

Running Head: Regulation of American Black Bear Rehabilitation in the United States

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REGULATION OF AMERICAN BLACK BEAR  
REHABILITATION IN THE UNITED STATES

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by

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# Regulation of American Black Bear Rehabilitation in the United States

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## DEDICATION

I dedicate this thesis to my husband. His love, support, and understanding throughout this academic experience facilitated the completion of this research.

## Regulation of American Black Bear Rehabilitation in the United States

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ABSTRACT OF THE THESIS  
REGULATION OF AMERICAN BLACK BEAR  
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American black bear (*Ursus americanus*) rehabilitation occurs throughout the United States with varying forms of regulation among states. The purpose of this case study is to provide a qualitative overview of state regulations and policies for black bear rehabilitation in the United States, present a rehabilitation framework based on best practices that will be useful in structured decision making, and advocate for changes in the regulations and policies. Twenty-four states permit black bear rehabilitation and regulate it through more general wildlife rehabilitation regulations and policies. Sixteen states had some inclusion of black bear specific regulations and policies, with eleven states focusing on housing requirements. It is recommended that states use a collaborative process in developing species specific rehabilitation regulations for black bears, use a rehabilitation framework within regulations and policies in order to address all aspects of the rehabilitative process, and incorporate adaptive management strategies into the regulations and policies.

Key Words: American black bear (*Ursus americanus*), regulation, wildlife rehabilitation.

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## INTRODUCTION

In Garden City, Idaho, Black Bear Rehabilitation, Inc. (BBRI) received 162 black bear (*Ursus americanus*) cubs between 2000 and 2010, which was a 450% increase in black bear cubs received during the previous 10 years (1989 –1999) (BBRI, 2010). The incidence of orphaned and injured black bears is increasing in areas of the United States, where black bears are prominent or expanding, and where human populations are also expanding (Don Carlos, Bright, Teel, & Vaske, 2009). This population dynamic has the potential to increase human-bear interactions and the need for black bear rehabilitation, which can affect the overall population dynamics of black bears. Black bear rehabilitation may therefore become an integral part of maintaining healthy populations as humans move into and alter habitats, and could contribute to the conservation of threatened species like the Louisiana black bear (*Ursus americanus luteolus*). Black bear rehabilitation is not without consequences, and improper captive handling and release has the potential to contribute to nuisance conflicts occurring at the human-black bear interface where bears are released, which can lower public support of black bear conservation efforts (van Dijk, 2005). One way to mitigate the potential consequences of black bear rehabilitation is for state wildlife agencies to develop species specific policies and regulations for black bear rehabilitation to ensure the use of best practices that focus on eliminating nuisance bear behavior associated with rehabilitation.

The relationship between black bear rehabilitation and public safety concerns regarding nuisance bears is complex. There are many factors that contribute to successful black bear rehabilitation and they are linked to the history of wildlife rehabilitation, the reasons for why rehabilitation is accepted as a wildlife management strategy, and the rehabilitation framework that serves as a reference point for implementation of best practices in wildlife rehabilitation

decision making. The strength of these strategies and their implementation for black bear rehabilitation are related to the history and current state of regulating wildlife rehabilitation. There are varying implications for black bear rehabilitation and best practices for black bears.

Wildlife rehabilitation is generally supported as a management alternative, due to its contributions to help perpetuate wild populations and ability to address issues of unnecessary animal suffering and the ultimate loss of wildlife species (Conover & Conover, 2001). The public is motivated to help individual animals that are deserving of moral concern when unnecessary suffering and loss is associated with varying anthropogenic impacts (Waples & Stagoll, 1997). The public's concern for the individual bear's welfare is centered on the circumstances that result in injured or orphaned bears, the individual bear's ability to recover from injuries and function on its own in the wild once released, and eliminating suffering during captive care and after release into the wild (Conover & Conover, 2001). Animal welfare concerns are extended to the wild populations once rehabilitated bears are released because of the potential impacts to both the individually released bears and the populations they are released into. These concerns focus on potential genetic and behavioral disruption of the wild populations, possible disease exposure, and exceeding carrying capacity (Waples & Stagoll, 1997).

Beyond concerns for the individual bears and bear populations, there are safety concerns for rehabilitators caring for captive bears, and public safety concerns in areas where bears are released. Within captivity the major concerns are for disease transfer to both the rehabilitators and to conspecifics that the bears may come in contact with (Miller, 2000). Public safety concerns include nuisance behavior from possible habituation or imprinting. Injured or orphaned black bear cubs that live in captivity and rely on people for food may lose their fear of people

and become habituated, or undergo behavioral changes that influence future behavior through processes of imprinting (Kolter & van Dijk, 2005; Shettleworth, 1993). These learning processes may contribute to negative interactions between bears and people that can lead to negative public perceptions of bears and release programs. This makes it difficult for rehabilitators and state agencies to sustain public support for rehabilitation and conservation programs (Huber, 2005). Successful rehabilitation practices strive to minimize or eliminate habituation or imprinting that could contribute to nuisance behaviors (Beecham, 2006).

Public support of wildlife rehabilitation and concerns for public safety associated with releasing rehabilitated black bears can be balanced through the administration and enforcement of state regulations and policies. Wildlife rehabilitation regulations function to ensure that wildlife species that are held in public trust are managed on behalf of the public and consider the varying value systems of the citizens of each state (Jacobson & Decker, 2008). It is the duty of wildlife agencies to address all aspects of wildlife management, including wildlife rehabilitation. More intense regulation of wildlife rehabilitation can address both management concerns and public safety concerns, while species specific regulations and policies are necessary to identify the differences in species management and ensure the implementation of best practices (Ashraf, Barman, Mainkar, & Choudhury, 2005; Fraser & Moss, 1985).

Rehabilitative techniques have advanced over the years, as public demand has helped motivate the use of wildlife rehabilitation to address animal welfare concerns. However, there is a continual debate about the overall viability of black bear rehabilitation. The debate is over the value of saving individual species through successful black bear rehabilitation versus the potential negative public perceptions of black bear conservation measures when released bears become nuisance animals (Karesh, 1995; Kolter & van Dijk, 2005; Soorae, 2005). In essence it

is a debate over the value of the individual animal versus the value of the entire population. It could be argued that what is good for the individual is also good for the entire population and wildlife rehabilitation seeks to address the needs of the individual in order to contribute to the entire population. In order to ensure that black bear rehabilitation is beneficial to the individual and the population, wildlife agencies can foster a stakeholder process to develop species specific regulations and policies (Casey & Casey, 1994).

### Significance of the Study

Currently, information is available regarding best practices for black bear rehabilitation in order to increase success of release of rehabilitated black bears by reducing the likelihood of nuisance activity shortly after release (Beecham, 2006; Rogers, 1985; van Dijk, 2005). Most states now have wildlife rehabilitation regulations that generally cover rehabilitation of native species (Casey & Casey, 2005). Wildlife management agencies have developed species specific regulations for the more traditional wildlife management focus of hunting and trapping, setting specific methods and limitations for each species. Consistent with these management transitions to fulfill wildlife and public need, it is also appropriate for wildlife management agencies to transition to species specific regulations for wildlife rehabilitation.

Currently, there is no research regarding the regulation of specific species, such as black bear, rehabilitation in the United States. This research seeks to understand the regulation of rehabilitation for black bears, and its implications for rehabilitation success, while offering recommendations to improve the regulatory process in order to transition to species specific regulations and policies within each state. This research has the potential to improve the rehabilitative process for black bears that can increase animal welfare for individual black bears, and black bear populations, while also minimizing public impacts.

### Purpose Statement

In order to understand the current regulations and their implications for black bear rehabilitation success, the purpose of this case study will be to provide an overview of black bear rehabilitation regulations by exploring state regulations and policies regarding wildlife rehabilitation in the United States, and to advocate for changes in the regulations that will include implementation of best practices for black bear rehabilitation. At this stage in the research, wildlife rehabilitation is generally defined as the captive care of injured, sick, or orphaned wildlife until they can be released back into the wild (Waples & Stagoll, 1997). This research also identifies a rehabilitation framework as a decision making tool by which to base the formulation of regulations in order to ensure that necessary aspects of rehabilitation are further addressed within regulation development for species specific rehabilitation regulations.

### Research Questions

In order to better understand state regulation of black bear rehabilitation it is necessary to research how black bear rehabilitation is currently regulated. To help answer this research question it is necessary to identify: 1) How many states allow black bear rehabilitation? 2) How each state regulates the process of rehabilitation? 3) What safety concerns are addressed in black bear rehabilitation? 4) What is the role of wildlife managers and wildlife rehabilitators in black bear rehabilitation? Answering these questions will identify the current atmosphere of state regulated black bear rehabilitation, whether species specific regulations currently exist for black bears, and what changes are necessary in order to ensure the implementation of best practices.

## LITERATURE REVIEW

### Wildlife Rehabilitation

Wildlife rehabilitation has changed through the years as more information is gathered, and new techniques are developed for rehabilitation of wildlife. Wildlife rehabilitation has occurred throughout human history, and gained momentum in the United States in the 1970s during the environmental movement, when environmental awareness was heightened (Karesh, 1995; Miller, 2000). Through the years, the changes within the wildlife rehabilitation community have contributed to wildlife rehabilitation as a well-known, and legitimate, wildlife activity recognized by wildlife agencies (Casey & Casey, 1994). There currently are a number of respected wildlife organizations at the international, national, and state levels. The International Wildlife Rehabilitation Council, and the National Wildlife Rehabilitation Association (NWRA) are two organizations that have worked together over the years to bring a level of professionalism to the rehabilitation community, strive to improve the rehabilitative care of all wildlife through providing a support system for rehabilitators, and fostering continuing education opportunities. There are non-profit rehabilitation organizations in 23 states, and an estimated 5,000 individual wildlife rehabilitators within the United States (Casey & Casey, 1995b).

