

A survey of wildlife rehabilitation goals, impediments, issues, and success
in British Columbia, Canada

by

Sara Dubois

B.Sc., The University of Victoria, 2000

A thesis submitted in partial fulfilment of the requirements for the degree of

Master of Science

in

The Faculty of Graduate Studies

(Animal Science)

We accept this thesis as conforming to the required standard

The University of British Columbia

May 2003

© Sara Dubois, 2003

In presenting this thesis in partial fulfilment of the requirements for an advanced degree at the University of British Columbia, I agree that the Library shall make it freely available for reference and study. I further agree that permission for extensive copying of this thesis for scholarly purposes may be granted by the head of my department or by his or her representatives. It is understood that copying or publication of this thesis for financial gain shall not be allowed without my written permission.

Faculty of Agricultural Sciences
Department of Animal Science

The University of British Columbia
Vancouver, Canada

Date 9 May 2003

Abstract

Wildlife rehabilitators have various levels of training, most relying on their personal experience, while many also work to some degree with veterinarians. Rehabilitators also operate within a regulatory framework created by government agencies. Based on their own experience and training, these groups may have different perceptions of the value of wildlife, of rehabilitation goals, and of its impediments. Additionally, there is great scope for disagreement on numerous practice issues such as methods of care and euthanasia. Disclosure of these value positions and issues is important in resolving how stakeholders can work together more effectively to promote the welfare of individual wildlife. Also, to assess the accomplishments and areas of improvement for rehabilitation, it is important to identify what constitutes rehabilitation success and determine how to effectively evaluate success. Therefore, this study aims to describe rehabilitation goals, impediments, and issues, and discuss rehabilitation success and its measures, among stakeholders. This is achieved through a comprehensive survey, using interviews, questionnaires, and analysis of summary records. Participants in all three groups saw the primary goals of rehabilitation as humane treatment and public education; however, rehabilitators recognized a wider range of goals than others. This may help to explain why, despite members of all groups identifying multiple components of rehabilitation success, more rehabilitators had a broader view of success than others. Rehabilitators further differed from other stakeholders when discussing rehabilitation impediments; most participants cited money, however, over half the rehabilitators also felt that a lack of non-monetary assistance or acknowledgement by government were important impediments. Major disagreements exist on the care of non-native species and the use of non-releasable animals for education. Although consensus was not achieved in all areas, consistent data recording and analysis, promotion of existing care and euthanasia guidelines, and increased enforcement and care assessments by a team of stakeholders, may serve to better inform practices and decision-making within the rehabilitation community. Finally, rehabilitation success of treating animals can be assessed by comparing facility operation and care methods to accepted professional standards, while other aspects of the program, such as public education, could be evaluated by surveying feedback.

Table of Contents

Abstract	ii
Table of Contents	iii
List of Tables.....	iv
List of Appendices	v
Acknowledgements	vi
Co-authorship Statement	vii
 Chapter 1 – Introduction.....	 1
Methods.....	9
References.....	17
 Chapter 2 – Conversations with stakeholders: goals, impediments, and relationships in wildlife rehabilitation	
Introduction	20
Methods.....	22
Results	25
Discussion.....	36
References	41
 Chapter 3 – Conversations with stakeholders: contentious issues in wildlife rehabilitation	
Introduction	43
Methods.....	44
Results	44
Discussion.....	56
References	61
 Chapter 4 – Defining and measuring success in wildlife rehabilitation	
Introduction	62
Methods.....	63
Results and Discussion	65
General Discussion and Recommendations.....	75
References	77
 Chapter 5 – Conclusion	 79
 Appendices.....	 82

List of Tables

Table 2-1	Number of participants (rehabilitators, officials, and veterinarians) that identified various goals of wildlife rehabilitation	26
Table 2-2	Number of participants (rehabilitators, officials, and veterinarians) that identified various impediments to the goals of rehabilitation	27
Table 3-1	Number of facilities reporting different factors as the main basis for deciding whether to rehabilitate animals.....	46
Table 3-2	Number of facilities reporting different types of euthanasia provider.....	52
Table 3-3	Number of facilities reporting different euthanasia methods.....	53
Table 4-1	Summary of records for 11 facilities between 1990-2001	64
Table 4-2	Release rates and percentage of deaths by euthanasia in 11 facilities...	66
Table 4-3	Release rates for the top ten bird species and top seven mammal species in 11 facilities.....	68
Table 4-4	Number of participants (rehabilitators, officials, and veterinarians) suggesting various components of rehabilitation success and factors that influence success	70
Table 4-5	Number of participants (rehabilitators, officials, and veterinarians) suggesting different measures of rehabilitation success	74
Table A-1	Total number and percentage of birds and mammals admitted by cause at 11 facilities between 1990-2001	99
Table A-2	Percentage of total species intake by cause for the top ten bird species at ten of the 11 facilities which treated birds between 1990-2001.....	100
Table A-3	Percentage of total species intake by cause for the top seven mammal species at nine of the 11 facilities which treated mammals between 1990-2001	101

List of Appendices

Appendix I	Report on the current and future role of rehabilitation summary records in BC	82
Appendix II	Report on the BC Society for the Prevention of Cruelty to Animals' recommendations on wildlife rehabilitation	88
Appendix III	List of cause categories generated from common terms used by facilities	91
Appendix IV	List of diagnosis categories generated from common terms used by facilities	93
Appendix V	Data analyses	99
Appendix VI	Facility demographics questionnaire	102
Appendix VII	Interview schedule	105
Appendix VIII	UBC Behavioural Research Ethics Board Approval	107

Acknowledgements

Firstly, I must thank the wildlife rehabilitators, veterinarians, and government wildlife officials who allowed me to venture into their shoes, in order to see rehabilitation from each of their perspectives. The Wildlife Rehabilitators Network of BC, through Lynne Short and Elizabeth Thunstrom, in addition to many other members, offered encouragement and provided valuable insight for the project.

I am extremely grateful to Drs. David Fraser and Dan Weary for their willingness to take on such an ambitious project in an area uncharted for the Animal Welfare Program. Their knowledgeable advice and supportive guidance kept me afloat throughout the study. I also thank my fellow students in the Animal Welfare Program for inspiring me every day with their dedication to the well-being of animals.

R. Wayne Campbell and Wild Bird Trust of BC, fostered my budding research ideas and helped to transform them into this worthy project. Drs. Susan M. Cox, Fern Brunger, and David Shackleton provided valuable assistance in the development and analysis of the research. I gratefully acknowledge the financial support of the National Wildlife Rehabilitators Association, Elizabeth Howland and the UBC Faculty of Agricultural Sciences, the Vancouver Foundation, and the UBC Animal Welfare Program.

I am deeply indebted to my parents, not only financially(!), but also for their constant encouragement and moral support. My parents, brother, and friends deserve much credit for putting up with me through all of these years of school. I must also mention my precious Princess, who for almost 17 years has taught me the significance of the human-animal bond. Finally, this thesis is dedicated to my husband Olivier, without whose patience and unconditional affection, I could not have made it this far.

Co-authorship Statement

Sara Dubois, graduate student, was responsible for the study's design, data collection and analysis, and drafted the thesis manuscript.

David Fraser, graduate supervisor, contributed to the interpretation and presentation of the findings.

Sara Dubois

9 May 2003

Date

David Fraser

9 May 2003

Date

Chapter 1 – Thesis introduction and methods

"When we return wild animals to nature, we merely return them to what is already theirs. For man cannot give wild animals freedom, they can only take it away."

