

## Case Study

# Caring for the circle of life: wildlife rehabilitation and sanctuary care

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**Abstract:** In the United States alone, there are >5,000 state-licensed wildlife rehabilitators in addition to a multitude of other wildlife caregivers across rehabilitation and sanctuary settings. Wildlife rehabilitation and sanctuary care provide a unique lens from which to explore human–wildlife interactions. We examined the experiences of wildlife caregivers within a continuum of acute veterinary services, community-based rehabilitation, and sanctuary care to gain insight into wildlife caregiving and its implications for human–wildlife coexistence. Between 2016 and 2018, we completed in-depth interviews with 15 wildlife caretakers in Massachusetts, Maine, and New Hampshire, USA. In addition to the interviews, we observed 197 unique human–animal interactions during wildlife care. The overarching paradigm that emerged from our research was what we refer to as “caring for the circle of life.” Embraced within this paradigm were 5 themes: (1) entering and persevering in the circle of care; (2) honoring natural processes; (3) knowing and being known by the wild creature; (4) extending the circle of care; and (5) fulfillment. Wildlife rehabilitation and sanctuary care, in addition to providing medical assistance to animals in need, advance knowledge about individual species and contributes to increased public awareness regarding wildlife conservation and human–wildlife coexistence.

**Key words:** caregivers, conservation, human–wildlife coexistence, Maine, Massachusetts, New Hampshire, wildlife, wildlife rehabilitation, wildlife sanctuary

**WILDLIFE HOLDS** different meanings for people across cultures and epochs (Manfredo 2008). Human–wildlife interactions can range from negative to positive on a continuum from conflict to coexistence (Frank 2016). Human development has increasingly encroached upon wildlife habitats (DeStefano and Deblinger 2005). However, human alteration of natural environments has led to imbalances in wildlife populations, which wildlife managers have sought to address through a variety of strategies (Messmer 2000). Concomitantly, as wildlife populations have increased in response to protection, so have human–wildlife conflicts (Messmer 2000).

The phrase “human–wildlife conflict” applies to any negative interactions between humans and wildlife, “either real or perceived, economic or aesthetic, social or political” (Messmer 2000, 100). Such conflicts can have adverse consequences for both humans and wildlife. The negative impact of wildlife on humans includes

property damage, loss of livestock, and threats to public health and safety (Patterson et al. 2003, DeStefano and Deblinger 2005, Conover 2019). Wildlife are also harmed through human actions such as lethal control methods that may cause increased animal suffering (Way 2007) as well as broader environmental destruction and habitat loss (Chivian and Bernstein 2008).

Frank (2016) emphasized that to develop an understanding and practices leading to conservation, there is a need for more research focused on describing the factors that contribute to enhanced human–wildlife coexistence. Human coexistence with animals has been reported as being an essential component of healthy and sustainable ecosystems (Chivian and Bernstein 2008, Messmer 2020).

Recent studies indicate cultural trends that could support coexistence. Research on attitudes toward wildlife in the United States suggests that modernization changes are influencing a shift in value orientation from domina-

tion, in which wildlife are viewed as furthering human interests, toward mutualism, an egalitarian and harmonistic perspective (Teel and Manfredo 2010). Public interest in wildlife is growing, as reflected in increases in wildlife tourism (Manfredo 2008, Knight 2009, U.S. Fish and Wildlife Service 2016).

However, research on human–wildlife coexistence is challenged by the natural separation between humans and free-living creatures. Despite living in a shared world, human–wildlife relations exist across a boundary (Perry 2016), which limits opportunities to examine human–wildlife interactions. Wildlife rehabilitation and sanctuary care create a bridge across the human–wildlife boundary. Moreover, wildlife care illustrates the moral view espoused by Ricard (2014), who locates the human–animal relationship in a shared capacity for suffering and calls for a compassionate ethos toward all beings.

Wildlife rehabilitation is defined as “the treatment and temporary care of injured, diseased, and displaced indigenous animals, and the subsequent release of healthy animals to appropriate habitats in the wild” (Miller 2012, ix). The term “wildlife” refers to “non-domesticated amphibians, reptiles, birds, and mammals” (Massachusetts Division of Fisheries and Wildlife 2016).

In the United States, permits to conduct general wildlife rehabilitation are managed by individual states while federal permits are required to care for migratory birds (U.S. Fish and Wildlife Service 2003). Wildlife rehabilitators, also called rehabbers, have varying educational backgrounds, which can range from veterinary medicine to more generalized education. However, there are standardized requirements by each state in order to obtain a wildlife rehabilitation permit. For example, in the state of Massachusetts, a rehabilitator must pass a written examination and have adequate facilities for care (Massachusetts Division of Fisheries and Wildlife 2016). In the United States alone, there are >5,000 state-permitted wildlife rehabilitators (National Wildlife Rehabilitators Association 2015). Rehabilitators work in collaboration with a multitude of other wildlife caregivers across rehabilitation and sanctuary settings.

The Wildlife Rehabilitator’s Code of Ethics maintains that “a wildlife rehabilitator should strive to provide professional and humane care in all phases of wildlife rehabilitation, protect-

ing the welfare, respecting the wildness, and maintaining the dignity of each animal in life and in death” (Miller 2012, v). It is critical that wildlife rehabilitators understand and value the wild nature of animals (Bordewieck et al. 2015). Approximately half the animals that are brought into rehabilitation cannot be saved (Kidd et al. 1996), and euthanasia is sometimes the most humane option (Miller 2012). For wildlife with treatable injuries, the goal is to provide care in a manner that fosters successful release back into the wild (Guy et al. 2013). Data on release outcomes are limited (Mullineaux 2014). However, studies with specific species, such as orphaned black bears (*Ursus americanus*), suggest that rehabilitation can be successful at fostering self-sufficiency in natural habitats following release (Smith et al. 2016, Myers and Young 2018).