Wildlife rehabilitation is a locally dependent and driven effort, as rehabilitation of species is determined by which species are found in a particular area, by public concern for individual wildlife, and the local level of involvement in the rehabilitative process (Kolter & van Dijk, 2005). Wildlife rehabilitators provide captive care to injured and orphaned wildlife of a variety of species to ensure successful release to the wild (Miller, 2000). Most wildlife rehabilitators are fully responsible for the funding necessary to provide the proper captive care for wildlife, and

also facilitate the support of local veterinarians to assist with medical treatment of acquired wildlife. Wildlife rehabilitation is generally considered to be a non-consumptive wildlife activity, outside the scope of traditional wildlife management considerations of commercial use of wildlife, scientific research, and education (Casey & Casey, 1996).

Personal motivations for participating in wildlife rehabilitation vary and generally there is a public concern for injured and orphaned wildlife that arises from the concern for the individual animal's welfare. People have increased animal welfare concerns for injured and orphaned wildlife that result from anthropogenic actions (van Dijk, 2009). Overall, people are concerned for each individual animal in need of assistance, and how that animal will be cared for. The primary role of wildlife rehabilitators is to ensure that animals in their care are provided with appropriate captive care that addresses the needs of the animal while minimizing welfare concerns (Miller, 2000). This is accomplished through increasing animal welfare while in captivity, and handling the animals in such a way that they will be successful upon release (Waples & Stagoll, 1997).

Rehabilitation efforts are based on an understanding of species specific information, and on the individual circumstances of the wildlife in need of care. This allows the methods of capture, captive care, and release to be tailored to the individual needs of each species as well as the individual characteristics of the animal. Each animal in rehabilitative care has its own unique history, personality, and circumstances that influence the methods for decision making regarding care (Waples & Stagoll, 1997). To better understand how decisions are made in the rehabilitative process, it is important to understand the framework of rehabilitation that contributes to survival and successful release into the wild (Kolter & van Dijk, 2005; van Dijk, 2005).

### Developing a Rehabilitation Framework

The rehabilitation framework is composed of three main elements: acquisition of the animal, captive care of the animal by the rehabilitator, and release of the animal back into the wild. The role of the wildlife rehabilitator is to ensure that each element is conducted with the animal's best interests in mind. The NWRA Minimum Standards for Rehabilitation identifies these main elements, with additional detail to fully understand the complexity of wildlife rehabilitation (Miller, 2000). Although not presented as a framework for decision making by Miller (2000), the main components of these standards are incorporated into the framework discussed within this research, and combined with other contributing research to get a holistic understanding of the main considerations that are necessary for successful rehabilitation.

#### *Acquisition*

There are many circumstances that may result in a rehabilitator acquiring a wild animal. Primarily, the proper identification of distressed wildlife is necessary to verify that the animal is in need of assistance (Miller, 2000). This identification may be conducted by private individuals, rehabilitators, or wildlife managers. Many times the rehabilitator is notified of an animal in distress which can include injured, sick, orphaned, or abandoned wildlife (Miller, 2000). There are many factors that can contribute to animals becoming sick or injured. An animal may become orphaned due to rejection from the mother, removal of the young animal from the mother either intentionally or unintentionally, the mother could have been killed, or the young animal may suffer injuries or illnesses that does not allow it to stay with a mother that is on the move (Trendler, 2005). Identification of wildlife in need of assistance is the first step in the process to ensure that animals that are in need of assistance receive it, and animals that are not in need of assistance are not unnecessarily removed from the wild.



Many times private individuals encounter distressed wildlife, and contact wildlife rehabilitators with questions regarding what they can do to assist the animal. Public education campaigns by wildlife rehabilitators and wildlife management agencies have contributed to a better understanding of what truly indicates that an animal is in need of rehabilitative care. Private individuals are usually the first to notice distressed wildlife and may need to capture and transport the animal to the wildlife rehabilitator. The rehabilitator may also retrieve the animal or rely on wildlife managers for assistance depending on the circumstances. Capture techniques can include hand capture, as long as the person capturing the animal avoids being bitten or contaminated with fluids from the animal, while sedation may be necessary for larger animals or animals that are unsafe to capture by hand (Animal Use and Care Committee, 1998).

Captured animals are transported to the rehabilitator, where the rehabilitator collects all available information about the history of the animal. This may include who found the animal, where it was found, the circumstances surrounding the distressed animal at the time of capture, and any information regarding the health of the animal upon acquisition (Miller, 2000). All of this information is used by the rehabilitator and veterinarian to determine whether the animal should be rehabilitated or euthanized, the veterinary treatment plan, and appropriate captive care (Hunter, 1989). Although the circumstances surrounding the animal coming into rehabilitative care are important for the decisions that are made about the animal, rehabilitators mainly focus on the captive care of the animal in preparation for release back into the wild.

### *Captive Care*

Captive care starts as soon as the animal is taken from the wild. It is therefore necessary to provide appropriate transportation for the animal to minimize stress and prevent further injury to the animal or potential injury to the person transporting the animal (Animal Use and Care

Committee, 1998). Once the animal is in the care of a wildlife rehabilitator, it may require veterinary treatment for injuries, illnesses, or simply a health check to ensure that it is a candidate for the rehabilitative process (Sikarskie, 1992). Proper captive care requires rehabilitators to work closely with their consulting veterinarian to ensure that rehabilitation decisions are made in the animal's best interest (Hunter, 1989). Generally, rehabilitation requires a broad understanding of the natural history of the wildlife species in order to provide appropriate housing, feeding, release training, and the appropriate length of time within captivity to ensure successful release (Miller, 2000). Animals should not be held any longer than necessary in order to minimize behavioral and physiological stress of captivity (Animal Use and Care Committee, 1998).

### *Release*

The ultimate goal of any rehabilitative effort is for the animal to be released back into the wild and be self-sufficient without relying on humans for any part of its normal function and behavior (Miller, 2000). Although categorized and discussed as release, this process can also be viewed as reintroduction, augmentation, or translocation. All of these take into consideration that the animal being released is new to the area where it is released and that the area already contains the same species (Waples & Stagoll, 1997). The International Union for the Conservation of Nature and Natural Resources and the Species Survival Commission (IUCN/SSC) Re-Introduction Specialist Group (1998) set guidelines based on best practices for release that consider the dynamics of release on the individual animals, and the wild populations that new animals are being released to. The IUCN (1998) emphasizes the need for pre-release feasibility studies of the release area, an understanding of the success of other releases of similar species, the selection of the release site should include the historic range of the species,

consideration of the long term effects on the receiving populations, the careful selection of individual animals to be released, adhering to any legal regulations within the release area, and post release monitoring. Incorporation of all of these aspects provides a holistic understanding of the animals to be released, the effects of the release on the populations and ecology of the release area, and a way to monitor and gauge the success of the release.

In many cases the acquisition information for the animal will provide information on capture location that will help the rehabilitator to determine the release site. The capture site is most often times determined to be the release location to prevent disease transmissions and avoid the introduction of new genes to local populations (Animal Use and Care Committee, 1998). The rehabilitator and veterinarian typically consult on the timing of the release to ensure that the animal is of proper age and body condition to survive the release (Sikarskie, 1992). Wildlife managers assist in these decisions by providing appropriate habitat information on the release location, as they are knowledgeable about the ecology in the release site (Miller, 2000). Wildlife rehabilitation can impact the welfare of wild populations through direct disruption of the wild populations, possible disease exposure, and exceeding carrying capacity that will impact individual and population survival and welfare (Waples & Stagoll, 1997).

Release location, time of year, and age of the animal are all considered in selecting the appropriate release conditions. Sarrazin and Legendre (2000) studied post release survival of sub-adult animals compared to adults and found that sub-adults had higher survival rates upon release, and seemed to be less affected by time in captivity. Molony, Dowding, Baker, Cuthill, and Harris (2006) studied translocation effects on hedgehogs and found that animals held in captivity for a short period of time before release had better survival rate attributed to weight gain and stress acclimation that captive care provided. These studies indicate that younger

animals may be better candidates for rehabilitation, and that some captive care can provide a nutritional advantage for released wildlife.

Release technique varies among species with the use of hard release, assisted release, and soft release methods. Hard release is the release of the animal directly from a transport carrier to the new habitat without allowing a period of acclimation (Nielsen, 1988). Assisted release may require the rehabilitator to accompany the animal on walks that acclimate the animal to the release environment and then return the animal to an enclosure (Ashraf, Dadda, Boro, & Akhtar, 2008). Soft releases allow a period of acclimation by providing the animal with an enclosure at the release site, and this method was shown to increase wolf survival post release (Fritis et al., 2001). Selecting the release method depends upon the animal, the habitat, and available resources.

Post release monitoring of animals is an important component of the rehabilitative process. Understanding the success of a release is important for identifying and modifying rehabilitative techniques. This may require banding, tattooing, ear tagging, or radio collaring the released animal in order to identify it, and track its movement once it is released (IUCN/SSC, 1998). The marking strategy should be species appropriate, and easily provide future identification of the animal after it is released (Animal Use and Care Committee, 1998). Post release monitoring can be time consuming and costly depending on the number of animals being released, and the method used for tracking (Waples & Stagoll, 1997).