– Jacques Cousteau

INTRODUCTION

What is wildlife rehabilitation?

Wildlife rehabilitation is a unique animal care practice which, until recently, has been on the fringe of wildlife management and veterinary science. The mostly volunteer-based, privately funded efforts to treat individual injured or orphaned wild animals, have in the past been described as an activity of "little old ladies in tennis shoes" and "bunny huggers" (Holcomb 1996). However, increasingly the skills of rehabilitators are being required and their services are being recognized, as crude oil spills devastate marine wildlife in coastal countries world-wide and the West Nile Virus rapidly spreads across North America.

Today, wildlife rehabilitation is an emerging profession which blends veterinary medicine, natural history, animal behaviour, and environmental and animal ethics, with public service and education. Rehabilitators are able to join two professional organizations in addition to state or provincial associations, the National Wildlife Rehabilitators Association and the International Wildlife Rehabilitation Council. Both networks outline ethical guidelines, foster communication, promote professionalism, host conferences and produce publications. Together, they jointly published a Minimum Standards Program for guidance on facility operation and animal care (Miller 2000). The International Wildlife Rehabilitation Council also offers basic and advanced skills training seminars, and the National Wildlife Rehabilitators Association provides research grants to facilitate advances in rehabilitation. Although there is no unique network for Canadian rehabilitators, several provinces have rehabilitation associations that interact with both umbrella organizations. Additionally, all four Canadian veterinary colleges have

rehabilitation programs, providing treatment and care to wildlife, while developing veterinary skills and knowledge in wildlife medicine for interested students.

Why rehabilitate wildlife?

"The conservation of wildlife has progressed more rapidly than its protection from cruelty."

– Richard D. Ryder

The value of wild animal rehabilitation is highly debated amongst wildlife interest groups (Loftin 1985, Williams 1990, Crawford 1994, Rosenman 1996, Frink and Miller 1997). Several arguments against rehabilitation outlined by Kirkwood (1992) are: 1 – rehabilitation diverts attention and efforts from habitat and population conservation; 2 – it does not contribute to the preservation of most species; and, 3 – it may result in the releasing of "less fit" individuals. Loftin (1985) argues that rehabilitation is of limited value and "for the most part, based on biological illiteracy." Further he suggests that "[humans] have no moral obligations to suffering wildlife animals except to end their suffering."

Arguments for wildlife rehabilitation often focus on its ability to improve the welfare of individual wild animals (Swingland 1992, Duke et al. 1998, Kirkwood and Best 1998) and act as compensation for negative human impacts on nature and wild animals (Williams 1990, Crawford 1994, Frink 1998, Hass 1998). Although many moral, philosophical, and practical motives exist for rehabilitation, to specifically address the above points against rehabilitation:

1. Concerns for species and habitat protection have dominated over concerns for individual animals, as seen by efforts aimed at traditional in-situ and ex-situ wildlife conservation measures. Wildlife rehabilitation is a unique form of wildlife management, in that it addresses the welfare of individuals, and yet the sum of these can be thought of as the welfare of the wildlife community. Rehabilitation can serve as a tool of habitat and population conservation by acting as an indicator of environmental health (Williams

1990, Cox 1998); by functioning as a method of collecting scientific data on human disturbances to wildlife and their habitats (Crawford 1994, Duke et al. 1998); and by operating as a medium for educating the public on wildlife and environmental issues, engendering caring, respect and stewardship of wildlife habitat, populations, and individuals (Williams 1990, Sewell 1996, Cox 1998, Haas 1998, Thrune 1998).

2. Rehabilitation can play a direct role in species and population preservation (Swingland 1992, Duke et al. 1998, Frink 1998) and contribute to the biological knowledge of wild species (Williams 1990, Thrune 1998) in such areas as behaviour, physiology, and nutrition. Rehabilitation also provides an opportunity to train wildlife researchers and veterinarians (Porter 1992, Sewell 1996). Together, these and other skills acquired through rehabilitation can assist in the preservation of endangered and threatened populations.

3. To leave injured or orphaned wild animals in nature because these animals are "less fit" members of their species, suggests that by rehabilitating them, deleterious genetic effects could occur in subsequent generations of the population, undermining the process of natural selection (Rolston 1992, Frink 1998). However, this argument is not valid because these animals are no longer under the sole pressure of natural selection; rather they are impacted by human activities such as habitat destruction, urbanization, pollution, and human ignorance (Kirkwood and Best 1998). Humans are the dominant selection force since the fate of the majority of these individuals is determined by vehicle, window, powerline, and fence collisions; shooting and trapping; domestic animal attacks; human-caused parental loss or abandonment; and oil spills and chemical exposure (Porter 1992, Crawford 1996). Also there is little concrete evidence of a long-term effect on species due to the re-introduction of rehabilitated wildlife (Williams 1990). Additionally, we have an ethical responsibility to wildlife when we cause their pain or abandonment, to minimize the pain or suffering (Rolston 1992), whether that responsibility leads to either rehabilitation or humane euthanasia, whatever is in the

best interests of the individual animal. This ethic is also consistent with the treatment of farm, companion, and laboratory animals (Kirkwood and Sainsbury 1996).

Wildlife rehabilitation in British Columbia

Wildlife rehabilitators in British Columbia serve a vast and diverse area from the Pacific Ocean to the Rocky Mountains. The approximately 40 rehabilitation facilities in BC treat migratory species passing through the Pacific Flyway plus a variety of species from marine, agricultural, wetland, forest, alpine, and urban ecosystems. Rehabilitation facilities vary in size and staffing levels, background and experience of rehabilitators, annual number of cases, types of species treated, and treatments used. The Wildlife Rehabilitators Network of British Columbia (the "Network") was founded in 1989 to provide a forum for the diverse and often isolated rehabilitators in the province. The Network aims to engender the cooperation of professional and government agencies; improve the profession of rehabilitation through the development of high standards of practice, ethics and conduct; disseminate knowledge through meetings, reports, publications, and symposia to members and the public; and foster affiliation with the National Wildlife Rehabilitators Association and the International Wildlife Rehabilitation Council (WRNBC 2002). Membership in the Network is not mandatory for BC rehabilitators, but is recommended by permitting agencies.

In general, to obtain a permit for designated facility rehabilitation there must be a need in the community for such services and the individual must have approved facilities for the species to be admitted, demonstrated training or experience, an established relationship with a veterinarian, liability insurance, and submit annual records of all wildlife treated. Annual permits for BC rehabilitators are administered by federal and provincial agencies. Federal agencies are the Canadian Wildlife Service (for migratory birds designated under the Migratory Birds Convention Act, 1994; Government of Canada 1994), and the Department of Fisheries and Oceans (for marine

mammals governed by the Fisheries Act; Government of Canada 1985). The provincial BC Ministry of Water, Land and Air Protection regulates rehabilitation of other species (amphibians, reptiles, non-marine mammals, and birds not under federal authority) under the Wildlife Act (Province of British Columbia 1996a). The Prevention of Cruelty to Animals Act, enforced by the BC Society for the Prevention of Cruelty to Animals, also applies to wildlife in captivity in BC (Province of British Columbia 1996b).