Some animals that are found to be non-releasable may be placed in sanctuary or educational settings (Miller 2012, Guy et al. 2013). Wildlife sanctuaries provide lifetime care for animals to meet their physical, psychological, and social needs within “specialized habitats in which wild animals can experience a relatively high quality of life” (Doyle 2017, 58). Although sanctuaries cannot duplicate life in the wild, they can provide natural environments that reduce stress and encourage species-specific behaviors for captive wildlife (Doyle 2017).

Research in wildlife rehabilitation has primarily focused on management of animal injuries and disease such as rehabilitation and release practices (Guy et al. 2013) and factors influencing successful release (Grogan and Kelly 2013). There are few studies focusing on caregiver experiences. One study of motives for entering wildlife rehabilitation found that the majority of wildlife caregivers had pets during their youth and an interest in animals since childhood (Kidd et al. 1996). Caregivers in this study cited that reasons for continuing the work included a love of animals and desire to help them, providing hands-on care, and contributing to the environment. Similarly, a study on rehabilitation centers found that organizational missions included both animal welfare and conservation (Guy et al. 2013).

Our aim in this study was to explore the experiences of wildlife caregivers. We focused particularly on caregivers’ interactions with

**Table 1.** Sample interview questions for wildlife rehabilitators, 2016–2018, New England, USA.

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1. How did you come to know that you wanted to become involved in wildlife care or rehabilitation?
  2. When you have a new animal to care for, how do you get to know that animal?
    - a. (probe) What sorts of questions are you asking about the animal?
    - b. (probe) What is important for you to know? How do you go about getting that information?
  3. Do you feel that any of the animals that you care for know you as an individual?
    - a. (probe) What sorts of behavior make you know that they know you?
  4. Can you share any particular stories about an animal that you felt particularly close to or had a particularly meaningful experience with?
  5. How has doing this work influenced your views about wildlife and human–wildlife relations?
  6. How has this work been meaningful to you and your life?
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wildlife and their reflections on those experiences to gain insight into wildlife care and its implications for human–wildlife coexistence. We used transcendental method, an interpretive phenomenological approach (Perry 2013), with qualitative interviews and observation within settings that reflect the continuum of wildlife care. Our study was guided by the theory of transcendent pluralism, which is grounded in mutually evolving human and ecological dignity (Perry 2015). Within this framework, each human or nonhuman animal is viewed as having dignity, or value. Dignity encompasses the good of each being’s unique existence (value in being) as well as its development (value in becoming) through which it realizes its capacity and contributes to the larger ecological whole (Perry, in press).

### Study area

We conducted our interviews and observations in Massachusetts, Maine, and New Hampshire, which are states in the New England region. New England is comprised of 6 states in the Northeastern United States (additionally including Connecticut, Rhode Island, and Vermont). The New England area stretches from the southern Canadian border to Long Island sound, and its variable landscape of high mountain ranges, valleys, plateaus, rivers, lakes, and seacoasts supports diverse species of wildlife (DeGraaf and Yamasaki 2001). We collected data between 2016 and 2018 at multiple locations including an acute care wildlife veterinary hospital, 6 community (home-based) wildlife rehabilitation organizations, and a wildlife sanctuary park.

## Methods

### Research design

We used transcendental method, formally identified as Transcendental Method for Research with Human Subjects, a qualitative phenomenological approach based on the philosophy of Bernard Lonergan, to conduct our research (Perry 2013). Lonergan’s philosophy emphasizes the role of inquiry and knowledge within human decisions. We conducted the interviews using a flexible guide (Table 1) aiming to explore the interiority of human experience and the questions, knowledge, and decisions that flow from that experience. In this approach, interview questions are placed in a developmental context to explore how a person’s background has shaped their current experience and how the knowledge and decisions emanating from that experience shape subsequent development. We utilized Lonergan’s reflective process of authentic subjectivity, which entails being attentive, intelligent, reasonable, and responsible throughout the study (Perry 2013).

We employed strategies for research trustworthiness proposed by Lincoln and Guba (1985). Credibility was achieved through persistent observation, prolonged engagement in the field, triangulation of interview and observation data, and peer debriefing. Transferability was obtained through purposeful maximum variation sampling and thick description. Dependability and confirmability were achieved through maintaining an audit trail, or a record of key reflections and decisions. The principle investigator (PI) utilized reflexivity

through self-reflection and journaling about insights into the research. The PI was a wildlife rehabilitation volunteer who became a certified rehabilitator shortly after the study conclusion. The study was approved by the University of Massachusetts Medical School's Institutional Review Board (H00011449; October 7, 2016).

### **Data collection**

We used a purposive sampling approach with maximum variation (Creswell and Poth 2018) to seek participants with a broad range of wildlife care experiences. This included a variety of settings as well as education, professions, and species cared for. Inclusion criteria were wildlife caregivers with 6 months or more experience, age 18 or greater, and ability to speak English. Participants were recruited for interviews on an ongoing basis by the PI via email, telephone calls, and notices at the facilities. Community rehabilitators were recruited from a statewide listing. Informed consent was obtained from each participant by the PI. We provided a \$25 gift card to participants for remuneration, which was communicated in the recruitment materials and consent form.

The sample size in qualitative research needs to be large enough to provide a richly textured view but one “that permits—by virtue of not being too large—the deep, case-oriented analysis that is a hallmark of qualitative inquiry” (Sandelowski 1995, 183). We interviewed 15 wildlife caregivers to reach horizontal saturation. Horizontal saturation is consistent with qualitative sampling approaches but also reflects Lonergan's cognitive philosophy (Perry 2013). Horizontal saturation entails an understanding of the participants' horizon of knowledge and concerns and is determined by the researcher during data collection and analysis. Horizontal saturation cannot be determined in advance, as interaction with participants entails expansion of the researcher's own horizon of knowledge.

