Mortality and injury rates of wildlife reported by rehabilitators across Alabama

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Abstract

Injured wildlife species are often brought to wildlife rehabilitation centers, where they are assessed, cared for, and eventually released. Injuries are due to many causes, such as anthropogenic sources, predation, disease, and malnourishment. However, little is known about rehabilitation rates (the number of animals brought in or released every year) of these animals. Alabama just recently began requiring rehabilitators to keep records, whereas other states have been doing it for several years. Our objectives were to determine the most common reasons for admitting wildlife species to wildlife rehabilitation facilities in Alabama and to quantify the most commonly brought in species during the first year of statewide records collection. We compiled intake records from 19 rehabilitators during 2014 by contacting district offices of the Alabama Division of Wildlife and Freshwater Fisheries. Records included intake date, species, presenting issue, county of origin, disposition, county of release, release date, and location of release. A total of 834 animals were taken in by rehabilitators in 2014. Nearly 87% of the animals recorded (n = 726) were orphaned, injured, or both, with the majority (66%) of the animals being admitted in one wildlife district. The most common animals taken in were squirrels (Sciurus carolinensisand Glaucomys Volans; n = 306) and opossums (Didelphis virginiana; n = 217). The majority of animals were brought in during August (n= 158) and September (n = 138), representing approximately 35% of the annual total. Almost 57% of the animals taken in were released after rehabilitation (n = 474). The intake records from most wildlife rehabilitators simply listed “orphan” or “injured” as the reason for intake. Identifying the causes for wildlife entering rehabilitation facilities could 2 aid wildlife education programs and better understanding incidences of human-wildlife conflict.

Introduction

Wildlife rehabilitation is 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 (Mullineaux, 2014). However, local governments often outlaw the rehabilitation of non-native species, such as wild pigs (Sus scrofa) in Alabama. The benefit to wildlife populations of the practice of rehabilitation has been debated in recent years (Wimberger et al., 2010). Many people believe that wildlife rehabilitation has no effect on most wildlife because relatively a few animals are released into large populations (Molina-Lopez et al., 2013). However, others believe there are several benefits from wildlife rehabilitation and release, including an improvement of an animal’s welfare, a reinforcement of the natural population, an identification of causes of the animal’s morbidity and mortality, an ability to provide data for passage of new laws, and the generation of positive attitudes towards wildlife by the public (Molina-Lopez et al., 2013). For species that are threatened or endangered, rehabilitation can aid in maintaining the genetic pool (Molina-Lopez et al., 2013). Furthermore, identifying causes of injury and death in wildlife could lead to early identification of disease outbreaks that threaten wildlife, livestock, or people. Finally, laws to limit the impact humans have on wildlife and the ecosystem have beendeveloped by information from wildlife rehabilitation (Molina-Lopez et al., 2013).

Although wildlife rehabilitation can provide valuable information about wildlife, relatively little information exists. The few existing studies to date note low to moderate release rates (<50%; Molina-Lopez et al., 2015; Mullineaux, 2014; Grogan and Kelly, 2013). However, the best indicator of animal survival during rehabilitation is the severity of the illness or injury

(Molina-Lopez et al., 2015). Thus, not all animals entering a rehabilitation center necessarily survive. Furthermore, juvenile animals typically havehigher release rates, which may show a lack of injury in orphaned animals (Molina-Lopez et al., 2015).

In Alabama, 2014 was the first year that wildlife rehabilitators were required to submit intake records to the state Department of Conservation and Natural Resources. This requirement afforded a unique opportunity to evaluate rehabilitation records from the onset of the program. In assessing the first year of the program in Alabama, we had two primary objectives: (1) to determine the most common reasons for wildlife species to be admitted to rehabilitation facilities; and (2) to quantify the most common wildlife species admitted to the rehabilitation facilities.