### Regulation of Rehabilitation

The rehabilitation framework helps identify the most important aspects of wildlife rehabilitation, and what needs to be considered in the regulation of wildlife rehabilitation. Wildlife rehabilitators necessarily have to follow the federal, state, and local legal requirements

in order to operate. Federally, the United States Fish and Wildlife Service (FWS) issues rehabilitation permits for migratory birds and endangered and threatened species (FWS, 2011). The FWS identifies standards of housing and captive care by referencing the NWRA Minimum Standards of Rehabilitation (FWS, 2009a; Miller, 2000). For all other species, the federal government delegates the regulatory responsibility to state wildlife agencies to determine further regulation of wildlife rehabilitation as necessary based on need and public advocacy. Within each state, there are local ordinances that must be followed to ensure that the wildlife rehabilitation efforts are legal within varying communities (Sikarskie, 1992). The ability of states and communities to develop their own rehabilitation regulations and policies results in highly variable regulations among states, rooted in the traditional responsibilities and governance of wildlife agencies.

### *Wildlife Management Paradigm*

The trust doctrine of wildlife management is one of the major underlying principles of wildlife management in the United States and identifies that all wildlife belongs to the public and is managed for the benefit of all people (Jacobson & Decker, 2006). In fulfillment of this trust doctrine, wildlife managers maintain a role of authority over public access to wildlife, and the lawful allocation of wildlife for import, use, and possession (Prukop & Regan, 2005). Wildlife rehabilitation requires temporary possession of wildlife, and therefore is under the administrative jurisdiction of wildlife managers (Casey & Casey, 1996; Prukop & Regan, 2005). Wildlife managers are mainly responsible for sustaining wild populations without focusing on individual animals. Closely regulating wildlife rehabilitation requires managers to focus on individual animal husbandry, as rehabilitated animals will become part of wild populations once released (Crowe, 1995). This requires wildlife managers to balance the public concern for individual

wildlife with their own responsibilities to manage wild populations through mechanisms of regulation within the institution of wildlife management.

Wildlife management agencies are governed by traditional practices of representative democracy that were dominant at the time when wildlife management came to exist in the United States (Jacobson & Decker, 2008). Representative democracy functions as a democratic system that represents the public by having elected officials make management decisions, about public resources, on behalf of the public (Jacobson & Decker, 2008). Traditionally, elected wildlife management representatives focused on consumptive wildlife uses of hunting and fishing, while lacking representation of changing public values that included non consumptive use of wildlife (Prukop & Regan, 2005).

#### *Changing Management Values*

In order to incorporate wildlife rehabilitation as a recent wildlife value into wildlife management, it has required changes to the traditional management values. Wildlife policy is ultimately public policy, and should represent the full democratic citizenship (Messmer, Reiter, & West, 2001). In order to elicit change that will allow for successful conservation programs, it may require wildlife managers to continue scientifically based management with a nurturing of individual species (McTaggart-Cowen, 1995). The scientific focus on wildlife populations by wildlife agencies limits wildlife policies to traditional management practices without regard for changing public value systems (Messmer, Reiter, & West, 2001). This approach fails to incorporate the motivation behind the initial development of wildlife agencies as a response to social value systems. Wildlife management emerged as a response to a social concern for consumptive uses of wildlife, and therefore is traditionally based in meeting the public demands of stakeholders when it comes to human-wildlife interactions (Jacobson & Decker, 2006; Crowe,

1995). Wildlife managers and wildlife management institutions are obligated to function within the necessary social context determined by public values for all wildlife users. Through the years, wildlife agencies have fulfilled their role as wildlife managers by including the biological considerations regarding traditional management decisions, and the sociological dimensions of those decisions (Decker & Chase, 1997; Karesh, 1995; Riley et al, 2002; Wagner, 1996).

Stakeholders that are not traditionally embodied in the representative approach to wildlife management have increased dissatisfaction in wildlife decision making approaches and outcomes. There may be an associated public reluctance to accept unchallenged policies created by government institutions (McTaggart-Cowen, 1995). This has spurred the use of direct democracy in order to elicit change through the development of ballot initiatives and referenda (Nie, 2004). Wildlife managers identify that the increased use of direct democracy may shift the focus away from scientifically sound judgments to socially acceptable opinions of management that undermine the legitimacy of wildlife management institutions as public representatives for wildlife resources (Jacobson & Decker, 2008).

The continued public use of direct democracy to elicit change has stimulated wildlife agencies to accept a more proactive approach to manage changing public opinions about wildlife. The participatory approach to management is used in order to allow stakeholders to take a legitimate part in the decision making process (Trachtenberg & Focht, 2005). Stakeholder participation allows direct interaction between all interested groups that are affected by management decisions, and allows wildlife managers to maintain their roles as authoritative public servants (Decker & Chase, 1997). Wildlife managers can provide decision makers and stakeholders with science based knowledge to ensure that factual information is used to

formulate public policy that also considers changing value systems (Messmer, Reiter, & West, 2001).

Modifying the currently dominant representative model of wildlife management may decrease the use of the direct democracy approach, while eliciting necessary changes within the regulation of wildlife management without forcing major institutional shifts (Jacobson & Decker, 2006). Working within the framework of the representative traditions of wildlife management, the public can expect to elicit changes within the framework by improving representation within the boards and commissions that make decisions, an increased effort on the part of wildlife managers to incorporate public values, and a more participatory decision making process that helps maintain legitimacy of wildlife management decisions (Jacobson & Decker, 2008). This approach was used by the Colorado Division of Wildlife in order to update wildlife rehabilitation regulations within the state that helped to strengthen the relationship between the state agency and wildlife rehabilitators (Casey & Casey, 1995b).

Adaptive management strategies can contribute to the collaborative approach to regulation by allowing changes to rehabilitation policies and regulations as more research and data becomes available. As a structured decision making strategy, adaptive management techniques help to reduce uncertainty associated with management actions over time (Williams, Szaro, & Shapiro, 2009). Wildlife rehabilitation regulations can benefit from this approach as more post release monitoring studies are conducted to identify the success rates of released animals, and the rehabilitation methods that provide the most consistent results. Incorporating this approach into the regulation strategies for state agencies allows for flexibility within the regulations that integrate scientific, societal, and legal considerations necessary for managing wildlife rehabilitation (Williams, Szaro, & Shapiro, 2009).



*Current Regulation Research*

Wildlife agencies throughout the United States have incorporated new wildlife values into management regulations and policies to include wildlife rehabilitation as a regulated wildlife activity. The increased focus on wildlife rehabilitation regulations over the last couple of decades was identified in the changing regulations for state wildlife rehabilitation (Casey & Casey, 2005). Earliest studies into the regulation of wildlife rehabilitation identified the differences and commonalities within the regulations to better understand the regulatory process, and to incorporate best management practices for the regulation of wildlife rehabilitation (Casey & Casey, 1994). Between 1994 and 1999 a shift had occurred in the regulation of wildlife rehabilitation that resulted in all 50 states having some form of wildlife rehabilitation regulations, and identified a shift in wildlife management to identify wildlife rehabilitation as a wildlife related activity in need of regulation (Casey & Casey, 1999). Casey and Casey (1999) identified that states with more specific wildlife rehabilitation regulations engaged a stakeholder group in the development of regulations. Much of this previous research focused on permit types, technical qualifications of rehabilitators, application forms, caging requirements, inspections, incoming animals, release requirements, recordkeeping, annual reports, restricted wildlife, and lists of rehabilitators (Casey & Casey, 1994). This sets the baseline for general regulation of rehabilitation on the state level.

Beyond this general focus for wildlife rehabilitation, there is a need for species specific guidelines. Wildlife managers necessarily develop species specific guidelines, policies, and regulations as an integral function of their traditional management and administrative duties, and wildlife rehabilitators need both general and species specific guidelines (Ashraf, Barman, Mainkar, & Choudhury, 2005). Species specific guidelines identify the unique needs of varying

species, while also considering the species specific implications for their release into the wild. Public safety concerns associated with certain species of rehabilitated wildlife motivate the formulation of species specific guidelines, and their implementation, to address these issues.

### Black Bears

Increased conservation efforts helped restore many black bear populations in the United States. In conjunction with expanding black bear populations is the expansion of human populations into habitats that support black bears. Where black bear habitat overlaps with urban advancement, there is potential for increased interaction, and conflict, between black bears and people (Don Carlos, Bright, Teel, & Vaske, 2009). Urban expansion has been shown to impact black bears due to the bear's high adaptability to new food sources and environments (Bolen & Robinson, 2003). Black bears are considered charismatic megafauna that draw considerable public attention and media coverage, especially in instances where injured or orphaned cubs are involved (van Dijk, 2005). Injured or orphaned cubs can result from conflicts associated with anthropogenic influences that can include hunting, poaching, vehicle collisions, habitat fragmentation and disruption, den disturbance, and an overall increase in interaction between bears and people (Clark, Pelton, Wear & Ratajczak, 2002; Don Carlos, Bright, Teel, & Vaske, 2009). Impacts from anthropogenic sources motivate public concern for the individual bears that are affected, and gains the support from organizations to intervene and do whatever possible to help the affected animal (Kolter & van Dijk, 2005).