We collected data over a 17-month period between 2016 and 2018. Interviews and observation were conducted by the PI with supplemental observation notes recorded by the research assistant. Observation was primarily non-participant although some participant observation activities were done such as assisting with animal feeding or enrichment. Observation notes

were written in free form and focused on the human–animal interaction during caregiving, including actions taken by the caregiver, the spatial relationship between the human and animal, and associated animal behaviors. We conducted interviews and observation during all seasons, although only 1 acute care observation was scheduled during the busy spring “baby season” to avoid overwhelming staff.

### **Data analysis**

The PI transcribed the interview audiotapes verbatim and conducted analysis. Each interview was read line by line with topical codes assigned to key participant declarations. A Microsoft Word document was created for each code, which included interview responses and observation data. Triangulation was achieved by comparing interview and observation data to note similarities and divergences. The data for each code were then reviewed and summarized. The PI read and re-read the data to gradually combine similar topical code summaries and develop the final themes. In this process, 56 initial codes (such as “animal cognition,” “helping animals,” and “respect”) were synthesized into the final 5 themes. This is a process of moving from concrete data to higher levels of abstraction and interpretation (Perry 2013). Data analysis was an iterative process and ongoing analysis informed subsequent interviews and observation.

### **Results**

We conducted 15 face-to-face interviews averaging 1 hour. Participants had a range of 1–60 years of wildlife care experience (Table 2). About half of the interviewees were involved in the observation sessions, although other staff were also engaged in care during observation times. We observed approximately 197 human–animal interactions with 39 species (Table 3) through formal facility-based observation sessions (5 at acute care center and 5 at sanctuary) as well as 3 informal home-based observation sessions. Observation sessions ranged from a half hour to 5 hours. Human–animal interaction was defined as the co-presence of human(s) and animal(s) within a physical space in which each has potential awareness of and impact upon the other. We observed a range of human–animal interactions including: (1) entering or standing

**Table 2.** Interview demographics of wildlife rehabilitators ( $N = 15$ ), 2016–2018, New England, USA.

Gender	Male = 6	Female = 9
Age	Mean = 49.3	Range = 26–78
Highest education level	High school	4
	Associate	2
	Bachelor's	6
	Doctoral	3
Years of wildlife care experience	Mean = 18.1	Range = 1–60
Setting/type of animal care <sup>a</sup>	Acute rehabilitation	4
	Community rehabilitation	7
	Sanctuary	4
Employment status as wildlife caregiver	Employed	7
	Volunteer	6
	Both	2

<sup>a</sup>Some participants had prior experience in another area.

**Table 3.** Species observed during human–animal interactions for wildlife care ( $N =$  approximately 197 human–wildlife interactions observed.), 2016–2018, New England, USA.

Bird	Mammal	Reptile
American crow ( <i>Corvus brachyrhynchos</i> )	American beaver ( <i>Castor canadensis</i> )	Painted turtle ( <i>Chrysemys picta</i> )
American kestrel ( <i>Falco sparverius</i> )	American black bear ( <i>Ursus americanus</i> )	Spotted turtle ( <i>Clemmys guttata</i> )
American robin ( <i>Turdus migratorius</i> )	Bobcat ( <i>Lynx rufus</i> )	
Bald eagle ( <i>Haliaeetus leucocephalus</i> )	Canadian lynx ( <i>Lynx canadensis</i> )	
Barn owl ( <i>Tyto alba</i> )	Cougar ( <i>Puma concolor</i> )	
Barred owl ( <i>Strix varia</i> )	Eastern coyote ( <i>Canis latrans</i> )	
Black vulture ( <i>Coragyps atratus</i> )	Eastern gray squirrel ( <i>Sciurus carolinensis</i> )	
Canada goose ( <i>Branta canadensis</i> )	Fisher ( <i>Pekania pennanti</i> )	
Common grackle ( <i>Quiscalus quiscula</i> )	Gray fox ( <i>Urocyon cinereoargenteus</i> )	
Cooper's hawk ( <i>Accipiter cooperii</i> )	Moose ( <i>Alces americanus</i> )	
Eastern screech-owl ( <i>Megascops asio</i> )	Raccoon ( <i>Procyon lotor</i> )	
Herring gull ( <i>Larus argentatus</i> )	Red fox ( <i>Vulpes vulpes</i> )	
Golden eagle ( <i>Aquila chrysaetos</i> )	Virginia opossum ( <i>Didelphis virginiana</i> )	
Great horned owl ( <i>Bubo virginianus</i> )	White-footed deermouse ( <i>Peromyscus leucopus</i> )	
Mute swan ( <i>Cygnus olor</i> )	White-tailed deer ( <i>Odocoileus virginianus</i> )	
Northern cardinal ( <i>Cardinalis cardinalis</i> )		
Red-tailed hawk ( <i>Buteo jamaicensis</i> )		
Ringed-bill gull ( <i>Larus delawarensis</i> )		
Rock pigeon ( <i>Columba livia</i> )		
Snowy owl ( <i>Bubo scandiacus</i> )		
Turkey vulture ( <i>Cathartes aura</i> )		
Wild turkey ( <i>Meleagris gallopavo</i> )		



**Figure 1.** Study themes within the overarching paradigm of “caring for the circle of life,” superimposed on a photograph of a medicine wheel, which represents Native American teachings of balance and healing within the circle of life, 2016–2018 (photo courtesy of D. Perry).

near enclosures, (2) assessment and/or physical examination, (3) medical treatment, (4) feeding, and (5) enrichment activities (such as providing food-based puzzles for cognitive stimulation).

We identified 5 themes: (1) entering and persevering in the circle of care; (2) honoring natural processes; (3) knowing and being known by the wild creature; (4) extending the circle of care; and (5) fulfillment. Together these themes comprised an overarching paradigm of “caring for the circle of life” (Figure 1). Themes are described below. Illustrative quotations representing the data are reported verbatim with removal of extraneous words such as “you know.” Italicized words indicate areas of emphasis within the tone of participants’ responses.

