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The importance of research in wildlife rehabilitation

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Abstract

The need to collect data as part of any wildlife rehabilitation operation has long been recognised by the RSPCA. In 1992 we set up an admissions database with the opening of a new wildlife hospital in Norfolk and have been collecting data ever since.

This paper discusses how such data can be used to benefit the animals in care, both now and in the future. By identifying trends in the data, we can make well-informed decisions earlier in the process so improving the welfare, not only of the individual casualty, but of the other animals as well. We can also plan the management of the unit, by identifying the busiest times of year and recruiting staff to manage this, or the busiest times of day and planning rosters to ensure that these times are covered.

We can also study the animals in care to better understand how they adapt to captivity and the consequences this may have for their survival once they have been released. So the RSPCA not only has an admissions database for recording the details of the animals it admits, but it also has specific projects looking at particular species with particular problems, such as oiled guillemots. We are, or have been, radio-tracking a number of different species to see how they adapt to living in the wild and we use CCTV to monitor animals in care to see how they respond to a particular treatment.

Introduction

The RSPCA operates four wildlife centres in England and since 1992 data has been collected on each wildlife casualty admitted. Information such as species, age, reason for admission, weight on admission and so on was originally collected on an old d-base system. This system was not a professionally designed database, but it was good enough to collect basic information allowing us to look for trends in the animals that were admitted to our care. Logged on this database are over 165,000 wildlife casualties admitted to RSPCA wildlife hospitals and units between 1992 and 2004.

The RSPCA introduced a new admissions database in 2005. This database reflects improvements in computer hardware and software that have occurred in recent years and allows us to continue collecting the same data and more. It also allows staff at HQ to keep up-to-date with admissions on a daily basis if required. This database has records of over 54,000 animals, covering 290 species, 75% birds and 24% mammals. An average of 40% of these casualties has been released, although this varies with species and injury. A further 37% are euthanased to prevent further suffering.

However, this new database still has some drawbacks. It was not intended to be a long term solution, and as modern computing technology has evolved so quickly, we recognise that we will need to introduce another new database in a couple of years. This new system should be developed by a software company which means that it should be available as a package to the wider rehabilitation community.

Data collection

Data collection should not be reserved for a particular study or project. Wildlife rehabilitation is probably unique in not having a systematic process for collecting data on admissions to establishments. Veterinary surgeries and hospitals will collect this data automatically and although their main goal may be different (i.e. the need to charge their clients for treatment provided) they record a great deal of additional information that helps inform veterinary science. Wildlife rehabilitators should also be open to the opportunities that recording such information might bring, in terms of identifying potential supporters and sponsors.

Wildlife rehabilitators should therefore consider adopting a computerised form of record collection that starts on admission. This could be done using a specially designed database, or an Excel© spreadsheet. Either way, it should allow data to be collected as soon as the casualty arrives and for forms to be printed that can then follow the animal through the centre to release and beyond. More specialist databases can be used to record diagnosis, treatment, feeding regimes and how the animal reacts to each of these situations.

The collection of such data not only helps the management of the animals in care, but can also identify wider conservation issues such as pollution (swans and lead), poisoning and illegal shooting (birds of prey). The careful recording of all these cases can then be used to address these problems in the wild.

The need for research

The RSPCA has always believed that science should form the basis of policy and wildlife rehabilitation is no different to any other aspect of animal welfare. The act of bringing a wild animal into care has repercussions; wild born animals are not adapted to life in captivity and so will be stressed. Such stress will affect treatment and so any wildlife rehabilitator needs to assess the pros and cons of their work to ensure that the benefits outweigh the harms. This can only be done by collecting data and obtaining a better understanding of how different casualties are affected by rehabilitation.

By studying information collected on each casualty, we can look for trends within species, admitted with different conditions, which can help us determine a course of action in the future. Research projects in this area may include many species or may be species specific.