Black bear rehabilitation is generally supported by the public as a management alternative to traditional management practices. Traditional management techniques for injured and orphaned black bear cubs included euthanasia, leaving the animal in the wild to survive on its own, fostering orphaned cubs to different adult female bears, or permanent placement in

captivity (Beecham, 2006; Clark, Pelton, Wear, & Ratajczak, 2002). Of these traditional methods, fostering cubs to different adult female bears gained increased support, although only allows for a small window of opportunity where the location of an appropriate surrogate female must be known and the cub must be healthy enough for the process (Rogers, 1985).

Rehabilitation of black bears has received increased public support, and represents the changing public values that seek to consider the individual animal's welfare (Waples & Stagoll, 1997).

The use of rehabilitation to help injured and orphaned bears must also consider the safety concerns for rehabilitators caring for captive bears, and public safety concerns for areas where rehabilitated bears are released back into the wild. The main concern for rehabilitators is disease transfer. Zoonotic diseases could be passed to rehabilitators and must be taken very seriously. Diseases could also be transferred to conspecifics within the rehabilitation facility or wild populations once the bear is released. These concerns can be mitigated by following proper handling techniques during capture and care of the bear, and administering proper veterinary examinations and treatments (Miller, 2000).

There are varying public safety concerns associated with black bear rehabilitation. The safety concerns for rehabilitated bears include learned behaviors of habituation and imprinting. These learning processes can take place while in captivity and potentially contribute to nuisance behavior once the bear is released back to the wild. Habituation is the loss of fear of people associated with the bear learning that people provide food (Kolter & van Dijk, 2005). Imprinting is restricted to a sensitive developmental stage early in life that is irreversible and can influence behavior later in life (Lorenz, 1935/1970). Both habituation and imprinting can be influenced by the age of the bear when it comes into captive care, the length of stay in captivity, the husbandry techniques employed by rehabilitators, and the individual personalities of the bears. Bears that

become habituated or imprinted to people may be considered nuisance animals if they injure people or their property in the search for food and shelter (Clark, Huber, & Servheen, 2002). Although these learning processes are the most discussed in relation to nuisance behavior in bears, there is little evidence to show that habituation is enough to contribute to nuisance behavior or that imprinting as it is classically defined even occurs in bears. How an animal learns is a complex process that is species and individual specific with differences that are not fully understood or represented in the understanding of behavior presentation (Shettleworth, 1993). Habituation and imprinting are traditionally used to help understand motivations for conflict between bears and people; however, they are not the only factors leading to nuisance behavior and conflicts.

Nuisance behavior associated with habituation is rare in wild black bears, and is most commonly associated with, but not limited to, wild bears being purposely fed by people or feeding on garbage, bird feed, or other food sources in residential communities (Gore, 2004). Black bear nuisance activity in rural and urban or suburban environments has increased public awareness regarding wildlife conflicts (Decker & Chase, 1997). Although monitoring of release is typically poor, it is indicated that less than 2% of rehabilitated black bears were involved in some type of nuisance activity soon after release, which is about the same as the occurrence found in wild bear populations (Beecham, 2006). Rehabilitative techniques function to minimize safety concerns associated with captive care, and possible nuisance activity from rehabilitated bears.

Public support for the incorporation of black bear rehabilitation as a viable management option contributes to the perpetuation of wild populations. As the human-black bear interface continues to expand, there will remain persistent management problems with black bears in

North America that must consider the issues that contribute to orphaned and injured bears, proper rehabilitative care, the contributions that rehabilitated bears make to wild populations, and research on post release success in black bears. All of these factors are important for understanding the dynamics of injured and orphaned black bear rehabilitation.

### Black Bear Rehabilitation

Black bear rehabilitation has many similarities to rehabilitation of other wildlife, but there are also necessary heightened precautions that must be considered in the process to ensure successful survival of rehabilitated bears. Beecham (2006) outlines rehabilitation of black bears that focuses on all of the major considerations throughout the rehabilitative framework. These methods were a collaborative effort among a variety of biologists and black bear rehabilitation specialists, and were supported in part by the internationally known World Society for the Protection of Animals (WSPA). Honing techniques with species that are more common, like the American black bear, can also provide necessary knowledge that can be used to help threatened species (Robinson, 2005). These techniques can be considered best management practices (BMP) for black bear rehabilitation. These BMPs function to ensure that rehabilitators are working to the highest acceptable standards of rehabilitative care that are necessary for black bear survival upon release.

Best management practices are commonly used to address conservation issues such as water quality; however, the concept can be used in many different management situations. The Association of Fish and Wildlife Agencies (AFWA) (2006) has adapted BMP methods for trapping wildlife in the United States. As with any BMPs, the goal is to be able to scientifically evaluate the wildlife management issue, and in so doing, create a reference by which wildlife managers and stakeholders can make decisions and actively improve methods (AFWA, 2006).

Trapping BMPs by AFWA also identify the importance of species specific techniques. Black bears require special considerations in the rehabilitative process in order to ensure successful survival of the bear and public safety after release of the animal back into the wild.

### *Acquisition*

There are many considerations in determining if a bear is a candidate for rehabilitation prior to capture and transport of the bear to a rehabilitation facility. The history of the bear may be one of the most important factors, and includes the age of the animal and the circumstances surrounding its need for rehabilitation. Most state agencies only allow black bear cubs younger than a year old to be rehabilitated, as black bears typically become self-sufficient around five months of age, although natural dispersion occurs at 18 months (Rogers, 1985). Exceptions may exist for injured or sick bears older than five months of age, however, as the bear increases in age, it becomes more difficult to house and care for (Sarrazin & Legendre, 2000). Nuisance activity by adult female bears with cubs that result in the death of the female may also increase the likelihood of nuisance behavior in the orphaned cubs, which should be considered in the decision to rehabilitate these cubs (Beecham, 2006). Healthy cubs with limited human exposure and an aversive response to humans are ideal for rehabilitative care (Beecham & Ramanathan, 2007).

Once it is determined that the cub is a candidate for rehabilitation, it must be captured and transported to a licensed rehabilitator. This can be difficult given the age or health of the cub, and proper capture and transport methods must be used to ensure the safety of the bear and the person transporting it. Very small cubs orphaned in a winter den can be hand captured easily, while older cubs that may find refuge and shelter up a tall tree may require the use of tranquilizing guns to administer sedation to remove them from the tree (Animal Care and Use

Committee, 1998). It is important in this case to consider safety measures for the bear if it should fall out of the tree once sedated, and may require the use of catch nets or pads. There are varying degrees of long term effects from the different capture methods and these must be considered in determining the best possible method for capture (Cattet, Boulanger, Stenhouse, Powell, & Reynolds-Hogland, 2008). Beecham (2006) addressed capture and transport in terms of release, in which case the rehabilitator has more control over the environment from which the bear is being removed from. Specially trained personnel may be required for captures and transport for the purpose of release depending on the type of rehabilitation enclosure the bear is being removed from. Transportation cages should be of sufficient size and strength to hold a fully awake cub and the animal should be transported immediately to the appropriate permitted rehabilitator.

### *Captive Care*

Captive care of a bear encompasses all of the same aspects as captive care of any injured or orphaned wildlife and necessarily includes veterinary assessment, housing, feeding, release training, and balancing the needs of the animals with minimizing time in captivity. It is recommended that new arrivals are quarantined for two to four weeks, and treated for various diseases to minimize transmission to conspecifics once introduced within captive housing (Beecham & Ramanathan, 2007). Housing a bear is dependent upon the size and the health of the bear. As the bear grows and gains strength, the size and strength of the enclosures increase (Miller, 2000). The main factor determining appropriate enclosures is preventing premature release. Many of the outside enclosures used for older cubs are constructed of heavy woven wire chain link that is partially buried, and has a roof, hot wire, or other deterrent along the top (Beecham, 2006). Habitat enrichment and den structures are necessary for the physical and

behavioral development of the bear, and housing with conspecifics is recommended for social and physical development (Stiver, Pelton & Scott, 1997).

Feeding a captive bear requires an understanding of their natural history, and the schedule is determined by the health, age, and size of the bear. Veterinary assessment will ensure that starvation and dehydration are treated appropriately prior to the start of a captive feeding schedule (Thompson, 2011). Bear milk is typically very high in fats and proteins, and infant formulas should reflect these needs by providing at least 24% fat and 12% protein, with very few carbohydrates (Beecham, 2006). Bears are omnivorous, and therefore survive on a variety of food types in the wild, and can be offered a highly variable diet in captivity even before two to three months of age for weaning (Beecham & Ramanathan, 2007; Miller, 2000). Offering natural food sources, although not necessary, is beneficial in maintaining aversive behaviors for bears so that they do not become conditioned to food sources, like dog food, that could potentially attract them to human communities once released (Mazer, 2010).

Proper housing and feeding ensure that the bear is properly contained until planned release, and is growing and gaining weight necessary for survival once released. Most black bear behavior is inherent, and does not require the mother bear in order for the cubs to learn the behaviors necessary for survival in the wild (Beecham, 2006). Minimizing the time the bear is held in captivity contributes to successful release; however, the time spent in captivity will vary greatly from case to case to ensure that the bear has recovered fully and is ready for release.

### *Release*

Not every bear that is taken into captivity for rehabilitation will be a candidate for release, and decisions must be made on a case by case basis for each bear (Soorae, 2005). As always it is necessary to study the potential release site for black bear releases, with greater



emphasis on public interest, perceptions, and education (Kolter & van Dijk, 2005). Most bear releases are conducted where bears already occur, and in most cases, the public usually has a greater understanding of bear interactions with greater support for releases that could be viewed as conservation efforts (Siemer, Hart, Decker, & Shanahan, 2009).