### Entering and persevering in the circle of care

There were 3 dimensions of this theme: the path to wildlife care, strained rehabilitation capacity, and a network of collaboration.

*The path to wildlife care.* Many participants recounted growing up with extensive exposure to animals and/or the outdoors. For several individuals, the decision to engage in wildlife care was influenced by a love of animals since childhood.

“I had always *found* wildlife as a child. And I didn’t really know that there was a *community* that *cared* for them...And as soon as I *knew*, that was it. I was like, ‘Oh, I’m all in.’ So, just *loving* animals, all my life. And wildlife especially.”

Some participants conducted wildlife care as part of a job that required formal education, such as veterinary medicine, while others had varying backgrounds. Senior staff educated newcomers within facilities. Community rehabilitators working out of their homes were often isolated, although they could obtain advice from veterinarians or other rehabbers. Much of the knowledge came through hands-on experience over time.

*Strained rehabilitation capacity.* Numerous participants bemoaned the limited resources for wildlife rehabilitation. This resulted in 2 inter-related problems: inadequate funding and insufficient personnel. Expenses included food, medication, supplies, and enclosures. The community rehabbers largely worked as volunteers and had to use their own money or solicit donations.

Meeting wildlife needs became particularly challenging during baby season in spring and summer when there were droves of orphaned and injured “animals flooding in.” One participant noted that even within the entire system of caregivers, “there’s always going to be more animals that have injuries, illnesses, or are orphaned than we can ever possibly deal with.”

The work took a personal toll. During the busy baby season, community rehabilitators struggled to keep up with frequent feedings, often unable to leave their homes due to the constant need. One rehabilitator described a typical scenario:

“It’s very common here to have 50 baby raccoons [*Procyon lotor*]...And then somebody brings two litters of five each...they haven’t eaten in a couple of days; they have to be warmed up; they’re dehydrated. They’re *terrified*. They’re *starving* but they don’t want you to touch them...But you’ve still got 50 that need to be fed. So, you’re going to have to dribble milk into 10 screaming babies without aspirating them to keep them alive...And while you’re

doing that...somebody brings you a fox [*Vulpes vulpes*] that they just hit with their car. With all the insides on the outside."

Participants described wildlife care as "exhausting." Even after baby season was over, many animals were overwintered for release the following spring, and injured animals kept arriving. One participant expressed concerns about some rehabilitators burning out. Several caregivers conveyed a strong sense of responsibility for helping wildlife as "a lifelong commitment."

*A network of collaboration.* Participants collaborated with numerous individuals to help meet the challenge of limited resources. This included strong relationships with local veterinarians. Community members also helped through volunteering with animal care, assisting with projects, providing a location for wildlife release and/or donating supplies and money. Members of the public were often the initial finders of injured animals. A few participants discussed cooperative relations with hunters, such as some who helped build enclosures.

### Honoring natural processes

Participants described their relationship with wildlife as one of respect. Respect meant honoring natural cycles and "not meddling." Dimensions of this theme included: maintaining boundaries, minimizing wildlife stress, meeting developmental needs, the cycle of life and death, and release.

*Maintaining boundaries.* In caring for wild animals, certain boundaries needed to be maintained to reduce animal stress and avoid habituation to humans. The relationship between caregiver and animal varied based on the species, where the animal would eventually live (in the wild or in a sanctuary setting), developmental needs, and the caregiver themselves. The most important determination was whether the animal would be released back into the wild. Caregiver interactions with non-releasable sanctuary or educational animals fostered familiarity so that the animals would be at ease with human presence. However, rehabilitators working with releasable wildlife emphasized the importance of preventing the animals from becoming habituated to humans because that would inhibit successful release. "We want to keep them as wild as possible. In a rehab set-

ting you want hands off as much as possible. We would do what we needed to do and then we'd *leave them alone.*"

Participants described both physical and mental boundaries between themselves and wildlife. Physical boundaries included covering cages with towels so the animals did not view people passing. Caregivers wore masks when working with some animals, such as owls [Strigiformes], to prevent imprinting. Emotional boundaries had to do with "holding back" to avoid getting attached to animals. This involved keeping the well-being of the animal foremost in one's mind and "knowing that it's for the best." One rehabber reflected on this challenge.

"Yeah. It's hard. Like the snowy owl [*Bubo scandiacus*]...I could sit in there for hours with this bird just watching him. He's so beautiful. But I try to; I say, 'No! This guy's going to be released. Wild as possible.'"

One rehabber noted that the need to maintain boundaries could sometimes make it difficult to retain volunteers because some people had the mistaken idea that they would be able to "pet and play with the animals."

Boundaries were also important for human safety. When entering an animal's space, it was critical to be attentive to cues that could indicate tenseness or agitation. Caregivers did not enter the enclosures of some animals, such as cougars (*Puma concolor*). Unlike pets, who are trained not to bite, wild animals need to scratch and bite for survival. Safe handling required "avoiding the pointing parts." Learning how to handle an animal safely involved knowing its natural history as a species. One caregiver described being cautious around a beaver (*Castor canadensis*). "It could bite you. It's a beaver. It could hurt pretty bad. It eats trees." In contrast, another caregiver noted that duck (*Anas platyrhynchos*) bites usually didn't hurt because they had flat bills.

While the boundaries described above were fairly consistent across rehabilitation facilities, there were subtle cultural and individual differences across settings. For example, while some facilities resembled pre-schools with stuffed animals and toddler toys, other rehabbers preferred more natural play objects that animals would find in the wild, such as sticks.

Some participants reported that they did



**Figure 2.** Gray fox (*Urocyon cinereoargenteus*) in rehabilitation at Medicine Mammals, Wendell, Massachusetts, USA. As orphaned animals mature, they are typically moved to outdoor enclosures situated in natural environments with reduced exposure to humans and designed to promote natural activities such as climbing (photo courtesy of D. Perry).