Molony *et al* (2007) reviewed the data for eight different species admitted to the four RSPCA wildlife centres; badgers, foxes, hedgehogs, pipistrelle bats, blackbirds, house sparrows, starlings and tawny owls. They analysed data for those animals that survived the first 48 hours in care and found that for all these species, severity of injury was a significant predictor as to whether the animal would be released. The only other factor that was shown to be significant was the centre where the animal was admitted, with house sparrows having a greater probability of release at one centre than another. This is one example of the value of such studies – we can identify a problem at one or more centres and rectify it based on the work of the other centres.

Studies can also be species specific. Kelly and Bland (2006) reviewed the data on sparrowhawks admitted to one RSPCA centre. They had a similar result to the study by Molony *et al* (2006), with severity of injury being the main predictor of release. Another example is racing pigeons; Kelly

(2008) reviewed the data for racing pigeons admitted to the RSPCA's Stapeley Grange Wildlife Centre specifically for a pigeon fanciers' magazine. This informed those involved in the hobby about the condition of the birds admitted for rehabilitation, which may help them improve their husbandry techniques.

These studies allow us to make decisions earlier in the rehabilitation process which can reduce the time in care for some casualties and so improve the treatment of others by freeing up time and resources. We can also improve treatment techniques to produce the same result. One example of this is a study to determine what anti-worming treatment is most effective for the treatment of lung worm in seals.

It must be stressed that each casualty is still assessed on an individual basis but the results of this research provide us with a better set of tools to help determine the best course of action for that casualty. It must also be accepted that we cannot save every casualty and that euthanasia will always have an important role in wildlife rehabilitation. However it should be remembered that even these animals still have a role to play in research. Not only can they be used to teach us about more about wildlife rehabilitation, they can also be used to further the conservation of their species, e.g. hedgehogs (Dowding, 2009) and otters (Simpson 2006, Grogan 2001).

Hedgehog carcasses were submitted for post mortem and various tissues analysed for contaminants, including anti-coagulant rodenticides commonly used to control rats and mice. The analysis demonstrated that, contrary to current thinking, hedgehogs are exposed to these chemicals and some carry a high contaminant load (Dowding, 2009). This therefore has impact on how we manage rodent control operations so as not to impact on a species of biodiversity concern.

Otter carcasses are examined as part of a nationwide programme to monitor for environmental contaminants. The results of such post mortems, as reported by Simpson (2007) have helped to determine why otters were so badly affected by pesticides as well as contributing to the design of mitigation in road schemes to help reduce otter road casualties. Further work has detected a possible new problem in the shape of a bile fluke imported into the UK from Russia (Sherrard-Smith *et al*, 2009).

Live animals also have a role to play in disease surveillance or to identify environmental problems that might pose a threat to some species. One example is the mute swan: routine blood sampling to determine lead levels can identify areas where lead poisoning may be a significant problem (Kelly and Kelly, 2004). Lead may also cause additional physiological problems that can increase a swan's chance of having an accident (Kelly and Kelly, 2005). This sort of work has a direct application to wildlife rehabilitation, if these effects are acknowledge and action taken to mitigate them.

Projects

All the examples above use information and carcasses that are collected incidentally as part of the daily routine of a wildlife centre. However, the opportunity exists for rehabilitators to conduct specific projects on the animals that they treat. Such projects should be aimed at improving rehabilitation techniques through changes in diet, husbandry and medication. Rehabilitators should also investigate how the animals they release survive and adapt in the wild.

Projects can often arise through the analysis of admission data as discussed above. RSPCA staff identified through the analysis of such data that many juvenile blue tits would not survive if they came into care at about 7-10 days of age. Independent research then demonstrated that blue tit parents preferentially feed nestlings spiders at this age, which are known to contain an enzyme called taurine in higher quantities than many other invertebrates (Ramsay and Houston, 2003). A project was then devised to see if the addition of a taurine supplement would improve the survival of the young birds in care (Moran 2007).

Many of the medicines used in wildlife rehabilitation are not licensed for the species we work with, so it's often a case of trial and error to see what works best. However, a carefully planned project can help determine if one course of treatment is more effective than another. This is particularly important if one treatment is cheaper than another. East Winch Wildlife Centre admits many juvenile seals each year, many of them suffering with lungworm. Two standard treatments exist, Dovamectine and Ivermectin, but there were no studies to show which was more effective. So the vets at East Winch conducted their own study and identified Ivermectin as the more effective remedy.