Many times the decision to release a rehabilitated bear requires the collaboration of the rehabilitator, the veterinarian, and the wildlife manager to ensure that proper location, time of year, and animal characteristics are considered in the decision. Hard and soft release techniques have been used for bears with varying degrees of preference and success. Kilham (2002) used assisted release techniques with black bears in New Hampshire that were very successful. Clark, Huber, and Servheen (2002) studied the varying success of release methods and found that hard releases were more successful when sub-adults were released compared to adult releases, although soft releases in the winter reduced homing behavior in adult females. The most commonly used method is hard release for black bears, where they are directly released into the selected habitat from the transport crate that contributes to aversive conditioning of the bears (Beecham, 2006).

Gauging the success of release of bears back into the wild is still under investigation. Although documented black bear rehabilitation has been occurring for more than 40 years, there is little information and research regarding the success of these releases (van Dijk, 2005). More recently, rehabilitation facilities and practitioners are recording release rates and successes in order to contribute to post release research for black bears. Idaho Black Bear Inc. (2010) identified that 144 of their 208 rehabilitated black bears are still alive because their radio collars or ear tags were not turned in, which would indicate that the bear had died. The Progressive

Animal Welfare Society of Washington State and Woodland Wildlife Center in New Jersey also record post release data in order to have a better understanding of success.

Quantifying release success is highly variable and can have implications in the interpretation of data collected during post release monitoring. Successful rehabilitation for bears is often measured by the animal's ability to find appropriate territory that provides food, shelter, denning, reproductive needs, and does not result in any nuisance activity shortly after release (van Dijk, 2005; Soorae, 2005; Clark, Pelton, Wear, & Ratajczak, 2002). Alt and Beecham (1984) considered releases to be successful if there was no nuisance behavior within 30 days of release, which may increase the rate of success for bears that are released because it does not consider long term survival. The long term effects of captive care may be difficult to determine due to the complexities of the length of time the bear is surviving in the wild. This makes it difficult to associate nuisance behavior with captive care. The International Workshop on the Rehabilitation, Release, and Monitoring of Orphan Bear Cubs (2007) identified successful release as the bear's ability to find and sustain itself on natural food for at least the first month after release, while also lacking nuisance behavior within the first year. In order to fully evaluate the success of black bear releases, it is important to have a monitoring strategy that requires bears to be marked by ear tags, tattoos, or radio collars for more intense tracking purposes (Beecham, 2006). Tattoos are considered a necessity by some rehabilitators since ear tags and radio collars can drop off or be removed, while tattoos are permanent markers (Langen, A., personal communication, October 8, 2011). Releases are considered unsuccessful when the bear is involved in nuisance behavior, and intervention plans are important for coping with bears that become a nuisance (van Dijk, 2005). Understanding release success will help to adjust captive

care techniques in order to address the varying concerns associated with failed releases, and contributes to an adaptive management strategy for the regulation of black bear rehabilitation.

### Regulation of Black Bear Rehabilitation

Currently there is a conservation debate on the viability of black bear rehabilitation that weighs the success of black bear rehabilitation against the threat to black bear conservation that can result from negative public perceptions if released bears become nuisance animals (Fraser & Moss, 1985; Karesh, 1995; Kolter & van Dijk, 2005). Rehabilitation is an expensive and time consuming activity, especially for black bears, and the money and effort to rehabilitate black bears may be more effective if applied to habitat protection, and species of higher conservation concern (Soorae, 2005). Public safety and conservation concerns can be addressed with the implementation of more intense regulation of wildlife rehabilitation (Fraser & Moss, 1985). While regulations vary among states, stakeholders and bears can benefit from identifying and implementing more specific regulations for black bear rehabilitation by specifying policies and regulations to help ensure successful rehabilitation (Casey & Casey, 1994).

Wildlife managers have ultimate decision making power over all forms of wildlife use, which is tempered by public opinion and politics. This makes it imperative that regulations and policies for wildlife rehabilitation reflect updated practices, and the scientific value of rehabilitation is acknowledged. The dynamic understanding of best practices for rehabilitative care of black bears, or any wildlife, should be reflected in regulation and policy concerning the practice of rehabilitation. Policy changes can only be implemented if they are based on sound science in order to support that best practices are scientifically proven to work in such a way as to minimize concerns and maximize success (Messmer, Reiter, & West, 2001). Increased regulation of black bear rehabilitation adds to agency personnel responsibilities during times of

financial cutbacks that reduce their availability to administer more intense regulations (Karesh, 1995; Fraser & Moss, 1985). Recent studies on black bear rehabilitation relate directly to captive care methods, and release success and methods, and fail to address ways by which to ensure that best practices are implemented within the regulatory framework of wildlife management. To better understand the regulation of black bear rehabilitation, this research paper will provide an overview of current black bear rehabilitation regulations, and identify ways in which best practices can be incorporated.

## METHODOLOGY

### Research Design and Methods

Qualitative methods were employed through the use of a case study approach that required the in depth exploration of black bear rehabilitation as regulated by state agencies and state management policies. The research was an analysis across cases of state regulation of black bear rehabilitation for all 50 states of the United States. Research materials were accessed through the public medium of the internet, and publicly accessible websites, web pages, and contacts. The internet is a public forum and collection of documents through this medium allows for convenient accessibility to the researcher and others. Some materials were incomplete or unavailable through the internet. The use of public documents helped minimize bias and increase transparency and accessibility in the research. State and wildlife agency websites are a primary source of wildlife information, backed by the authority of the United States government, and are a resource for information on wildlife management and wildlife related issues. Searches extended to wildlife rehabilitation specific international, national, and state organizations as necessary to collect state specific data relating to black bear rehabilitation. Regulations, policies, and management plans were read, coded based on research questions, and themes were identified and interpreted in order to understand current regulations of black bear rehabilitation, and advocate for changes necessary to ensure animal welfare and public safety.

### Locating Regulations and Policies

States were categorized for inclusion in data analysis based on the presence and size of black bear populations. Population data was gathered from Brown (2009), and verified on state agency websites for each state. States with no known population of black bears, transient black bear populations, or population numbers of less than 200 black bears were excluded from

analysis due to the lack of stable black bear populations within the state. This is consistent with the strategy used by Spencer, Beausoleil, and Martorello (2007) who excluded states from analysis in relation to bear conflict complaints due to the lack of self sustaining bear populations. Black bear rehabilitation is unlikely to be addressed in states with very low black bear populations. States with low population numbers do not actively manage black bear populations; however, they focus on potential recovery and conservation plans and tracking black bear sightings (Young, 2011). All states with stable black bear populations over 200 bears were included in the initial research and analysis.

State wildlife agency websites were located and generally searched for key words including wildlife rehabilitation and wildlife rehabilitation permit or license to identify if wildlife rehabilitation was directly addressed on the state agency website. If no web page existed discussing wildlife rehabilitation, the state agency website was then searched for captive wildlife, wildlife possession, and permit or license regulations. The results from the initial searches were used to locate the state regulations available on wildlife agency websites. If wildlife agency websites were lacking links to regulations regarding wildlife rehabilitation, then state government websites were searched in order to locate appropriate administrative codes that contained information regarding wildlife rehabilitation. If wildlife rehabilitation was not discussed directly in the code, then captive wildlife and wildlife possession regulations were searched in order to determine if wildlife rehabilitation was discussed under different terminology. In the case of regulations that were lacking altogether, or vagueness in regulations, then the wildlife agency site was searched to locate available black bear management plans and policies. These plans and policies were then reviewed and searched for black bear rehabilitation, or injured and orphaned bears.

### Identifying States that Permit Black Bear Rehabilitation

Once regulations and policies were located for all states included in this analysis, they were analyzed to determine if black bear rehabilitation was permitted in the state. If species were not directly addressed in regulations, or if regulations referenced other regulations for clarification, then other regulations were searched to determine if black bears were an approved species for rehabilitation. States with vague regulations or policies were contacted using the “contact us” link on the wildlife agency website in order to get clarification on whether or not the state allowed black bear rehabilitation, and if there were any policies or regulations for black bear rehabilitation. The regulations and policies for all states included in analysis were searched for specific references to black bears. State regulations that permitted black bear rehabilitation, but did not address black bears specifically were interpreted as pertaining to black bears since they were an allowed species for rehabilitation. States that explicitly prohibited black bear rehabilitation were excluded from further analysis.

### Regulation of Rehabilitative Process

All data for states that permit black bear rehabilitation was coded and recorded by the researcher using note taking procedures that employed a standardized table available in Appendix A. The specific regulations, management plans, and policies that were analyzed were identified for each state as a reference for the information contained within the table. The table incorporated the research questions to include the rehabilitative process, safety issues, and the roles of wildlife managers and rehabilitators as identified in the regulations and policies. The table was designed by the researcher using the rehabilitation framework identified in the literature review. The table contains the most important consideration for rehabilitation of black bears from the varying sources that addressed wildlife rehabilitation in general and more

specifically for black bears. The process of rehabilitation was generalized into three main categories: acquisition, captive care, and release.

### *Acquisition*

Acquisition covers all activities that result in the capture and transport of a wild animal to a rehabilitator, and any background information about the animal. Acquisition topics included cause of distress, capture/transport of the animal, and history of the animal. Any wording in the regulations that pertained to any of these topics was coded as acquisition, and any bear specific acquisition topics were identified.