**Figure 3.** Raccoon (*Procyon lotor*) in rehabilitation at Medicine Mammals, Wendell, Massachusetts, USA. Wildlife stress in captivity can be reduced by having areas for retreat within larger enclosures. Small enclosed habitat boxes reduce the territory an animal must defend and provide a sense of safety (photo courtesy of D. Perry).

have feelings of attachment and being “emotionally connected” to some of the animals in their care. Attachment tended to occur toward animals that “we have for a long time” and those that have “come through great adversity.” This seemed to be more common in the sanctuary setting where animals were placed for lifelong care.

*Minimizing wildlife stress.* Stress in captivity could trigger physiologic changes that resulted in animal death. This was of particular concern in the acute rehabilitation setting with newly admitted wildlife. Caregivers needed to be

attentive to signs of animal stress such as rapid breathing. Covering the animal’s head with a towel during procedures could help keep it calm. Caregivers tried to decrease noise and use slow, calm, methodical movements. Activities were clustered together to reduce interactions with people.

Sanctuary settings, in contrast, reduced stress by fostering familiarity with people because human interactions would be part of the animal’s future life. This was especially important for animals viewed by the public as part of educational displays. Having consistent caregivers and procedures was helpful. One participant noted, “You get into a *pattern* with each animal...so they know what to expect when I come in. And I feel like they’re going to be less stressed if I stick to that routine.”

*Meeting developmental needs.* Some rehabbers emphasized the developmental nurturing needs of orphaned babies. However, while baby animals might be nurtured during feeding, rehabilitators were careful not to handle the animals more than necessary. They also distanced themselves as the animals grew older. As animals matured, they naturally became more fearful of or aggressive toward humans, and it was important to recognize that as a normal stage. One example was with a species “like possums [*Didelphis virginiana*]. They’re going to be cute and fun for a little while and then they’re going to start opening their mouths and showing you their teeth and growling at you. And that’s a good response.”

For many rehabbers, an important milestone was when the animals were moved to an outside enclosure. This transition was designed to foster independence in preparation for release. At this point, human interaction was limited to providing food, water, and cleaning the cage. Some of the rehabbers located outdoor enclosures away from the house and road traffic to prevent unnecessary exposure to humans (Figure 2). Small boxes for retreat within enclosures provided wildlife with a sense of safety (Figure 3).

Participants noted that some animals would naturally “wild up” on their own. Certain practices could assist with this process, such as having habitat enclosures with natural climbing materials. If juveniles seemed to be growing too friendly, some facilities used mild hazing such as banging on raccoon cages. “If you’re a



raccoon and you come to associate people with good things and you go approach people you unfortunately are going to have a pretty short lifespan. And you're gonna get shot."

A few participants noted the need to assist young predators to hone their hunting skills through placing dead prey (such as roadkill) in an enclosure. Some rehabbers used live prey, although participants had varying views as to whether live prey was necessary.

Caregivers also provided enrichment activities for wildlife. This included approaches to foster natural behaviors, such as putting waterfowl in a tub to swim and providing cognitive stimulation through food-based puzzles. Caregivers in the sanctuary setting noted the effectiveness of their techniques through formal evaluation of animal behavior.

Participants emphasized that companionship from other animals of the same species could help to reduce stress. Companions were particularly important for orphaned baby animals to meet developmental needs and prevent imprinting on humans. For example, baby raccoons would learn through "fighty-bitey play." Rehabbers would transfer animals between facilities so that they could "raise them all with at least one other of their kind." In sanctuary settings, animals were placed with conspecifics whenever possible. However, this needed to be done carefully, as animals might view a newcomer as a territorial threat and respond aggressively.

*The cycle of life and death.* Participants described a deep respect for the circle of life. One dimension of this was valuing both predator and prey as necessary for a balanced ecosystem. "I'm equally happy to care for a fox or a cottontail (*Sylvilagus floridanus*). I want them both out there to do what they're supposed to do."

A second dimension of the cycle of life and death related to "sad stuff," or caring for animals who died. In the acute setting, euthanasia was generally done when animals had non-releasable injuries, a poor prognosis, or unreliable suffering. During the slow season, staff might provide care to an animal even if it had a "long shot." But in the busy spring and summer, a strict triage system was needed:

"...in the summer when I have a billion patients and not enough people to take care of them, we can only realistically care

for the ones that we really think we're going to be able to get back out into the wild. Unfortunately. Everybody else is euthanized. Which is unfortunate. But that's the reality of the situation."

In some cases, a non-releasable animal might be transferred to an educational facility. However, such spaces were limited. Less common species had a better chance of finding a permanent home. Limited space meant that animals who might have flourished in an educational setting were instead euthanized.

Although wildlife death could be "emotionally draining," participants tried to put it in perspective by reasoning that after "horrific" injuries, euthanasia was "a kindness."

"I just try to...rationalize in my mind, 'His wing was never going to heal. He was never going to be able to fly. So ultimately, he was never going to be happy...this is better for him.'"

*Release.* The ultimate goal of wildlife rehabilitation is for release "back out into the wild." Ideally the release site should be "in a familiar environment where it knows where its food and shelter is." Sometimes caregivers provided a "soft release" in which the animal was let go near the rehabilitation facility with temporary food provision. Animals were usually released in late summer or early fall to give them time to find food and shelter before the winter. Readiness was assessed through measures including weight, mobility, flying skill, and ability to catch live prey. Many participants noted that an animal's behavior would "tell you when they're ready."

"So you feel really proud of them when they start to get feisty, when they start to get unmanageable, when they start to get really hard to pick up and give treatments to, and just be a royal pain in your behind because they're acting like their own wild selves."