Other projects can be used to test changes in husbandry. The RSPCA rehabilitates many pipistrelle bats every year and like many bat rehabilitators, would exercise the bats in rooms for a couple of hours each day. However it was always thought that these bats required a facility that would enable them to undertake more sustained exercise and to develop their echolocation skills. This coincided with a bat rehabilitator radio tracking five rehabilitated bats and found that they had to be recovered within 48 hours of release. So Stapeley Grange built a bat flight that allowed bats to fly free when they wished to do so. Some of these bats were then subsequently radio tracked upon release. Many survived 10 days (the life of the transmitter) (Kelly *et al*, 2008) and two bats have since been found alive after –235 days in the wild. As a result of this work, all the RSPCA wildlife centres are in the process of building their own bat flights.

Many of the RSPCA's projects though are designed to investigate how casualty animals survive after release. Sometimes this work can provide results that can be used to inform conservation projects. For example, many reintroductions of rare or previously extinct wild mammals have failed as the released animals have failed to thrive. So it was interesting when Molony *et al* (2006) compared the survival of rehabilitated and translocated hedgehogs released after different treatment regimes with a group of wild hedgehogs and demonstrated that hedgehogs used in translocation programmes would benefit from an extended period in care, rather than being transferred directly from one site to another.

The conservation of another species of biodiversity concern and indeed, another victim of secondary poisoning by rodenticides, the polecat, has also benefitted from rehabilitation. The post release monitoring of rehabilitated polecats in Cheshire and Wales has shown that such release programmes work and may work as models for the reintroduction of other species.

Other post release projects are much more fundamental for rehabilitation. The post release of tawny owls has now been demonstrated through extensive radio tracking (Routh, 1999, Leighton et al, 2008, Griffiths et al, 2009, in press) and ring returns (Leighton et al 2008). This has also led to a change in policy in on wildlife centre as the Griffiths et al (2009, in press) demonstrated that soft release techniques were not required for this species.

Other species that have been studied by the RSPCA include blackbirds, buzzards, roe deer, badgers, little owls and collared doves. However, the RSPCA is not unique in undertaking studies to investigate the impacts of rehabilitation on the animals treated. In 2001, Calgary Zoo started the Flying Free project (Brookfield *et al*, 2005), aimed at analysing all the existing data they held on injured raptors to determine if there were trends they could use to improve their decision making process. Their results were similar to those described above by both Molony (2006) and Kelly and Bland (2006). Fajardo *et al* (2000) compared survival and dispersal of wild and rehabilitated barn owls. They showed that more rehabilitated birds died quickly but after four weeks, mortality was comparable. They also showed that birds fed live prey had an increased chance of survival. Albritten and Jackson (2002) compared survival in two groups of western screech owls, one group with eye injuries and one group without, ands showed that survival was better in owls that had not sustained an eye injury. Holz *et al* (2006) compared different exercise regimes for peregrine falcons and brown goshawks and showed that birds exercised using conventional falconry techniques have a greater probability of survival after release.

Communicating the results

Yet all these projects are of limited value if the results are not known to the wider rehabilitation community. A common complaint is that papers reporting the results of such work are often published in journals which most rehabilitators do not have access to, so the emphasis is on those conducting the work to make the results more widely available.

To this end, abstracts of some of the papers mentioned have been published in the Rehabilitator, and the wildlife centres often report the progress of their projects in their own newsletters. Conferences too are an important vehicle for informing other rehabilitators of the results of such work and also provide an opportunity for further discussion. It should also be remembered that such presentations should not just report on what works, but should also report on the failures as well.

However, scientific papers are important as they raise the profile of wildlife rehabilitation, making it more acceptable to the wider scientific community. Rehabilitators have access to a large amount of potential data that can be used to benefit both the welfare of individual animals and the conservation of species. So it is our responsibility to collect that data and use it as best we can, to benefit wild animals in general.

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