Although adequate veterinary support and training is required for permits, some veterinarians believe that some rehabilitators' training and level of interaction with vets is insufficient (Porter 1992, Hunter 2002). Dr. Bruce Hunter (2002), founder of the Wild Bird Clinic at the Ontario Veterinary College suggests that rehabilitation is one of the few areas in animal care where the public and humane societies allow medical decisions and treatment to be supplied by non-veterinarians. But as Dr. Hunter states, "there are few veterinarians with sufficient understanding of biology and natural history and individual species status, needs and requirements, to allow them to make decisions on housing, nutritional needs, special requirements for release and sometimes even whether medical/surgical intervention should be attempted in the first place." Dr. Hunter is one of many individuals who have suggested that a team of people, including veterinarians and rehabilitators, are essential to any rehabilitation decision-making process (Porter 1992, Holcomb 1996, Lerman 1997).

A great example of this team effort in BC was the Wildlife Veterinary Report begun in 1988, a semi-annual publication edited by Drs. Ken Langelier and Rosanna Marchetti. The publication was dedicated to the Canadian wildlife veterinarian and rehabilitator, and highlighted wildlife research, rehabilitation case studies and care techniques, relevant legislation, as well as news and events from veterinarian and rehabilitation associations. However, within a few years the publication ended due to time limitations of participants (Langelier 2002), and since then, communication between the BC veterinary and rehabilitation communities has generally been limited to

individual rehabilitators and their consulting veterinarians. Also, the rehabilitation community has experienced decreasing contact with government wildlife officials, which may be attributed in part to the low priority of rehabilitation to these agencies and decreasing staff levels of wildlife conservation and enforcement officers and biologists. A recent example of this reduced interaction comes from the provincial government, which will be soon undertaking a legislative and policy analysis dealing with all aspects related to the keeping of wildlife in captivity, including rehabilitation (Pimlott 2002). This process, which attempts to "streamline" government rehabilitation policies, may consider the use of multi-year permits for rehabilitation facilities (Thunstrom 2002).

Previous surveys

Although no previous surveys have focused uniquely on BC rehabilitators, a few research studies have solicited information from rehabilitators in the province. Most recently, the University of Bristol and the Royal Society for the Prevention of Cruelty to Animals commenced a four-year study in 2002, which aims to identify welfare problems associated with wildlife rehabilitation and make scientifically sound, ethically based recommendations for improving rehabilitation (Garland 2002). Also the researchers endeavoured to determine how wildlife rehabilitation is affected by the ecology or behaviour of animals in the wild, treatment and handling, and the injury or trauma (Grogan 2002). Three BC rehabilitators participated in one of the first research steps, a quantitative questionnaire, which aimed to identify factors that influence release rates (Garland 2002). In another academic project completed in 2001, Kennedy (2001) assessed volunteer retention and burnout for her doctorate thesis in organizational psychology; BC wildlife rehabilitators were asked to complete a qualitative scale-response (agree, neutral, disagree) questionnaire on burnout and stress in their organization.

The National Wildlife Rehabilitators Association has conducted several surveys of its members, both individual rehabilitators and state/provincial associations. In 1993, the Association's Board of Directors conducted a questionnaire-based survey of individual member demographics to help plan the future of its organization (Throne 1994). This was followed by a similar survey in 1998, in which results only differed notably in the increased number of people reached by public education efforts of rehabilitators (Borgia 2000). In February 2002, the National Wildlife Rehabilitators Association hosted a Wildlife Rehabilitation Issues Forum for representatives of state and provincial associations across North America, to discuss the role of these associations in improving the quality of care given to wildlife by rehabilitators. The BC Network, along with 23 other associations, participated in the questionnaire which formed the basis for discussions at the Forum. In the questionnaire, associations detailed their demographic information, commented on their organizational services and effectiveness, and identified and ranked critical factors limiting care (TEWRWG 2002). The Network is also currently conducting a survey of its members regarding organizational services and effectiveness (Thunstrom 2002).

A comprehensive survey of wildlife rehabilitators was undertaken between 1989 and 1992 by the Human Dimensions Research Unit in the Department of Natural Resources at Cornell University, New York, in order to facilitate the efforts of the State wildlife department in creating a cooperative relationship with rehabilitators that would provide wildlife benefits to the people of New York. Through the use of scale-response questionnaires, researchers characterized the activities and attitudes of 299 licensed wildlife rehabilitators in New York and the perceptions of rehabilitators held by both State wildlife personnel (n=309) and the public (n=279) who interacted with rehabilitators (Siemer and Brown 1993, Siemer et al. 1994).

Thesis objectives

This chapter has outlined in general what constitutes wildlife rehabilitation and why people participate in such activities. Although several studies have investigated specific aspects of rehabilitation in the UK and US, rehabilitation in British Columbia and Canada could greatly benefit from an assessment of its practices and stakeholders, since it is a product of our own diverse geography, species composition, wildlife legislation, and culture. Thus, the purpose of this study was to describe and explore the views of wildlife rehabilitation stakeholders in British Columbia, on the goals and impediments of rehabilitation, contentious rehabilitation issues, how stakeholders define rehabilitation success, the effectiveness of release records in measuring success, and finally, on other potential criteria of success.

The thesis body is composed of three main chapters. The first uses interviews to describe rehabilitation goals and impediments as seen by stakeholders in the province, and to investigate the roles and relationships of these groups. These topics are discussed together as the roles and experiences of each group affect how they each see rehabilitation goals and obstacles. The following chapter also employs interviews, in this case to explore the range of stakeholders' views on contentious rehabilitation issues and what scope there is for consensus on these issues. This chapter focuses on rehabilitation practices and highlights differences between facilities and opinions of stakeholders on such practices. The last chapter then uses both qualitative and quantitative methods to discuss and assess rehabilitation success. Interviews are used to define the meaning of 'success' to stakeholders and discuss success measures based on these definitions, and analyses of rehabilitation annual summary records are conducted to evaluate current measures of rehabilitation success. Versions of chapters 2, 3, and 4 have been submitted to peer-reviewed journals; hence, there is some repetition of methods and literature cited from chapter to chapter.

A fifth chapter concludes the thesis, and two reports on the value of annual summary records and role of the BC Society for the Prevention of Cruelty to Animals in wildlife rehabilitation are included as Appendix I and II, as their results, although important for BC rehabilitators, are too locally focused to be included for journal submission. The relevance of Appendices III through VIII are outlined in the following Methods section.

METHODS

The study used a variety of techniques, including participant observation, summary record analysis, questionnaires, and in-depth interviews, to surface the range and diversity of issues in wildlife rehabilitation in BC. A descriptive and exploratory approach was used in this investigation of wildlife rehabilitation in BC since it is important to document an initial account of the perceptions and beliefs of stakeholders. This approach is similar to "grounded theory" methods in that the research is grounded in the experience of its participants and is not hypothesis driven; that is, rather than testing a hypothesis, these methodologies aim to discover what the right research questions are through inductive use of the data. However, descriptive and exploratory studies differ from grounded theory, as theory building is a key aspect of this latter methodology (Glaser and Strauss 1967, Charmaz 2000). The goal of this study was not to develop new, or refine existing theory, as wildlife rehabilitation is a relatively new field for scientific inquiry; however, the information from this study could be used to inform questions that seek to develop theory which emerges from data.

Research design

In qualitative research, observation is fundamental to understanding another 'culture' (Silverman 1993). Participant observation is a method of data collection whereby a researcher integrates into a 'culture' by adopting a role within the culture.