The moment of release could bring mixed emotions of "happiness. And sadness," as well as a feeling of "accomplishment." One participant described the moment of release with a sigh of joy, "Ooohhh! It's really great."

### Knowing and being known by the wild creature

This theme included 4 dimensions: attentiveness to what they are showing you; communication; knowing individual characteristics, and animal knowledge of individual humans.

*Attentiveness to what they are showing you.* In acute rehabilitation, the physical exam was critically important because, “In wildlife medicine we have almost no history whatsoever. Most animals are brought in to us because they have come in contact by happenstance with a person.” In sanctuary settings, repeated interactions over a long period gave caregivers insight into the animal’s behavior and personality. “The long-term behavior takes some time. And that’s the only thing that can really give it to you is time. Time *and* interaction.” Regular caregivers could notice subtle cues that might indicate a problem. One participant emphasized:

“You have to *always* be *looking* to see what they’re showing you...’Cause some of these things are really subtle and it’s easy to miss them...Sometimes it’s just like, their *eyes* can look different when they’re sick. You just see it in their eyes. And *that’s it...*”

*Communication.* Participants reported different types of communication with wildlife. It was critical to understand the body language of particular species to assess for stress or aggression. It was also important to be aware of the meaning that one’s own body language would hold for a particular species. For example, one rehabber noted that looking directly at a coyote might be perceived as a threat whereas yawning signaled nonaggression.

While some participants avoided talking to wildlife during care, many individuals described using some sort of verbal communication. A number of caregivers emphasized the importance of using “calm, safe, quiet noises.” A couple of rehabilitators used musical communication through humming or singing. “I get them in an area where it’s quiet and I let them just calm down...And I sing to them. *I sing to them all the time.*”

Caregivers came to know common sounds used by the species they cared for. One rehabber interpreted a raccoon vocalization, “Oh, that’s a grumpy sound...That means, ‘Don’t

come near me.’” Another participant described using the animal’s own sounds. “I will make their noises...So I don’t talk *human*. I try to *mimic* what they do...So I talk *their* language.”

Some individuals used physical communication such as a sanctuary caregiver who was observed to lightly pat a bobcat (*Lynx rufus*) that had sidled up next to the worker during feeding. The bobcat seemed to solicit and enjoy the patting.

*Knowing individual characteristics.* While each species had some common behavioral traits, participants also noted characteristics that varied within species. Adjectives used to describe individual animals included “clever,” “growly,” “shy,” and “grumpy.” One raccoon was “feisty” while another had more “sweetness.” Insights into animal characteristics included embodied knowing. “The more that we handle the animals...you get to know little quirks like, this one likes to turn and bite your stomach when you’re holding it.”

Participants indicated that differences in personalities were important to assess because they provided clues as to how to best interact with that particular animal.

“We get some herring gulls (*Larus argentatus*) that have a sense of humor... there are herring gulls that I *tease*. Because they *like it*. There are herring gulls that are angry and I let them be angry...If you have herring gulls that are shy, well then you leave them alone. It’s just this innate human response to the responses that we’re interpreting from those animals.”

There was a wide range of beliefs and practices among participants and settings regarding naming individual animals. Some community rehabilitators did name the wildlife. One participant advocated that naming animals allowed for more individualized plans of care. In the acute veterinary setting, names were generally not used, although identifying marks with different colors of nail polish were put on littermates to distinguish them for treatment. One site only named long-term educational animals. Another site had names used “in secret” among staff but did not provide the names to the public.

The cultural influence around not naming animals was evident during observation of team dis-

cussion at a facility in which a caregiver described a bird saying, “We call her Cutie,” but then looked a bit sheepish and reverted to the species name. Despite a policy of not naming animals, we did observe the occasional use of names during care such as, “Good job, Tiny!” This inconsistency was explained by a participant:

“We always tell our interns...we don’t ever name patients. They come in and they get a number...But they always get nick names. Like that goose [Anatidae] that was released this morning; we’ve been calling him ‘Gramps.’ Ever since we found out—cause he has a band—he is *quite* elderly for a goose. He’s like 9 years old now.”

The rationale for not naming animals was typically because it was believed to foster anthropomorphism and might give the public the erroneous impression that the animals were pets. Some participants preferred to educate the public using the proper species name. However, a caregiver noted that members of the public seemed to be more interested in learning about the animals as individuals rather than hearing scientific information about the species. “They want to know about *that* animal. Not bobcats. Or fishers [*Pekania pennanti*]. But *that* fisher or *that* bobcat.”

*Animal knowledge of individual humans.* Although a few participants felt it was “hard to tell” if animals recognized individual caregivers, many participants described interactions in which the behavior of an animal led them to be certain that it recognized and knew individual humans. This usually occurred when animals had been under care for an extended period of time, particularly in the sanctuary setting. “If I were bringing a group of people around...some of the birds will turn their heads and be a little more attentive towards me...they recognize the voice...” Even in the acute rehabilitation setting, in which strict boundaries were maintained, some wildlife seemed to display caregiver recognition.

### Extending the circle of care

The 2 dimensions of this theme were: the need for public education and ambassador animals.

*The need for public education.* Participants lamented that many of the problems that

brought wildlife into care were due to human actions, typically rooted in lack of understanding. For example, many raptors were admitted with internal bleeding due to eating prey that had ingested rodenticide poison. Even well-intentioned human actions could result in harm. Baby animals, such as fawns (*Odocoileus virginianus*), were sometimes mistakenly thought to be orphaned and “kidnapped,” when in reality the mother was probably close by foraging for food. Some caregivers attributed human misunderstanding about wildlife to reduced exposure to the outdoors in contemporary society. This resulted in “a certain ignorance about how the natural world really works.”