Methods

Within Alabama, five Wildlife District offices manage wildlife rehabilitation licenses for the counties within their district (Figure 1). We contacted the supervising wildlife biologist for each wildlife district and obtained copies of all the intake records submitted within that district. Only four of the five districts had data for 2014; District 5 had no rehabilitators submit for new licenses or license renewal. Records only include mammal and herpetological species because records from the Alabama Wildlife Center and the Southeastern Raptor Rehabilitation Center, which are the only rehabilitation centers in Alabama that admit and rehabilitate avian species, were not available. Once we received the records, we compiled the data following the same record-keeping guidelines as intake records found on the Alabama Department of Conservation and Natural Resources website. These records required rehabilitators to note intake date, species accepted, presenting issue, country of origin, disposition, county of release, date of release, and GPS coordinates or street address of release site. A few records included information from 2013 and 2015, but they were excluded from analysis. We then classified the data into additional categories, including the district where a rehabilitator was located, a unique identification number for each rehabilitator, and the month of intake.

We also edited the data to correct misspellings of species names and to group animals that were not identified to species level into broader species classes (e.g., squirrels, reptiles). Our numbers do not include records that were unreadable due to poor scanning or illegible handwriting. We quantified the number of animals admitted per month, number of animals by class admitted per month, number of animals with certain disposition admitted by month, number of animals admitted by district, and number of animals admitted by presenting issue. We analyzed the data by calculating basic summary statistics for the various intake information, as we only had a single year of data and were not testing a priori predictions amongst any groups.

Results

In 2014, a total of 834 animals were admitted to rehabilitation facilities across Alabama, of which 24 were missing intake date and thus were not included in the total number of animals taken in by month (Table 1). Of these 834 animals, 37% (n = 306) were squirrels and 26% (n = 217) were opossum (Didelphis virginiana; Table 1). The classification of squirrel included both Eastern Gray Squirrel (Sciurus carolinensis) and Southern Flying Squirrel (Glaucomys volans,). There were several other classifications, but they accounted for less than 9% in each case. Of the animals admitted, 87% (n = 726) were labeled with a presenting issue of orphaned (74%) or injured (13%). The other 13% of presenting issues only labeled the animals with an age range, such as adult or juvenile, or as brought in due encounter with domestic animals or some type of disease. Among the four districts that had rehabilitators submit intake records, 66% (n = 549) were from District 4 (Figure 1). The peak of admittance was August (n = 158) and September (n = 138; Figure 2). Of all the possible final dispositions, 57% (n = 474) of the total number of animals admitted were released after spending time at a rehabilitation facility.

Discussion

The greatest number of animals admitted by class were squirrels and opossums. These two classes of animals have high fecundity, with opossums having an average litter size of seven to eight, but the potential for as many as 13. Squirrels average only two to three young, but in good years, females can have two litters. Peak of breeding season in Alabama is in January to February and then again in June to July for both species of squirrels (Burde and Fieldhamer, 2005). With the peak of breeding seasons within those months, young are ready to leave their parental care around May for the first litter of squirrels and then again in August or September for the second litter of squirrels and the litter of opossums. These life-history attributes, along with the proximity of both species to humans, are likely factors for why they comprise such a large number of individuals admitted to wildlife rehabilitation centers. Other animals with high reproductive rates that lived in close proximity to humans were admitted, but they numbered far fewer than opossum and squirrels. These animals that live in close proximity to humans are synanthropes and often gain something beneficial from living in an altered environment such as in urban and suburban areas (Marchesini, 2016). The large percentage of animals admitted in District 4 was likely due to a greater number of rehabilitators in this district, compared to the other districts, and the presence of one of the larger mammal rehabilitation centers, the Big Bend Wildlife Rehabilitation Center. Recent legislation allows each district only one rabies-vector rehabilitation center, and Big Bend is the designated center for District 4. However, determining why there were more rehabilitation centers in District 4 was beyond the scope of this study. Our results differ from previous research results in terms of release rates of wildlife species. Most previous research had release rates $< 50\%$, whereas we found a statewide release rate of 57% (Molina-Lopez et al., 2015). Alabama's release rate could be due to the large number of animals that were labeled and admitted as orphans. People not educated on the life histories of many wildlife species can misidentify an animal's disposition. Some may believe an animal is orphaned or appears too young to be on its own and take it to a wildlife rehabilitator, when such action is not needed. For example, white-tailed deer (Odocoileus virginianus) fawns are often found without their mothers, as the fawn will remain in one area, staying hidden while the doe roams to forage. The doe then returns throughout the day to allow the fawn to nurse until it is strong enough to venture out with the doe and escape predators if found (Burde and Feldhamer, 2005). There are a number of reasons for why wildlife species are brought into wildlife rehabilitations centers; however, examining these reasons was beyond the scope of the data available. To alleviate the problems of human-wildlife encounters that result in injury or removing a healthy juvenile from parental care, a campaign to educate the public would help decrease future admittance of injured wildlife or juveniles that are not truly orphaned. Future research can develop yearly trends and identify broad-scale patterns in the state. One aspect that would be beneficial for future research and the state's wildlife professionals is better record keeping. For this study, some records were not considered because of illegible penmanship. Entering records electronically would help alleviate this problem. Furthermore, on-line record keeping would allow for a real-time update that could show which species are being admitted over time and by location.