### *Captive Care*

Captive care covers all aspects of maintaining a wild animal in captivity. Captive care topics included veterinary treatment, housing, feeding, release training, and limits on time that the animal can be held in captivity. Any wording in the regulations pertaining to these broad topics was coded as captive care, and any bear specific care topics were identified.

### *Release*

Release covers all aspects of returning the animal back to the wild. Release topics included release location feasibility studies, selection process for determining releasable animals, recommended release techniques, who makes the decision pertaining to release of the animal, location of the release, time of year, age of the animal, and post release monitoring. Any wording in the regulations that pertained to these topics was coded as release, and any bear specific release topics were identified.

### Analysis of Rehabilitative Process

All states included in analysis, the NWRA Minimum Standards for Rehabilitation (Miller, 2000), and Beecham (2006) Orphan Bear Cub Rehabilitation Guidelines were read and



coded using the table to allow comparison for analysis. States that identified the NWRA Minimum Care Standards were coded according to the topics that were covered in the NWRA coding table. It was assumed that if the state regulations identify the NWRA standards to be followed, that all portions of the NWRA standards would have to be followed by rehabilitators in addition to other provisions set forth in the state regulations. All states were categorized based on their inclusion of all three main rehabilitation topics within their regulations and policies. All states were then compared based on the subtopics within each identifying theme in order to identify patterns. All states were also compared based on identification of topics that were specific to black bears. Topics with high degrees of state inclusion in the regulations were determined to be of maximum importance, while topics that were lacking in representation within state regulations identify areas where regulations and policies could be modified in order to represent these topics.

### Safety Concerns

Any portion of the regulations that addressed safety concerns in regards to the animal's safety or human safety both during the rehabilitative process and after release was coded as addressing safety concerns. The four main safety concerns for black bears include habituation, imprinting, nuisance activity, and disease. All regulations and policies were searched for information addressing these topics, and coded within the research table.

### Roles

Any implicit or explicit identification of the roles for the wildlife managers or wildlife rehabilitators was coded within the table. Implied roles included any roles that were not directly stated in the regulations, but were inferred from the meaning of the purpose of the regulations. For example, wildlife agencies have the implied role of administering the wildlife rehabilitation

regulations as their duty as a wildlife agency in the United States, although this is not directly stated in the regulations. Similarly, the implied role of wildlife rehabilitators is to provide captive care for wildlife, and this role may not be directly stated within regulations. Explicitly identified roles included roles that were specifically stated or outlined within the regulations. For example, some states may require wildlife agency personnel to inspect facilities before issuing a permit, and this role is stated within the regulations. Similarly, wildlife rehabilitators may be required to keep records on all animals in their care, and this role is stated specifically within the regulations.

### Validation of Findings

Findings were validated through the researcher's personal background as a zoo keeper and peer debriefing. The researcher has previously worked and volunteered at rescue and rehabilitation facilities with black bears, where decision making is based on state regulations, however, the researcher does not currently work or volunteer for a wildlife rehabilitation facility, is not a certified wildlife rehabilitator, and is not employed by or associated with any state wildlife agencies. The researcher is employed by a zoological facility, and has eight years of captive brown and black bear experience, although is not currently working with bears. The researcher refrained from suppressing, falsifying, or inventing findings, with full transparency of procedures and analysis methods. The researcher takes responsibility for any unintentional omissions or research errors. The researcher fully acknowledges those associates that contributed to the development of the research manuscript.

## RESULTS

### Black Bear Rehabilitation

#### *Excluded States*

Fifteen states (AL, CT, DE, HI, IL, IN, IA, KS, MO, MS, NE, OH, RI, SD, and TX) were excluded from analysis due to no known population of black bears, or low population numbers estimated below 200 black bears. One state (WV) was excluded from analysis because no wildlife rehabilitation regulations were available, and correspondence for clarification was unsuccessful.

Identifying which states permit black bear rehabilitation required further inquiry beyond reading the wildlife rehabilitation regulations. Some states identified specifically which animals were allowed to be rehabilitated, and which animals were prohibited directly in the regulations. For example, Arizona regulations identified which species could and could not be rehabilitated directly within the regulations (Arizona Administrative Code, Chapter 4, Article 4, § 423 D.5, 1989). Not all states specifically identified which species were allowed or prohibited, and further clarification was needed.

Black bears are prohibited from rehabilitation in ten states (AR, GA, KY, MA, ND, OR, SC, VT, WI, and WY). All of these states with the exception of ND manage bears as game animals for hunting, or classified black bears as potentially dangerous animals. North Dakota was at the population cut off line for analysis, and black bear populations are protected within the state. Regardless of this classification, ND is not issuing any rehabilitation permits at this time, as they are updating their rehabilitation regulations. There was no consistent relationship between the prohibition of black bear rehabilitation, and the size of black bear populations for these states. Table 1 identifies the states that prohibit black bear rehabilitation and the populations sizes associated with each state.

State	Black Bear Population*
Arkansas	3,500
Georgia	2,300-2,500
Kentucky	<500
Massachusetts	2,900-3000
North Dakota	100-300
Oregon	25,000-30,000
South Carolina	1,200
Vermont	4,000-4,300
Wisconsin	12,350
Wyoming	5,000-7,000

\*Population estimates (Brown, 2009).

### *Permitted States*

Determining which states permitted black bear rehabilitation was not always clear within the regulations. Some of the states that were included in the analysis had conflicting statements in the regulations and policies. The state of Alaska for instance did not recommend the rehabilitation of large carnivores and big game animals, and limits rehabilitation activities to cover situations in which any mammals that are victims of a toxic waste or oil spill may be rehabilitated at the discretion of fish and game, and by fish and game personnel only (Alaska Department of Fish and Game, 2010). The state of California also identified that black bears are a big game mammal, and may not be temporarily possessed or confined, unless the wildlife agency gives written authorization to do so (California Code of Regulations, § 2118 b., 2011). This was common for many of the states that did not specify within regulations which species could or could not be rehabilitated. Many states identified that big game species, or inherently dangerous animals, defined and identified in other portions of the regulations, should not be

rehabilitated without written permission from the state. In all of these cases, it was interpreted to mean that black bears were not necessarily prohibited, because in certain circumstances, rehabilitation could be an option and the states were therefore included in analysis. Figure 1 provides a full comparison of all states included and excluded from analysis.

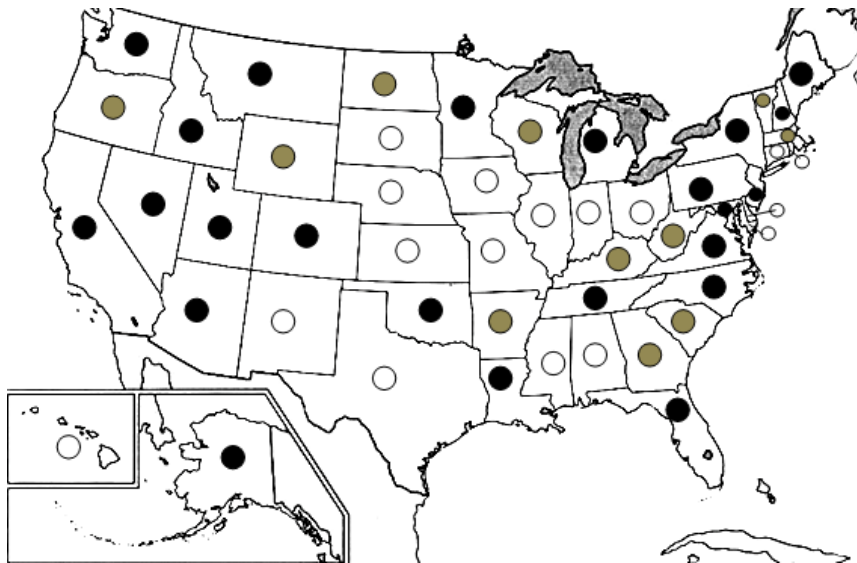


Figure 1: Comparison of states for inclusion in analysis.

- States that allow black bear rehabilitation.
- States that prohibit black bear rehabilitation.
- States that have black bear populations less than 200.

The 24 states (AK, AZ, CA, CO, FL, ID, LA, ME, MD, MI, MN, MT, NE, NH, NJ, NM, NY, NC, OK, PA, TN, UT, VA, and WA) that allow black bears to be rehabilitated had varying degrees of regulation. Alaska, Montana, and North Carolina do not allow private individuals to rehabilitate black bears, and only allow state wildlife personnel or state funded rehabilitation facilities to conduct black bear rehabilitation due to increased public demand for black bear rehabilitation (Hanauska-Brown, L., personal communication, August, 16, 2011). Many of the

states only allow a licensed or permitted rehabilitation facility or one individual within the entire state, to rehabilitate black bears. In the case of a private individual, it is an individual that has a proven track record with successful releases of black bears.

Many of the states have regulations pertaining to some or all of the aspects of wildlife rehabilitation. Within the states that provided rehabilitation regulations, six states discussed black bears separately in management plans, conflict guidelines, and response manuals. Only four states lacked regulations, but provided bear specific policies. Many of the states that do not allow black bear rehabilitation within the state will send orphaned or injured black bear cubs to other states for rehabilitation in order to meet public demands for rehabilitation. The Idaho Black Bear Rehabilitation Inc. has received bears from OR and WY, two states that prohibit rehabilitation of black bears within their own state (BBRI, 2010). All states that allow black bear rehabilitation regulated the process of rehabilitation differently.