Wildlife caregivers viewed public education as an important part of their role. Participants emphasized the need to educate people about healthy interactions with wildlife and to impart a realistic understanding about wild animals that avoided the extremes of viewing them as either “pests” or “pets.” Participants also tried to dispel fears toward particular animals. “Probably the biggest thing I do is to get people not to be fearful because – humans fear what they don’t know. And by giving them the information they get less fearful.” One individual, who cared for a vilified predator species, sometimes invited family and friends to view the animals while they were still babies. “To appreciate them...any exposure to them, to harbor a love. And a caring.”

One participant advocated practical strategies toward 3 “common problems.” These included: (1) “educate people about turtles [Testudines] that breed in the spring; they’re going to be crossing roads in areas of swamps, marshes, where there’s ponds...Try to get people to slow down”; (2) “get people to not use rodenticides indiscriminately so we don’t have as many rodenticide toxicosis”; and (3) “get hunters to switch from lead-based ammo to copper-based ammo.”

Education about wildlife also had a broader vision, as expressed by a participant who emphasized the need for public exposure to wildlife care. “We need stewards of natural places. We need stewards of habitats. And wildlife populations. And you can’t create stewards when you don’t have interaction and knowledge.”

*Ambassador animals.* Some participants cared

for animals who could not survive in the wild due to physical limitations yet seemed very content in sanctuary settings. Non-releasable wildlife in sanctuaries could enhance public education as “ambassadors for their species.” This provided an opportunity for the public to see wild animals up close to gain a realistic understanding of the animals, habitat needs, and healthy human–wildlife interactions.

### Fulfillment

Participants found fulfillment through meaningful connections with wildlife and people and through helping animals and the larger ecology. These dimensions are described below.

*Meaningful connections with wildlife and people.* Participants described meaningful connections with wildlife that developed through care during extended illness, unique relationships, and bonds of trust. One participant described caring for a fox whose neurological condition eventually required euthanasia, yet still was meaningful.

“A small gray fox...not completely but substantially blind. It had been car-hit we think. It was relatively young...And I spent almost a year with him...Winter came; he wouldn’t even seek shelter...So on my way home every night, I’d grab him. I put a little hinge door on the front. I’d bring him in the box and shut it. And in the morning on the way in I’d let him out.”

In addition to the joy of working with animals, several participants also commented that they found meaning through connections with other staff and community members.

*Helping animals and the larger ecology.* Participants found purpose and fulfillment through helping animals with care that enabled the animal to eventually “go back outside,” to have “a good life” in captivity, or have a “peaceful” death. Several participants noted that their experience as wildlife caregivers fulfilled a longstanding desire to help animals.

“It has completed my world. I feel like I am doing what I was born to do...So, for me my work is fulfilling...the fact that that animal got set free because I helped is...the best feeling in the world really.”

Several participants felt they were helping the larger ecology. One reflected, “These animals belong to the world. And I put them back in the world.” While the long-term fate of animals after release was often unknown, some animals, such as eagles (*Haliaeetus leucocephalus*) and bears, were released with bands or trackable collars, and participants knew that the animals were alive and breeding many years later. Some caregivers reflected that their work contributed to the knowledge base of the evolving field of wildlife rehabilitation. A rehabilitator recounted how the knowledge he gained from working with 1 species was being applied to assist a related endangered species.

One participant reflected that the experience of being a wildlife rehabilitator gave her deeper insight and compassion.

“Probably very deep, *profoundly*, the cycle of life and death...They don’t all live... it’s not *easy*. But if you’re going to do this you *have* to be able to deal with that part of it...I think it just gives me a better understanding and compassion for the limited time too. That they’re here. And whenever somebody does pass, part of my prayer is, ‘Come back. Come back as what you were. We need you.’”

### Discussion

The overarching theme of “caring for the circle of life” emerged in several ways. First, the phrase was expressed verbatim in several interviews. Participants expressed a deep respect for the circle of life within the natural world. They valued both predator and prey and appreciated that all animals had a “job to do.” While saddened by animal casualties, caregivers viewed humane euthanasia as a way to relieve suffering and part of the cycle of life and death. This is consistent with Kidd et al.’s (1996) study in which rehabilitators developed coping mechanisms to deal with euthanasia. Study participants also sought to work in harmony with natural cycles. Finally, these caregivers drew the broader public into the circle by educating others about wildlife and the role of humans in the natural world.

The theory of transcendent pluralism views 3 types of outcomes from human action. These are: the physically sensible effect, which reflects

an outcome that can be perceived in the external world; the self-constituting effect as realized in one's own development, and the transformative effect through influence on the development of others. The findings provide examples of these outcomes within the field of wildlife care. The visible effect was realized through tangible results in accordance with each animal's capacity. Caregivers witnessed releasable animals that were healed and returned to the wild, sanctuary animals that were content in their surroundings, and deeply wounded animals relieved of their suffering through euthanasia. The self-constituting effect was attained through gaining personal knowledge and skills and doing work that "makes me a more compassionate person." The transformative effect was accomplished through educating others. Participants noted that public education was greatly enhanced by ambassador animals and thus rehabilitated animals themselves contributed to transformative processes. Further research would be helpful to quantify these outcomes and assess their correlation with specific wildlife care practices.

Dignity is a core value of wildlife rehabilitation (Miller 2012). In the theory of transcendent pluralism, dignity is comprised of interwoven value in being and value in becoming (Perry 2015). The findings suggest that dignity as value in the being of wildlife occurs through recognition of each animal as good in itself, as worthy of care and, if need be, a humane death. But the dignity of each animal is also valued in its becoming, which reflects fulfilling its own capacity as a wild creature. One of the etymological meanings of "wild" is from the Old English "wilde," meaning, "in the natural state, uncultivated, untamed, undomesticated, uncontrolled" (Online Etymology Dictionary, <https://www.etymonline.com/word/wild>). Wildlife caregivers in this study expressed a deep respect for the wild nature of animals and a goal to "keep them as wild as possible." Practices aimed at minimizing human contact to enhance chances for successful existence in the wild. Putting aside one's own desires for animal interaction to maintain the animal's wildness required a certain self-transcendence. This limited retention of some volunteers who wanted more hands-on interaction.