The researcher learns about the rules, beliefs, and values of its members by becoming an 'insider' (Hammersley and Atkinson 1983, Brunger 2001), gaining insights from the members together with the researcher's own impressions and reflections (Kirby and McKenna 1989). In November 1999, I began corresponding with several members of the Wildlife Rehabilitators Network of British Columbia (the "Network") to assess the research and informational needs of this community. In the summer of 2000, I volunteered one day a week at a wildlife rehabilitation facility in order to actively participate in the culture of wildlife rehabilitation and to gain insight into its goals and obstacles. Volunteering also allowed for informal discussions with rehabilitators, to hear about their personal experiences, how they arrived in their positions, and the daily expectations and pressures that they faced.

The research design stemmed from this interactive experience. In summer 2000 and spring 2001, annual rehabilitation summary records from facilities and government agencies were gathered. For the purposes of this study, a "facility" is defined as a person or group of individuals from one organization, permitted to conduct rehabilitation activities by a minimum of one of the provincial or federal government wildlife agencies. Hard copy records from eight facilities were entered into a newly created database, while additional electronic records from three facilities were edited and entered into this database. The 30,000 records of individual animals treated by BC rehabilitators between 1990-2001 were further edited to ensure completeness and validity, and their components were standardized into categories for sex, age, species, and final disposition. Categories for causes and diagnoses were generated from common terms used among facilities (Appendix III and IV). The number of days in care was calculated for those records with intake and final disposition dates. Informal discussions with rehabilitators and officials throughout data processing and analysis provided valuable information which increased my understanding of terms and codes used in data recording. The data analyses in Appendix V on rehabilitation causes demonstrate the

types of analysis generated from these records, which informed qualitative data collection.

I presented an analysis of these data at the annual meeting of the Network in November 2001. Following the presentation, I administered a questionnaire eliciting information on facility demographics (Appendix VI), which also requested the participation of a senior rehabilitator at each facility in an interview. The questionnaire results are not reported since at least one representative from each of the surveyed facilities was later interviewed. However, the questionnaires, in combination with the participant observation and summary record analysis, helped to shape the interview questions (Appendix VII), as the results engaged rehabilitators in dialogue about their concerns and beliefs pertaining to the goals and impediments of rehabilitation, contentious rehabilitation issues, what constitutes rehabilitation success and how this can be assessed.

Interviews were selected as the main form of data collection because they achieve in-depth understanding and allow participants to provide illustrative examples of their experiences and to raise issues that the interviewer may not have anticipated (Silverman 1993). The aim of these interviews was to understand how rehabilitators experience and attribute value to their own practices and lives (Valentine 1997). This study attempted to include a range of perspectives on rehabilitation by involving three participant groups, and by seeking individuals with varied backgrounds within these groups.

To ensure that participants were fully aware of what the study involved, I achieved informed consent of the voluntary participants through the use of consent forms provided at the time of the questionnaire and the interview. The content of the consent forms, questionnaire, and interview schedule was approved on December 12th, 2001, through the ethical review process conducted by the University of British Columbia Behavioural Research Ethics Board (Appendix VIII). The questionnaire was a confidential

survey and only myself and my graduate supervisor, David Fraser, had access to the identity of respondents. To maintain anonymity of interview participants, documents pertaining to a participant or particular facility were identified by codes throughout the analysis. All data were stored in a locked filing cabinet in my possession and computer files containing data were password encoded. In order to maintain confidentiality in the presentation of the results, participants are referred to by group association: veterinarians, officials, and rehabilitators. Individuals from these groups are not assigned numbers, such as "Rehabilitator 1," as linking quotes to the same participant may lead to their identity being revealed.

Interview recruitment and sample selection

Senior rehabilitators who volunteered, or whose names were provided by their facility, to participate in an interview, were contacted. Government wildlife officials, affiliated with rehabilitation through permitting or enforcement, were sought based on their high level of interaction with rehabilitators and to achieve a wide geographical representation. Eight officials and five veterinarians associated with rehabilitation were contacted by telephone and asked to participate in an interview regarding their view of rehabilitation in BC and its stakeholders.

This study used purposive sampling, as its participants were not chosen for their representativeness, but for their relevance to the research topic (Schwandt 2001) and other specific characteristics (aware of subject, willing to participate, had the time) (Morse and Richards 2002). In fact, the sample was "stratified purposeful" in order to illustrate subgroups (different stakeholder groups) and facilitate comparisons among them (Miles and Huberman 1994). The small sample of veterinarians and government officials interviewed did not aim to be representative of these respective populations; rather they served to explore the range of views held by members of these communities who had intimate rehabilitation experience, in order to contrast these views with

rehabilitators. In the case of rehabilitators, however, the interviews surveyed almost the entire population of rehabilitation facilities in the Network. Thus, a sample of the Network was not assessed for its representativeness of this community, rather the sample was relatively exhaustive, describing almost the complete population. There is a high degree of confidence in these latter findings as "saturation" of the data, or a high degree of repetition (Morse and Richards 2002), was observed within the rehabilitators.

Participant description

The five veterinarians, each with 17 to 25 years of veterinary experience, were either Network members or recommended by Network members due to their current or past involvement in rehabilitation. Three practiced mainly small animal medicine and occasionally treated wildlife brought by the public. Two practiced wildlife medicine, one in a non-clinical setting and the other full-time in a rehabilitation facility. Of the eight government wildlife officials (technicians, biologists, and enforcement officers), seven were from the BC Ministry of Water, Land and Air Protection, each representing one provincial management region; the eighth was a Canadian Wildlife Service official. They had been employed 10 to 28 years with their respective agencies in wildlife capacities.

The 27 rehabilitators interviewed included 17 facility founders. Of the 27, 16 lived on the facility site or provided in-home care. Four rehabilitators were no longer directly involved in animal care but performed duties such as director, office manager, or naturalist, and three rehabilitators had retired from the practice. A total of 24 rehabilitators practiced in a non-zoo or aquarium setting, and will be called primary rehabilitators. These individuals had been involved in rehabilitation for 3 to 30 years (average 14 years). Eighteen of the 24 primary rehabilitators were women. Currently or when last active, 19 of the 24 primary rehabilitators participated full-time in rehabilitation, although some had additional part-time employment, and eight of these individuals were paid for their rehabilitation activities.

Overall, 21 BC facilities and one facility in a neighbouring jurisdiction with ties to the Network, participated in the research. Seventeen facilities had permits to rehabilitate both provincial and Canadian Wildlife Service regulated species, and one of these facilities also had a Department of Fisheries and Oceans permit. Four facilities had only provincial permits and one facility had only a Department of Fisheries and Oceans permit. Sixteen facilities were registered as non-profit societies. At the time of research, 20 facilities had current Network memberships, 12 had International Wildlife Rehabilitation Council memberships, and 11 had National Wildlife Rehabilitators Association memberships.

Interview process and questions

Thirty-nine interviews, lasting 1 to 2 hours, were conducted between December 2001 and June 2002. Most of the 30 in-person interviews were held at the participants' facility or office. These interviews were recorded on audiocassette and transcribed verbatim for analysis. Nine participants were interviewed by telephone due to location or time limitations. These interviews were not recorded on audiocassette, rather notes were taken during these conversations and typed into a format similar to the transcribed interviews. One participant responded by mail to written questions.

The open-ended questions focused on the participants' experience with rehabilitation, their interpretations of rehabilitation's goals and impediments and rehabilitation success, communication with other rehabilitation stakeholders, facility practices, and the role of rehabilitation records and measures of success (Appendix VII). Participants were not given options to choose from; rather, only points raised by participants were discussed. Also, participants were not asked to rank their responses (e.g. top three rehabilitation goals), as the purpose of the study was to find out what the right questions are to be asking. Without establishing the full spectrum of responses, I could have excluded valuable information. In a few cases, a yes/no question was asked

to ascertain descriptive data about practices before participants discussed why they opted for such practices (e.g. Do you treat non-native species?).