References

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Table 1. Total number of animals admitted each month per class to wildlife rehabilitation centers in Alabama in 2014. Class includes both species and groups of species.[1]

Class	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Amphibian	0	0	1	0	0	0	0	0	0	0	0	0	1
Armadillo	0	0	0	1	1	0	0	0	0	0	0	0	2
Bat	0	0	1	0	3	3	4	1	1	0	0	1	14
Beaver	0	0	0	1	0	0	0	0	0	0	0	0	1
Bobcat	0	0	0	0	1	0	1	0	0	0	0	0	2
Chipmunk	0	0	1	3	0	0	0	0	1	10	2	2	19
Coyote	0	0	0	0	1	0	0	1	0	0	0	0	2
Deer	0	0	0	0	0	0	17	21	23	9	1	1	72
Fox	0	0	0	3	8	2	0	0	0	0	0	0	13
Opossum	0	0	45	54	42	21	11	41	2	1	0	0	217
Rabbit	0	1	3	13	14	8	11	3	4	2	1	0	60
Raccoon	0	0	1	1	9	14	13	6	15	5	6	4	74
Reptile	0	1	0	3	10	1	0	2	1	1	1	0	20
Rodent	0	0	7	0	0	0	1	0	8	1	0	0	17
Skunk	0	0	0	0	0	10	0	1	0	0	0	0	11
Squirrel	2	4	7	3	8	9	26	82	83	31	17	13	285
Total	2	6	66	82	97	68	84	158	138	60	28	21	810

[1] A total of 834 animals were recorded as being admitted to wildlife rehabilitation centers in Alabama during 2014, but 24 of these animals were recorded without an intake date thus were not included in this table.

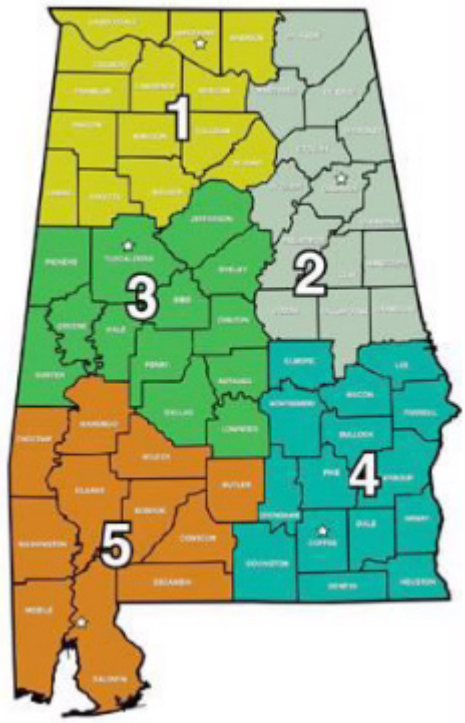

Figure 1. Alabama state map with color-coded wildlife districts.