When return to the wild was not feasible, the

goal shifted toward creating natural conditions for animals who would require lifelong care among humans. This is consistent with Doyle's (2017) emphasis that true wildlife sanctuaries provide captive animals with a natural and fulfilling life to the extent possible. Participants did report a deeper relationship with animals in sanctuary settings, which is congruent with zoo research findings that some zookeepers perceive attachments and even bonds involving mutual benefit with the animals under their care (Hosey and Melfi 2012, Hosey et al. 2018).

Study participant experiences underscore the insufficiency of resources to care for injured and orphaned wildlife whose misfortune often arises from human actions. Many animals are euthanized due to the disparity between need and resources. At a time when humanity is faced with an environmental crisis that includes the projected extinction of numerous species, the findings support the need to increase resources for wildlife care. Bowman, as reported in Foley (2020), discussed the effects of the 2019–2020 Australian wildfires on wild species and noted that wildlife were likely going to need significant human intervention to survive. "We're living in the Anthropocene and it calls into question the idea that nature can self-assemble."

Wildlife typically come into rehabilitation when natural processes have been disrupted, such as when human-placed toxins enter the wildlife food chain. The results suggest that human-wildlife coexistence is fostered when humans act in harmony with natural processes. This requires a deeper human understanding of the natural world. Wildlife rehabilitation and sanctuary care can contribute to this understanding and broader human-wildlife coexistence through public education.

Our results align with prior studies that found rehabilitators viewed their work as having both animal welfare and conservation aims (Guy et al. 2013) and that the role includes public education (Siemer et al. 1991). Siemer et al. (1991) have proposed that wildlife rehabilitators are uniquely positioned to enhance wildlife management education due to their interest and regular interaction with the public. Findings from this study indicated strong public interest in and concern for wildlife, suggesting a receptivity to education.

Future areas of research are needed to advance best practices in this field. While wildlife care practices were largely consistent between participants, there were some subtle differences that merit future study. Some variations in care practices were due to different developmental stages of an animal (juvenile vs. adult) or animal capacity (releasable vs. requiring lifelong care). However, some differences in practice seemed to reflect organizational culture or individual caregiver characteristics. For example, some participants placed a stronger emphasis on nurturing needs and physical contact with orphaned baby mammals (such as raccoons) in the early stages of care. Although it is clearly important to avoid habituating wildlife to humans, research with human infants has shown that early skin-to-skin contact (called kangaroo care) has important physiological and psychological benefits (Association of Women’s Health, Obstetric and Neonatal Nurses 2016). It would be helpful to explore best approaches to balance developmental nurturing needs for orphaned wildlife while avoiding habituation to humans. There were also differences in caregiver beliefs and institutional practices regarding whether to name animals, which holds implications for public education. Further research could explore the impact of naming animals on human attitudes toward wildlife.

Research to explore mechanisms for community-based euthanasia would be helpful, as access to timely veterinary services for euthanasia was a challenge for some. It could also be beneficial to explore different models of care. For example, participants mentioned that the need to maintain strict boundaries in rehabilitation sometimes hindered volunteer recruitment. Animals designated for educational placement brought enjoyment through rare opportunities for closer interaction. It could be helpful to explore whether mixed settings with both rehabilitation and educational animals might enhance staff recruitment and retention by allowing a closer relationship with some of the animals. Expansion of educational animal placement sites could also reduce euthanasia burden with potential benefits to both human caregivers and wildlife.

While several of the rehabilitators in this study cited instances of long-term follow up as demonstrating successful release, some of these

were anecdotal experiences, which supports calls in the literature for further research on release outcomes (Mullineaux 2014). This could be particularly helpful for testing long-term outcomes with different approaches to care. Given the limited resources for wildlife rehabilitation along with its community-base, such research would require funding and might benefit from community–academic partnerships.

Community involvement in wildlife care facilities described by study participants reflects Frank’s (2016) call to engage communities in conservation practices that foster positive human–wildlife interaction. Some community rehabilitators described collaborations with local hunters, and 2 participants self-identified as hunters. Indeed, the wildlife sanctuary in this study was operated by the state fisheries and wildlife agency. This suggests wildlife care as a space in which different stakeholder groups might find common ground. This is an important area for further research, as management of human–wildlife conflicts is often impeded by disagreement among different human stakeholders (Madden and McQuinn 2014).

Wildlife care occurs at the intersection of human–wildlife conflict and offers insight into possibilities for coexistence. Animals that come into care have often suffered from human disruptions to natural cycles, such as being hit by cars while foraging for food or being harmed by toxins that poison the natural food chain. Caregivers assist with healing individual animals by honoring the wild nature of each creature and helping to restore it within its natural cycles. But a fuller healing requires repairing the ways in which humans have disrupted underlying ecological patterns. This requires human understanding of the natural world and integration into its processes.

### **Management implications**

The study was limited in its focus on New England and may not be applicable to different geographic regions. It was also limited by the inability to communicate directly with wildlife to gain their perspective. A strength of the study was its breadth of scope using maximum variation sampling in settings ranging from acute veterinary care to community rehabilitators and a wildlife sanctuary as well as triangulating data from interviews and observation. Wildlife care

holds value both for its contributions to animal welfare as well as its potential to enhance coexistence through expanded public understanding of healthy human–wildlife interactions. As such, wildlife rehabilitation and sanctuary care are an important dimension of wildlife management and offer opportunities for collaboration between stakeholders. Wildlife caregiving involves human–animal interactions in which the mutual dignity of both human and creature may be realized. Ultimately, coexistence with wildlife is dependent on the human community finding its own role as one of many species in harmony with the circle of life.

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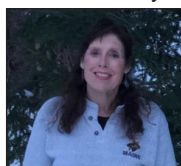
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