There was a natural flow to the interviews which enabled the same questions to be asked in the same order, in a search for patterns of answers (Morse and Richards 2002). But as a result of this semi-structured format, not all questions may have been asked, but new ideas raised by participants were explored. As a result, the interview schedule was modified through the process of inductive data collection. For example, a question about euthanasia methods was added after one interview where contentious issues surrounding euthanasia were raised by the participant; subsequently, I felt it was important to ask the remaining participants about euthanasia methods. This explains why in some cases, less than the total number of participants discussed certain subjects.

Interview analysis

The analysis of the interviews was mostly descriptive, focusing on the language used and key concepts, values, and themes raised by participants. Interview transcripts were read and re-read. Emerging ideas about topics were recorded through a process known as "open coding," where individual sentences are assessed and notes are made alongside the text (Crang 1997). Relationships and patterns within and between general interview topics, and those that related to the literature on certain rehabilitation subjects, were identified. As reoccurring themes developed, they were assigned into categories by codes, which helped to organize the texts. This process coded two types of data for later retrieval, categorization, or reflection: descriptive coding, where factual knowledge about participants (stakeholder group, gender) was noted; and topic coding, which identifies all material on one topic (Morse and Richards 2002).

To distinguish between categories and themes, themes run throughout the text, and an example of this is the theme of euthanasia as a release from suffering. Within the REHABILITATION GOALS category, euthanasia to reduce pain and suffering was

discussed. Also in the category of MOTIVATION of why participants were involved in rehabilitation, some mentioned to reduce animal pain and suffering. Finally, EUTHANASIA itself was a category that included euthanasia decisions and methods.

In some cases, some topics were quantified into tables (e.g. euthanasia provider, methods). These topics were conducive to enumeration and this helped to tease out relationships and patterns, facilitated management and analysis of data, as well as presentation of the data. One step in the verification of the data was that the interview results were presented at the 2003 annual meeting of the Wildlife Rehabilitators Network of BC, which was attended by many of the study's rehabilitation participants.

Limitations of data collection and analysis

The difficulties encountered in collecting and analyzing rehabilitation summary records, based mainly on a lack of standardization, are discussed in chapter 4 and Appendix I. The questionnaire data were also limited, in that responses were restricted to only the options provided to respondents. Finally, I recognize that by using personal interviews I am, in fact, the instrument of research, and that my presence influences the behaviour and responses of participants. However, my knowledge gained through previous observation of rehabilitation and interaction with many of the participants prior to the interviews, in addition to the length of the interviews, helped to make participants feel comfortable in expressing their opinions. It is very possible that participants may have different answers if another researcher asked the same questions, or if I asked the same questions on a different day. But since there is not one true interpretation of the data, such qualitative methods aim to find consistent patterns in the data in order to give the best interpretation of the data possible. Another limitation to interviews is that one cannot always know what questions to ask, however, there is strength and validity in the questions that are asked because they inductively arise from the process itself (e.g. euthanasia methods).

REFERENCES

- Brunger, F. 2001. Anthropologist. University of British Columbia, Centre for Applied Ethics. Personal Communication, 8 May 2001.
- Borgia, L. 2000. Member survey report. *The NWRA Quarterly* 18(4):17-18.
- Charmaz, K. 2000. Grounded theory, objectivist and constructivist methods. In: Denzin, N.K. and Y.S. Lincoln (Eds.). *Handbook of qualitative research, second edition*. Thousand Oaks: Sage Publications. pp. 509-535.
- Crang, M. 1997. Analyzing qualitative materials. In: Flowerdew, R. and D. Martin (Eds.). *Methods of human geography: a guide for students doing a research project*. Essex: Addison Wesley Longman Ltd. pp. 183-196.
- Crawford, W. 1994. The pros and cons of wildlife rehabilitation. *The NWRA Quarterly* 12(2):14-15.
- Crawford, W. 1996. Wildlife rehabilitators: their ecological impact on the future. *The NWRA Quarterly* 14(2):9-11.
- Cox, M. 1998. What is wildlife rehabilitation? *The NWRA Quarterly* 16(2):16-18.
- Duke, G.E., L. Frink, and E. Thrune. 1998. Why wildlife rehabilitation is significant. *The NWRA Quarterly* 16(4):14-16.
- Frink, L. and E.A. Miller. 1997. Oiled wildlife: Is rehabilitation effective? *The NWRA Quarterly* 15(3):10-12.
- Frink, L. 1998. Philosophy of wildlife rehabilitation: The wildlife rehabilitator's pocket guide to self-defense. *The NWRA Quarterly* 16(1):13-14.
- Garland, L. 2002. Post-doctorate Researcher. University of Bristol, Bristol, UK. Personal Communication, 19 September 2002.
- Glaser B.G. and A.L. Strauss. 1967. *The discovery of grounded theory: strategies for qualitative research*. Chicago: Aldine Publishing Company.
- Government of Canada. 1985. Fisheries Act R.S. 1985, c. F-14. Available at: <http://laws.justice.gc.ca/en/F-14/56082.html> Accessed 6 December 2002.
- Government of Canada. 1994. Migratory Birds Convention Act, 1994, c.22. Available at: <http://laws.justice.gc.ca/en/M-7.01/79498.html> Accessed 6 December 2002.
- Grogan, A. 2002. Wildlife Rehabilitation Coordinator. Royal Society for the Prevention of Cruelty to Animals, West Sussex, UK. Personal Communication, 7 January 2002.
- Haas, K.B. 1998. A history of wildlife conservation and rehabilitation, Part 2. *Wildlife Rehabilitation Today* 10(1):31-38.
- Hammersley, M. and P. Atkinson. 1983. *Ethnography: principles in practice*. London: Tavistock.

- Holcomb, J. 1996. The ethics of wildlife rehabilitation. *Proceedings of the SASOL Symposium on Wildlife Rehabilitation, Onderstepoort 27-28 October 1995*:112–118.
- Hunter, B. 2002. Professor and Veterinarian. Ontario Veterinary College. Personal Communication, 30 April 2002.
- Kennedy, A.B. 2001. *Toward the development of a model program to increase the retention of qualified volunteers in wildlife rehabilitation centres*. Unpublished Doctoral Dissertation. Personal Communication, 30 July 2001.
- Kirby, S. and K. McKenna. 1989. *Experience, research, social change: methods from the margins*. Toronto: Garamond Press.
- Kirkwood, J.K. 1992. Wild animal welfare. In: Ryder, R.D. (Ed.). *Animal welfare and the environment*. London: Duckworth. pp. 139-154.
- Kirkwood, J.K. and A.W. Sainsbury. 1996. Ethics of interventions for the welfare of free-living wild animals. *Animal Welfare* 5:235–243.
- Kirkwood J.K. and R. Best. 1998. Treatment and rehabilitation of wildlife casualties: legal and ethical aspects. *In Practice* 20:214–216.
- Langelier, K. 2002. Veterinarian. Island Veterinary Hospital, Nanaimo, British Columbia, Personal Communication, 26 November 2002.
- Lerman, M. 1997. How to establish and maintain a relationship with your veterinarian. In: Moore, A.T. and S. Joosten (Eds.). *National Wildlife Rehabilitators Association principles of wildlife rehabilitation*. St. Cloud: National Wildlife Rehabilitators Association. pp. 47-51.
- Loftin, R.W. 1985. The medical treatment of wild animals. *Environmental Ethics* 7:231–239.
- Miles, M.B. and Huberman, A.M. 1994. *Qualitative data analysis, second edition: an expanded sourcebook*. Thousand Oaks: Sage Publications.
- Miller, E.A. (Ed.). 2000. *Minimum standards for wildlife rehabilitation, third edition*. St. Cloud: National Wildlife Rehabilitators Association.
- Morse, J.M. and L. Richards. 2002. *Readme first for a user's guide to qualitative methods*. Thousand Oaks: Sage Publications.
- Pimlott, M. 2002. Wildlife Technician. British Columbia Ministry of Water, Land, and Air Protection. Personal Communication, 19 August 2002.
- Porter, S.L. 1992. Role of the veterinarian in wildlife rehabilitation. *Journal of the American Veterinary Medical Association* 200:634–640.
- Province of British Columbia. 1996a. Wildlife Act [RSBC 1996] Chapter 488. Available at: http://www.qp.gov.bc.ca/statreg/stat/W/96488_01.htm Accessed 6 December 2002.