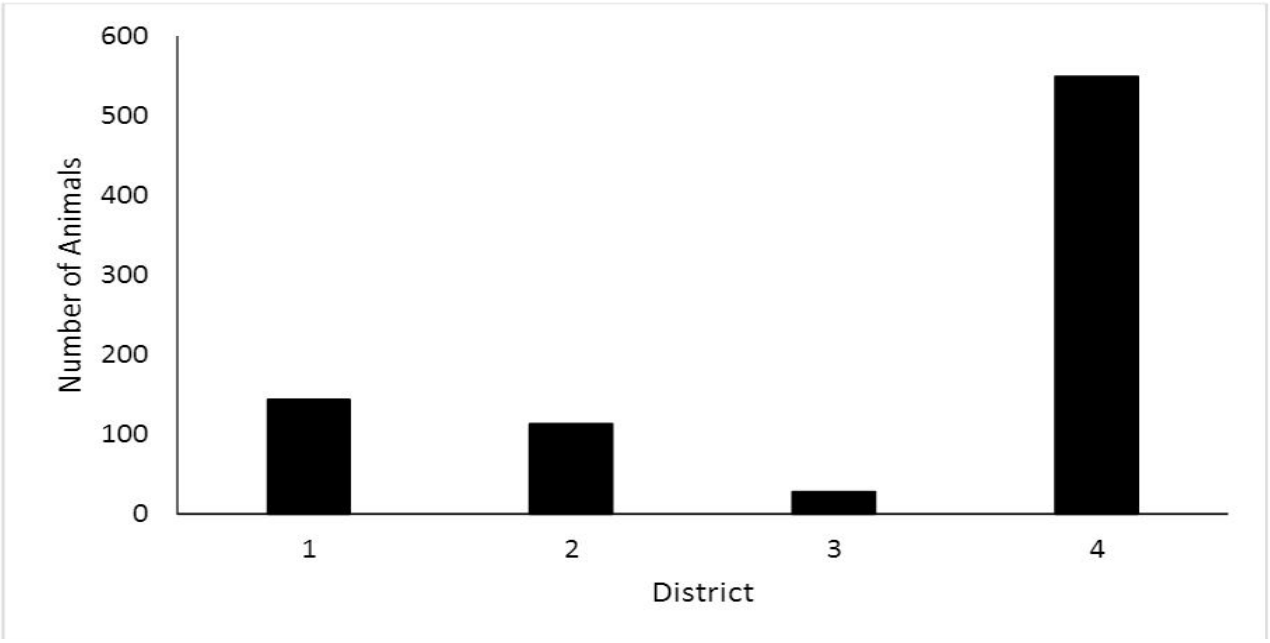

Figure 2. Total number of animals admitted per district to wildlife rehabilitation centers in Alabama 2014.

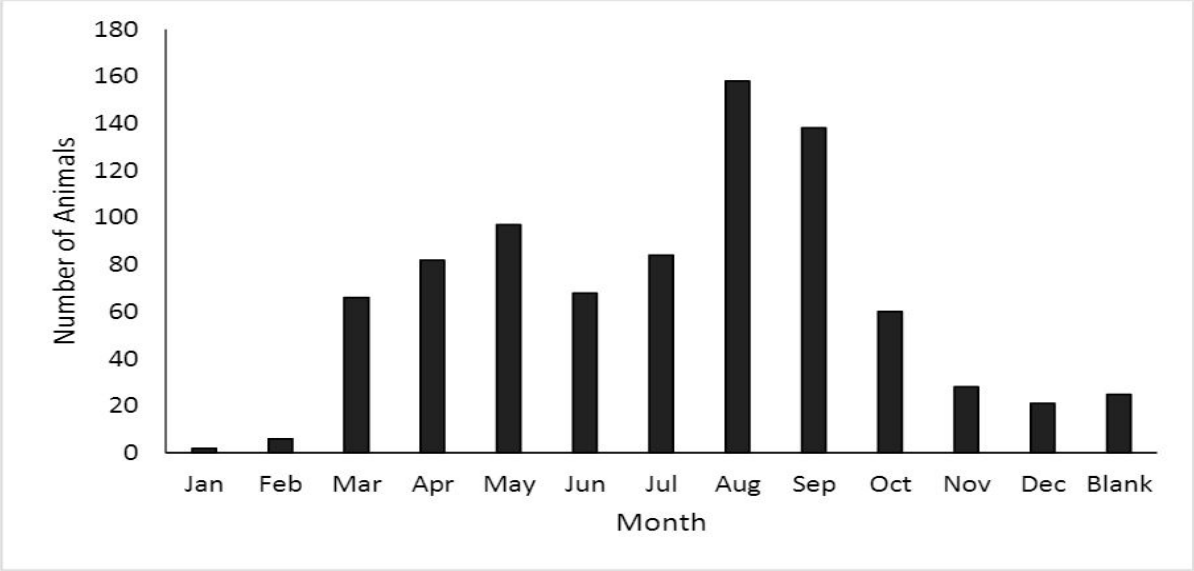

Figure 3. Total number of animals admitted per month to wildlife rehabilitation centers in Alabama in 2014.