### Rehabilitation Framework

Sixteen of the states that allow black bear rehabilitation have a portion of the regulations that specify requirements for black bears. In other cases, there are black bear specific policies that either identify rehabilitation as an option for orphaned cubs, or outline rehabilitation guidelines for black bears. The regulation of black bear rehabilitation falls under the rehabilitation framework, and analysis provided these general results. Although the results are quantified, this technique is used to identify dominant themes within the regulatory framework of rehabilitation.

### *Acquisition*

Acquisition was discussed in 23 of the states, with the one exception of ID. All 23 states identify the cause of distress for wildlife that would make it a candidate for rehabilitative care

and included wording such as injured, sick, debilitated, orphaned, and otherwise incapacitated. Capture and transport needs were discussed in the regulations of 15 states, only one (NY) of which included specific considerations for the capture and transport of bears. The history of the animal is considered in the regulations of 12 states, three (MT, NY, and PA) of which had specific considerations for black bears. Table 2 compares the acquisition categories analyzed for each state included in analysis. The dark squares indicate that the states discussed the topics within regulations and policies, the white squares indicate that the topics were not discussed, and the black squares indicate that the state specifically addressed the topics in relation to black bears.

STATE	Distress	Capture/Transport	History
1. AK	Dark	Dark	Dark
2. AZ	Dark	Dark	White
3. CA	Dark	Dark	Dark
4. CO	Dark	Dark	White
5. FL	Dark	White	White
6. ID	Dark	White	White
7. LA	Dark	Dark	Dark
8. ME	Dark	White	White
9. MD	Dark	Dark	White
10. MI	Dark	Dark	Dark
11. MN	Dark	Dark	White
12. MT	Dark	Dark	Black
13. NC	Dark	White	White
14. NH	Dark	Dark	Dark
15. NJ	Dark	White	White
16. NM	Dark	White	White
17. NY	Dark	Black	Black
18. NV	Dark	White	White
19. OK	Dark	Dark	Dark
20. PA	Dark	Dark	Black
21. TN	Dark	Dark	Dark
22. UT	Dark	White	Dark
23. VA	Dark	Dark	White
24. WA	Dark	Dark	Dark

*Captive Care*

Captive care was addressed in 22 of the states, and only six states referenced the NWRA Minimum Standards for Wildlife Rehabilitation (Miller, 2000). Veterinary treatment and assessment was addressed in the regulations and policies of ten states, these states varied on whether veterinary treatment was to occur upon initial acquisition of the animal, or prior to release, however, all ten states required that the veterinarian be involved at some point in the rehabilitative process. Housing requirements were discussed in the regulations and policies of 20 states, 11 of which specified black bear holding requirements. Feeding was addressed by 13 states, with two states identifying the unique needs of black bears. The NWRA minimum standards identify specific housing requirements for bears, as well as feeding considerations. Release training was addressed by 13 states, while only one (MT) identified the unique needs for black bears. The amount of time that an animal spends in captivity is highly variable among states, and 15 states specify maximum time limits for captive housing. Montana identified time limits for bears. Further analysis of time limits identified that the majority of states recommended holding not exceed 180 days. Table 3 compares the captive care categories for all states included in analysis. The dark squares indicate that the states discussed the topics within regulations and policies, the white squares indicate that the topics were not discussed, and the black squares indicate that the state specifically addressed the topics in relation to black bears.



Table 3: Captive Care Comparisons

STATE	Vet Treatment	Housing	Feeding	Release Training	Captive Stay
1. AK					
2. AZ					
3. CA					
4. CO					
5. FL					
6. ID					
7. LA					
8. ME					
9. MD					
10. MI					
11. MN					
12. MT					
13. NC					
14. NH					
15. NJ					
16. NM					
17. NY					
18. NV					
19. OK					
20. PA					
21. TN					
22. UT					
23. VA					
24. WA					

*Release*

Release was discussed in the policies and regulations of 22 states. None of the states, or the NWRA Minimum Standards discussed the importance of habitat feasibility studies for release locations. Selection of releasable animals was addressed by 14 states, and two of those states discussed criteria specific for black bear selection. Only three states discussed release techniques. Twenty states discussed the selection of the release location, and three states identified specifics for releasing black bears. Time of year of release was identified for 15 states, with four states identifying specifics for black bears. Six states discussed the age of the animal in relation to being released, and two of these states had specific recommendations for black bears. Only seven states identified some form of post release monitoring for wildlife, and two states identified the methods used for post release monitoring of black bears. Release decisions are made by wildlife agency personnel for 14 states, veterinary approval in one state, and otherwise not addressed in the remaining nine states. Table 4 compares the release categories for all states included in analysis. The dark squares indicate that the states discussed the topics within regulations and policies, the white squares indicate that the topics were not discussed, and the black squares indicate that the state specifically addressed the topics in relation to black bears.

The state of ID does not cover any regulations for acquisition or captive care for wildlife rehabilitation, but requires permits for the release of wildlife. Idaho is home to the Black Bear Rehabilitation Inc., which has rehabilitated hundreds of black bears over the last 25 years (BBRI, 2010). Although not reflected within the regulations of the state, the facility has a very comprehensive handbook for rehabilitation of cubs that was used in the creation of the guidelines

for the rehabilitation and release of orphan bear cubs which can be considered best practices (Beecham, 2006).

STATE	Feasibility Studies	Releasable animals	Technique	Decision	Location	Time of year	Age	Monitoring
1. AK				W.A.				
2. AZ				W.A.				
3. CA				W.A.				
4. CO				N/A				
5. FL				W.A.				
6. ID				W.A.				
7. LA				W.A.				
8. ME				T.C.				
9. MD				Vet.				
10. MI				N/A				
11. MN				N/A				
12. MT				W.A.				
13. NC				N/A				
14. NH				W.A., Vet				
15. NJ				W.A.				
16. NM				N/A				
17. NY				N/A				
18. NV				W.A.				
19. OK				N/A				
20. PA				W.A.				
21. TN				W.A.				
22. UT				N/A				
23. VA				W.A.				
24. WA				N/A				

### *Rehabilitation of Louisiana Black Bear*

The Louisiana black bear is a subspecies of the American black bear, and is a federally threatened species in all habitats where it is known to occur as of 1992 (USFWS, 2011). The largest populations occur in Louisiana, with remnant populations found in Mississippi and Texas

(USFWS, 2011). Recovery actions focus on habitat enhancements, population analysis, subpopulation interchange, human-bear conflict education, general public information, and nuisance response and abatement strategies (USFWS, 2009b). As a threatened species, rehabilitation permits that are issued by the state must meet the federal requirement for recovery. A rehabilitation facility in Tennessee is permitted to rehabilitate Louisiana black bear, however does not hold, nor is required to hold, a federal rehabilitation permit necessary for rehabilitation of a threatened species (Burgin, J., personal communication, September 19, 2011). This contradicts U.S. Fish and Wildlife Agency policy on rehabilitation of threatened and endangered species.

#### Addressing Safety Concerns

Safety concerns are generally addressed in the regulations and policies, and identify safety concerns related to wildlife rehabilitation and the impact that captive care can have on wildlife. Habituation and imprinting was mainly addressed in the housing portion of the regulations and policies. Habituation avoidance was addressed by 12 states, with two states specifying the negative impacts of habituation on black bears. Imprinting was discussed for 11 states, with one state identifying the impacts of imprinting in black bears. While habituation and imprinting are defined differently, they are addressed in an interchangeable manner in the regulations. Only eight states make a distinction between the two, and the need to avoid and minimize both. Most of the regulations address diseases in terms of keeping the rehabilitator safe while handling the wildlife in their care. Nine states discuss zoonotic diseases and minimizing their transmission. Four states identify the need to prevent diseases in captivity that may affect wild populations once the animal is released. Nuisance activity was identified as an issue in released wildlife after rehabilitative care in six states. Nuisance activity was also

addressed when discussing the reasons for minimizing habituation and imprinting during captive care.

### Roles in Wildlife Rehabilitation

#### *Wildlife Managers*

The role of wildlife managers was implicitly identified as administrative throughout all of the regulations, as wildlife agencies developed and administered rehabilitation regulations. Within the regulations explicit duties of wildlife managers included rehabilitation facility inspections to ensure permit or license compliance, administering examinations to potential rehabilitators to ensure they possessed the required knowledge level to rehabilitate wildlife, and inspection of wildlife records in order to monitor rehabilitation activity. Wildlife managers also approve captive holding extensions, and release locations for many states. Some states also require the state agencies to provide rehabilitators with the necessary instructions for the handling of wildlife in need of rehabilitation. In Louisiana, the wildlife personnel determines if a black bear is in need of rehabilitation, and also determines which facility the bear will go to for rehabilitation due to the federally threatened status of the Louisiana black bear. Only three states (AK, MT, and NC) identified wildlife agency personnel as wildlife rehabilitators through state appointment of duties, or within state operated wildlife facilities.

#### *Wildlife Rehabilitators*

The role of wildlife rehabilitators was explicitly identified as the captive care of wildlife in need of rehabilitation, and discussed within the definitions sections of regulations, on the website pages pertaining to wildlife rehabilitation, or within the purpose sections of the regulations. Not all regulations specifically identified wildlife rehabilitation, and some states regulated rehabilitation as wildlife possession, or more generally under captive wildlife

regulations. For most states, wildlife rehabilitators were not allowed to practice veterinary medicine, and required the active participation of veterinarians in the rehabilitative process. Many states do not require veterinarians to obtain a rehabilitation permit if they are the ones conducting the rehabilitation. Some states also require the rehabilitator to develop an emergency plan. Rehabilitators were required to meet and follow all provisions of the state regulations and policies, fund the rehabilitative program, administer care, maintain veterinary support, and all other aspects of rehabilitative care and release.