- Province of British Columbia. 1996b. Prevention of Cruelty to Animals Act [RSBC 1996] Chapter 372. Available at:
http://www.qp.gov.bc.ca/statreg/stat/P/96372_01.htm Accessed 20 November 2002.
- Rolston, H. 1992. Ethical responsibilities toward wildlife. *Journal of the American Veterinary Medical Association* 200(5):618–622.
- Rosenman, B. 1996. Wildlife rehabilitation: What do you honestly-off-the-record think about it? *The NWRA Quarterly* 14(3):14–15.
- Schwandt, T.A. 2001. *Dictionary of qualitative inquiry*. Thousand Oaks: Sage Publications.
- Sewell S. 1996. Is rehabilitation unnatural? *Wildlife Rehabilitation Today* 7(4):31.
- Siemer, W.F. and T.L. Brown. 1993. *Key perceptions held by wildlife managers and wildlife rehabilitators in New York: an assessment of communication coorientation*. Human Dimensions Research Unit Publication 93-1. Ithaca: Department of Natural Resources, Cornell University.
- Siemer, W.F., T.L. Brown, and P.P. Martin. 1994. Characteristics of wildlife rehabilitation cooperators in New York. *Wildlife Rehabilitation* 12:227–246.
- Silverman, D. 1993. *Interpreting qualitative data: methods for analyzing talk, text and interaction*. Beverly Hills: Sage Publications.
- Swingland, I. 1992. The human impact on wildlife and the environment. In: Ryder, R.D. (Ed.). *Animal welfare and the environment*. London: Duckworth. pp. 17–26.
- TEWRWG (The Excellence in Wildlife Rehabilitation Working Group). 2002. *Informal survey of wildlife rehabilitation associations in North America*. Minneapolis: National Wildlife Rehabilitators Association.
- Throne, E. 1994. Member survey report. *The NWRA Quarterly* 12(1):8, 12(2):7, 12(3):8.
- Throne, E. 1998. What does it take to be a wildlife rehabilitator? *The NWRA Quarterly* 16(4):16–17.
- Thunstrom, E. 2002. President. Wildlife Rehabilitators Network of British Columbia. Personal Communication, 26 May and 16 November 2002.
- Valentine, G. 1997. Tell me about...:using interviews as a research methodology. In: Flowerdew, R. and D. Martin (Eds.). *Methods of human geography: a guide for students doing a research project*. Essex: Addison Wesley Longman Ltd. pp. 110–126.
- Williams, T.D. 1990. Rehabilitation of wildlife animals. *Journal of the American Veterinary Medical Association* 197:554–555.
- WRNBC (Wildlife Rehabilitators Network of British Columbia). 2002. Available at:
www.wrn.bc.ca Accessed 23 November 2002.

Chapter 2 – Conversations with stakeholders: goals, impediments, and relationships in wildlife rehabilitation¹

INTRODUCTION

The practice of wildlife rehabilitation generally began in the homes of compassionate, well-meaning, but often inadequately trained individuals (Hass 1998). Rehabilitation practices have evolved over the years, through trial and error and the adaptation of care protocols for companion and zoo animals, emerging as a distinct field with specific techniques for animal handling, medical and surgical care, nutrition, housing, and release. Wildlife rehabilitators have various levels of training, with many rehabilitators relying on personal experience and knowledge shared with their peers to upgrade their skills. Additionally, many rehabilitators work to some degree with veterinarians. Rehabilitators also operate within a regulatory framework created by government wildlife agencies which permit and monitor rehabilitation activities. Therefore, to be effective, many rehabilitators need to have satisfactory relationships with other rehabilitators, veterinarians, and government wildlife officials.

However, these three stakeholder groups (rehabilitators, veterinarians, and officials) may not see wildlife rehabilitation in the same way. Based on their experience, education, and training, these groups may have different perceptions of the value of wildlife, of the goals of rehabilitation, and of the impediments to successful rehabilitation. Such differences may create barriers to communication and cooperation among stakeholders. In a comprehensive survey of New York wildlife rehabilitation stakeholders, Siemer and Brown (1992a and 1992b) described two subgroups of rehabilitators based on their attitudes and values regarding wildlife management. About one third of respondents expressed attitudes similar to those of wildlife officials who

¹ A version of this chapter been accepted for publication by the *Journal of Wildlife Rehabilitation*, volume 26, number 1, published by the International Wildlife Rehabilitation Council. Reprinted here with permission from the IWRC.

believed humans are rightful stewards of wildlife and are entitled to use wildlife in traditional ways. The remaining two-thirds of rehabilitators, in contrast to officials, opposed many traditional forms of wildlife management such as recreational hunting and trapping (Siemer and Brown 1993). Although these different standpoints can create barriers to rehabilitator-government communication, the researchers emphasized that the two groups held some common fundamental beliefs and values, one of which was that human interactions with wildlife should be considerate of the pain and suffering of individual animals, suggesting opportunities for cooperation on at least some issues (Siemer and Brown 1993).

Although there have been several surveys of the practices, views, and constraints of wildlife rehabilitators (Siemer and Brown 1992a and 1992b, Thrune 1994, Borgia 2000, TEWRWG 2002), there has been only limited research comparing these stakeholders, how they communicate, and how they perceive their respective roles. The present study gathered information from rehabilitators, veterinarians, and wildlife officials involved in wildlife rehabilitation in British Columbia, Canada. The aims of this study were (1) to identify the goals of wildlife rehabilitation as perceived by rehabilitators, veterinarians, and government wildlife officials, (2) to identify what the three groups view as major impediments to successful wildlife rehabilitation, and (3) to explore how the different groups perceive each others' roles and the relationships among the groups.

STUDY POPULATION

Wildlife rehabilitators in British Columbia serve a vast and diverse area from the Pacific Ocean to the Rocky Mountains. The approximately 40 rehabilitation facilities in BC treat migratory species passing through the Pacific Flyway plus a variety of species from marine, agricultural, wetland, forest, alpine, and urban ecosystems. Rehabilitation facilities vary in size and staffing levels, background and experience of rehabilitators,

annual number of cases, types of species treated, and treatments used. The Wildlife Rehabilitators Network of British Columbia (the "Network") was founded in 1989 to provide a forum for the diverse and often isolated rehabilitators in the province. The Network aims to engender the cooperation of professional and government agencies; improve the profession of rehabilitation through the development of high standards of practice, ethics and conduct; disseminate knowledge through meetings, reports, publications, and symposia to members and the public; and foster affiliation with the National Wildlife Rehabilitators Association and the International Wildlife Rehabilitation Council (WRNBC 2002). Membership in the Network is not mandatory for BC rehabilitators, but is recommended by permitting agencies.

Annual permits for BC rehabilitators are administered by federal and provincial agencies. Federal agencies are the Canadian Wildlife Service (for migratory birds designated under the Migratory Birds Convention Act, 1994; Government of Canada 1994), and the Department of Fisheries and Oceans (for marine mammals governed by the Fisheries Act; Government of Canada 1985). The provincial BC Ministry of Water, Land and Air Protection regulates rehabilitation of other species (amphibians, reptiles, non-marine mammals, and birds not under federal authority) under the Wildlife Act (Province of British Columbia 1996a). The Prevention of Cruelty to Animals Act, enforced by the BC Society for the Prevention of Cruelty to Animals, also applies to wildlife in captivity in BC (Province of British Columbia 1996b).

METHODS

In the summer of 2000, I volunteered one day a week at a rehabilitation facility to actively participate in wildlife rehabilitation and gain insight into its goals and obstacles. Volunteering also allowed informal discussions with rehabilitators, to hear about their personal experiences, how they arrived in their positions, and the daily expectations and pressures that they faced. In November 2001, a questionnaire on

facility demographics was administered to a representative of each facility at the annual meeting of the Network (Appendix VI). The survey also requested the participation of a senior rehabilitator from each facility in an interview. Rehabilitators who did not attend the meeting were contacted by telephone and asked to participate. Eight government wildlife officials, affiliated with rehabilitation through permitting or enforcement, were sought based on their high level of interaction with rehabilitators and to achieve a wide geographical representation. These officials, and five veterinarians associated with rehabilitation, were contacted by telephone and asked to participate in an interview regarding their view of rehabilitation in BC and its stakeholders.

Interviews and analysis

The interview used open-ended questions which focused on individuals' views and interpretations of rehabilitation goals and impediments, their own role in rehabilitation and that of other rehabilitation stakeholders, and the nature of communication and relationships with other stakeholders (Appendix VII). Participants were not given options to choose from; rather, only points raised by participants were discussed. Due to the semi-structured format of the interviews, not all questions may have been asked in the flow of the conversation, but the format permitted the exploration of new ideas raised by participants.

Thirty-nine interviews, lasting 1 to 2 hours, were conducted between December 2001 and June 2002. Most of the 30 in-person interviews were held at participants' facilities. These interviews were recorded on audiocassette and transcribed verbatim. Nine participants were interviewed by telephone due to location or time limitations. Notes were taken during these conversations and typed into a format similar to the transcribed interviews. One additional participant replied by mail to written questions.

The analysis of the interviews was mostly descriptive, focusing on the language used and key concepts, values, and themes raised by participants. Interview transcripts,

coded to ensure confidentiality of participants, were read and re-read. Emerging ideas in the text were recorded through a process known as "open coding," whereby individual sentences are assessed and notes are made alongside the text (Crang 1997). Relationships and patterns within and between general interview topics, and those that related to certain rehabilitation subjects, were identified. As reoccurring themes developed, they were assigned to categories by codes which helped to organize the texts. Quotes are used in the results to illustrate a typical attitude or an extreme view about an issue, or to demonstrate the variety of participant experiences and beliefs. Categories for main goals and impediments (Tables 2-1 and 2-2) were developed either from direct phrases mentioned by participants such as "public education" or from interpretations of the transcripts; for example, "getting pleasure out of it yourself" was coded as "personal satisfaction."

Participant description

In order to maintain confidentiality, participants will be referred to by group association: veterinarians, officials, and rehabilitators. The five veterinarians, each with 17 to 25 years of veterinary experience, were either Network members or recommended by Network members due to their current or past involvement in rehabilitation. Three practiced mainly small animal medicine and occasionally treated wildlife brought by the public. Two practiced wildlife medicine, one in a non-clinical setting and the other full-time in a rehabilitation facility. Of the eight government wildlife officials, seven were from the BC Ministry of Water, Land and Air Protection, each representing one provincial management region; the eighth was a Canadian Wildlife Service (federal government) official. Officials included technicians, biologists, and enforcement officers. They had been employed 10 to 28 years with their respective agencies in wildlife capacities.

The 27 rehabilitators included 17 facility founders. Of the 27, 16 lived on the facility site or provided in-home care, four were no longer directly involved in animal

care but performed duties such as director, office manager, or naturalist, and three had retired from practice. The 24 rehabilitators who practiced in a non-zoo or aquarium setting will be called primary rehabilitators. These individuals had been involved in rehabilitation for 3 to 30 years (average 14 years). Eighteen of the 24 primary rehabilitators were women. Currently or when last active, 19 primary rehabilitators participated full-time in rehabilitation, although some had additional part-time employment, and eight of these individuals were paid for their rehabilitation activities.

Overall, 21 BC facilities and one facility in a neighbouring jurisdiction with ties to the Network participated in the research. Seventeen facilities had permits to rehabilitate species regulated by both provincial authorities and the Canadian Wildlife Service, and one of these facilities also had a Department of Fisheries and Oceans permit. Four facilities had only provincial rehabilitation permits and one facility had only a Department of Fisheries and Oceans permit. Sixteen facilities were registered as non-profit societies. At the time of research, 20 facilities had current Network memberships, 12 had International Wildlife Rehabilitation Council memberships, and 11 had National Wildlife Rehabilitators Association memberships.

RESULTS

Main goals and impediments of rehabilitation

All participant groups agreed that the primary goals of rehabilitation are humane care of injured and orphaned animals until release or euthanasia, combined with public education and awareness to prevent such problems in the future (Table 2-1). However, the groups differed in the breadth of additional goals they identified. Numerous rehabilitators identified public service (by receiving and treating animals brought by the public), providing opportunities for research in wildlife medicine and biology, developing rehabilitation expertise, and serving as an environmental indicator by monitoring diseases and problems in the environment, as additional goals of rehabilitation. Other

goals, namely reducing human impact on wildlife, personal satisfaction for the rehabilitator, and contributing to conservation of species, were stated by a few rehabilitators, but not by any participants from the other groups. All veterinarians cited humane care to release or euthanasia and public education (in order to address the causes of injury and "not just treat the symptoms, damaged animals") as the main goals of rehabilitation. Government officials identified public education, humane care, and public service ("by satisfying the public demand not to kill injured animals"), as the main goals of rehabilitation.

Table 2-1 Number of participants (rehabilitators, officials, and veterinarians) that identified various goals of wildlife rehabilitation

Goals identified*	Participant group		
	Rehabilitators (27)	Officials (8)	Vets (5)
Humane care until release or euthanasia	21	6	5
Public education and awareness	19	7	5
Public service	7	4	1
Providing opportunities for research	6	0	1
Developing rehabilitation expertise	5	0	1
Reducing human impact on wildlife	4	0	0
Personal satisfaction	4	0	0
Serving as an environmental indicator	3	0	1
Conservation of species and rare species	3	0	0

*Participants could respond with multiple goals; hence, column totals do not sum to the number of individuals per group.

Lack of funding for facilities, supplies, and staff was cited by most rehabilitators as a major impediment to achieving rehabilitation goals (Table 2-2); however, over half of the rehabilitators either felt that a lack of non-monetary government assistance or a lack of awareness, acknowledgement, and philosophical support by government, were important impediments that may be more easily overcome than financial constraints.