## DISCUSSION

This case study indicates that wildlife agencies regulate black bear rehabilitation in accordance with more general wildlife rehabilitation regulations, and many states incorporate bear specific regulations to some degree. States that cover all aspects of the rehabilitation framework have a tendency to discuss black bear rehabilitation more specifically. States with very vague regulations fail to address bears directly within regulations, although address black bears to some extent within management plans and policies. More specific regulations and the inclusion of bears may be due to increased stakeholder involvement in the formulation of state regulations, which is consistent with findings by Casey and Casey (1994). In order to reduce vagueness and uncertainty about the scope of the regulations or policies, it is recommended that regulations explicitly state the species that are permitted and the species that are prohibited from rehabilitation. The inclusion of species specific regulations or references to species specific policies within the regulations will also eliminate vagueness within regulations that indicate uncertainty (Casey & Casey, 1995a).

States determine the necessary regulations for wildlife management and wildlife rehabilitation that focus on the needs of the state. The rehabilitation framework, identified in the literature review, provides agencies a framework for creating policies or updating regulations that consider the most important factors for successful black bear rehabilitation. Focusing on this framework gives insight into the current regulations, provides a starting point by which to improve regulations and policies, and set an adaptive management strategy for black bear rehabilitation, by necessarily requiring post release monitoring of bears.

## Rehabilitation Framework

### *Acquisition*

The acquisition of a black bear cub can be highly variable and dangerous depending on the circumstances in which the bear cub is determined to be in need of rehabilitative care. It is recommended that specific capture and transportation guidelines for bears be consistent with handling of dangerous species. This may require special training for rehabilitators that are called upon to capture orphaned bear cubs, or restricting capture to wildlife agency personnel that are trained in wild animal restraint for larger species. This is consistent with recommendations by the Animal Care and Use Committee (1998) for the capture of wildlife in regards to research situations when capture potentially requires the use of sedation.

### *Captive Care*

Once a bear reaches a rehabilitation facility, the care it receives will help determine its selection for release, and its success once released. Housing requirements were the most addressed topic for captive care overall, with specific recommendations for black bear housing. Housing and facilities sections of regulations and policies identified that appropriate housing structures were one of the most important factors in reducing habituation, imprinting, and the associated nuisance behavior that can occur upon release. Housing requirements also address issues of disease, since sanitation measures were addressed under housing requirements for most states. The housing also partially determines the exposure a bear will have to handlers and people in general. These results are consistent with Beecham (2006) and NWRA standards, however, there are highly variable ways in which to minimize human exposure without consistent evidence to which method yields more success upon release. It is recommended that



states identify within regulations and policies, the need for rehabilitators to minimize human contact with bears while in captive care, without defining the methods by which to do so too narrowly. It is also recommended that proven methods of aversive conditioning are incorporated as part of release training so bears maintain their avoidance and flight responses when humans are present after they are released (Mazer, 2010). It is important for wildlife rehabilitators to document rehabilitation activities in order to communicate success and failure in their rehabilitation strategies so that wildlife agencies have a better understanding of wildlife rehabilitation, and adaptive management approaches can be employed so that regulations reflect the learning process of data collection.

### *Release*

Although much consideration goes into the individual care and release considerations, the potential impacts within areas where the release takes place are not addressed. Neither the states, nor the NWRA standards mention the need for release location feasibility studies. Many of the releases take place in the natural home range from which the bear was originally captured as long as there is minimal chance of nuisance behavior associated with the release. Releasing within the capture area helps to minimize concerns for genetic pollution of the resident population (Animal Care and Use Committee, 1998). Many of the states require the permission of the wildlife agency to conduct releases or require special permits for release. This may imply that the wildlife agency would have an understanding of the ecology of the release area, and an understanding of the potential impacts of release on the wild populations. Feasibility studies require more time and resources for both the rehabilitators and wildlife agencies, however are highly recommended in order to understand the wild population dynamics and genetics, and public viewpoints about releases (Beecham, 2006). Public input regarding black bear release has

implications for conservation efforts for black bears, feasibility studies can assist with public education programs for communities near release sites, and provides a baseline for post release research that will contribute to adaptive management strategies within the regulations.

### Safety Concerns

Black bear rehabilitation efforts can be highly controversial due to their potential public safety implications, and the results identified that some states take this into consideration when determining the regulations and policies that govern the rehabilitation of black bears. Safety concerns mainly focused on housing techniques to minimize habituation and imprinting. It is recommended that more research be conducted on the mechanisms of imprinting for bears to determine if imprinting occurs in bears. Many of the states with generalized regulations address imprinting in order to cover bird species where imprinting has been proven to disrupt natural behavior. The language and assumptions within the current regulations contributes to a misunderstanding of bears and their ability to succeed in rehabilitation programs, and species specific regulations help to clarify these differences and their implications for different species. It is recommended that a more holistic understanding of nuisance activity and post release safety concerns be incorporated into the captive care policies for black bears.

### Roles

Consistent with findings by Casey and Casey (1995a), there is a disconnect between the roles of wildlife agency personnel and wildlife rehabilitators. While wildlife agency personnel provide administrative oversight, they are otherwise not actively participating in the rehabilitation of wildlife species, unless specifically assigned to do so. Wildlife rehabilitators are then responsible for all captive care in accordance with all applicable laws and regulations, many times without much representation within the wildlife agency governance. Black bear

rehabilitation efforts most often times require wildlife agencies and rehabilitators to work closely in determining the appropriate circumstances by which to select releasable animals, and where the release is to take place. It is recommended that the regulations and policies clarify the roles of wildlife managers and rehabilitators and identify the necessary collaboration to ensure that the animal's needs are met, in accordance with state regulations and population management objectives.

## CONCLUSION

Black bear rehabilitation is a labor intensive process that can be assisted by having clear regulations and policies that allow for collaboration between wildlife agencies and wildlife rehabilitators in order to diminish the dichotomy between both parties that are intricately involved in the process. This is accomplished through a shift in the traditional management paradigm to include stakeholders with varying value systems focused on non-consumptive wildlife uses. Wildlife rehabilitation professionals are motivating that shift in order to provide wildlife with the best care possible to ensure their continued survival. Wildlife rehabilitators will continue to see increases in injured and orphaned black bears as black bear populations and human populations continue to expand and interact. Continued public pressure on state wildlife agencies to allow rehabilitation of orphaned and injured black bear cubs motivates the need for wildlife agencies to consider individual animal welfare and species specific regulations and policies for wildlife rehabilitation. Black bear rehabilitation also requires a heightened awareness of how rehabilitation and release practices impact public safety that can influence public perception of conservation efforts for black bear populations. Increased regulation of black bear rehabilitation can help balance the needs of the individual animal with the needs of the populations and the public. Inclusion of changing wildlife values helps ensure a collaborative approach to regulation and policy formulation that is traditionally excluded from representation within the wildlife management institution.

This research identified that wildlife rehabilitation regulations are starting to include more species specific considerations where black bears are concerned. Each state has its own emphasis on which portions of the rehabilitation framework are included in regulations, and what portions of the rehabilitative process are specified for black bears. The rehabilitation framework is an essential part of wildlife rehabilitation regulations to ensure that all necessary aspects of the

rehabilitative process are included within the regulations and policies. The framework functions as an outline for regulatory considerations for wildlife rehabilitation in general, as well as species specific regulations and policies, and a basis for adaptive management strategies. Regulations will be strengthened by including a more holistic understanding of acquisition, captive care, and release within the regulations and policies. Identifying the best practices for black bears within regulations will address successful captive care techniques while also emphasizing safety considerations and the varying roles of wildlife managers and wildlife rehabilitators.

Incorporating an adaptive management strategy into the policies and regulations will enable flexibility that is currently lacking in state regulations in order to incorporate the most up to date data to ensure successful rehabilitation practices.

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## APPENDICES

Appendix A  
Research Coding Table

<b>Regulation(s) Reviewed:</b>	
<b>Research questions</b>	
<i>Acquisition</i>	
Cause of distress	
Capture/transport of the animal	
History of the animal	
<i>Captive Care</i>	
Veterinary treatment/assessment	
Housing/Facilities	
Feeding	
Release training	
Time limit on captivity	
<i>Release</i>	
Release location feasibility studies	
Selection of releasable animals	
Release technique used	
Who makes release decision	
Location	
Time of year	
Age of animal	
Post release monitoring	
<i>Safety concerns addressed</i>	
Habituation	
Imprinting	
Nuisance activity	
Disease	
<i>Roles</i>	
Wildlife managers	
Wildlife rehabilitators	



Appendix B  
State Abbreviations

AK:	Alaska
AZ:	Arizona
CA:	California
CO:	Colorado
FL:	Florida
ID:	Idaho
LA:	Louisiana
MD:	Maryland
ME:	Maine
MI:	Michigan
MN:	Minnesota
MT:	Montana
NC:	North Carolina
NH:	New Hampshire
NJ:	New Jersey
NM:	New Mexico
NV:	Nevada
NY:	New York
OK:	Oklahoma
PA:	Pennsylvania
TN:	Tennessee
UT:	Utah
VA:	Virginia
WA:	Washington