Public ignorance, causing wildlife to be injured and young wildlife to be picked up and taken into care unnecessarily, as well as a lack of public awareness about wildlife and rehabilitation were also seen as impediments by six rehabilitators. Several rehabilitators believed a lack of time and lack of trained people impeded their ability to achieve their goals. Veterinarians believed the primary impediment to rehabilitation was a lack of funding because "wild animals don't come with owners." Public ignorance about rehabilitation was also mentioned by two veterinarians. Officials saw impediments being mostly financial, stating that money could be used for training, facilities, and hiring staff. Two officials indicated there is a need to provide more training opportunities. Limited government assistance for rehabilitation was also mentioned as a possible impediment to rehabilitation by two officials.

Table 2-2 Number of participants (rehabilitators, officials, and veterinarians) that identified various impediments to the goals of rehabilitation

Main impediments identified*	Participant group		
	Rehabilitators (27)	Officials (8)	Vets (5)
Lack of funding for facilities, supplies, staff	20	6	5
Lack of non-monetary government assistance	7	2	1
Lack of awareness, acknowledgement and philosophical support by government	8	0	0
Public ignorance leading to animal injuries, lack of awareness about wildlife and rehabilitation	6	1	2
Lack of time to care for animals	5	0	1
Lack of trained staff, new rehabilitators, volunteers	5	1	0
Lack of training opportunities	2	2	1
Bad rehabilitators, marginal facilities	2	1	1
Rehabilitators' personal issues	1	1	0
Lack of post-release studies, feedback after release	0	1	1
Burnout	1	0	1

*Participants could respond with multiple impediments; hence, column totals do not sum to the number of individuals per group.

Rehabilitators' view of their role and their peers

Given that rehabilitators recognized a broad range of goals for rehabilitation, they saw themselves fulfilling many roles in promoting wildlife welfare and conservation. Although they believed that rehabilitation "has come far", they suggested that it still needs a more professional, scientific basis. They believed it will only be respected as a profession if formal training and standards are accepted and universally employed by rehabilitators, and further recognized by permitting bodies and the public. Almost all the rehabilitators had been to facilities that they felt should not have been operating, and they stressed the importance of addressing these concerns because problems reflect badly on all facilities. Several rehabilitators suggested that this situation should be addressed from the start with new rehabilitators, since some beginners may think they "can do it on their own," and consequently, animals can suffer.

Eleven rehabilitators discussed rehabilitation's poor communication and internal politics, which they believed to result from conflicting passions and beliefs. They identified communication issues such as competition, personal jealousy, rumours, and bad reputations. These "traditional rivalries" were generally thought to be based on differences of opinion on the key contentious issues of treatment techniques, euthanasia, and use of non-releasable animals (Chapter 3). Three rehabilitators stated that they preferred to "stick to [themselves], do [their] own thing" and did not want to become involved with others. Many rehabilitators believed that this reflects a common belief among many that they are not "people-people."

Fifteen rehabilitators communicated regularly with other rehabilitators and did so generally with nearby facilities and with large or specialized facilities for the purposes of transferring animals, sharing information and resources, seeking advice or opinions on treatment, and for social reasons. The frequency of communication varied from daily and weekly by some rehabilitators, to one or two times per year by others. Although most rehabilitators were Network members, several stated that they also had contact with

non-members in their area. Despite the 10-year history of the Network, eight rehabilitators felt that there is still a lack of communication among BC rehabilitators. Although most rehabilitators felt positive about the Network, three suggested that the Network is currently static, floundering, and that "it feels that the Network still hasn't quite decided on its role." Most Network members had participated in several meetings and many had served on the Board of Directors or participated in Network discussions on a variety of issues. Five rehabilitators stated that they have reduced their participation in the Network for political reasons or lack of time. Two member rehabilitators rarely or never participated in Network activities; several reported that it is often hard to get away and that the meetings, although educational, were inaccessible. One rehabilitator felt they did not "need" the meetings and a few stated they preferred spending time with their animals rather than with other rehabilitators.

Rehabilitators also discussed how they began their rehabilitation activities. Eight of the 24 primary rehabilitators started when they found an injured or orphaned animal and could not find anywhere to take it, or they saw a need in their community for such a service. Another eight became involved in wildlife rehabilitation as an extension of their activities in domestic animal care. Rehabilitation was an extension from academic animal studies for another four primary rehabilitators, while another four began their involvement as volunteers at existing facilities. Nine of the 27 rehabilitators spoke of animals as being a large part of their young lives, as several took in injured wildlife and unwanted pets from a young age. Twenty-one rehabilitators (either currently or in the past), were also caregivers for their own children, special-needs children and adults, ailing parents, spouses, medical patients, or domestic and zoo animals. The majority of these rehabilitators were women and few were paid for these additional caregiving activities.

Rehabilitators' views of veterinarians

Rehabilitators reported various degrees of contact with veterinarians. Most often, small or mixed-animal vets acted as consultants, providing services on a monthly or even weekly basis. Three facilities had vets on staff, two facilities had one or two veterinary visits per year, and two stated they did not have veterinary contact. Overall, rehabilitators viewed their relationship with their consulting vets as positive. A few mentioned having encountered vets that were not "keen on rehabilitators," since rehabilitators were not trained in recognized programs. One such rehabilitator stated that "some vets out there think that they are gods and that rehabilitators have no place on this earth." Rehabilitators suggested that in many cases, vets do not have much experience with wildlife, and often learn from and with rehabilitators. One rehabilitator stated that it was very important for rehabilitators to support and inform veterinarians of what rehabilitators can do and what facilities exist for animal placement. Rehabilitators recognized that veterinarians have businesses and that their services cannot always be provided at no or little cost, but as one rehabilitator pointed out, the wildlife "belongs" just as much to the veterinarian as to the rehabilitator. A few rehabilitators felt that those veterinarians willing to work with rehabilitators should have consistent fee schedules, and perhaps offer their time at a reduced or no cost.

Rehabilitators' views of government

Five rehabilitators shared the view that both provincial and federal government agencies see rehabilitation as "kind of a joke" and do not recognize rehabilitation as a worthy or legitimate activity. Three rehabilitators reported encountering very negative attitudes towards rehabilitation by government officials; one stated that to government, rehabilitation is a "total waste of money, time, and effort." Many rehabilitators blamed this attitude for the unwillingness of certain government personnel to assist rehabilitators. Rehabilitators recognized that the government wildlife agencies have

mandates for population and species protection, and all agreed that rehabilitation has little impact on species conservation. However, rehabilitators stated that they regard animals as individuals, not just as members of populations. Additionally, many rehabilitators felt they also promoted environmental and species conservation in their practice and interaction with the public; as one rehabilitator suggested, "through rehabilitation, people become sensitized to the needs of wildlife and from there it is a very short step to habitat and water conservation, forest protection, and the need for a healthy environment that includes wildlife."

Rehabilitators held mixed attitudes towards government agencies and personnel, generally based on their own experience with local officials. Many rehabilitators believed that the government agencies "govern [wildlife], but they don't value it." Of the 20 rehabilitators who discussed their relationship with the provincial government, 15 believed that they currently have a good relationship with their local representatives, but several of these had poor relations in the past, and many were aware of rehabilitators who did not have good rapport with their own local officials. Further, nine of these rehabilitators felt that the provincial government policies and non-monetary support for rehabilitation were not sufficient, and that officials' attitudes and involvement varied greatly by region. Of the remaining rehabilitators who commented, four strongly felt that they received no support from the provincial government and another stated that they had no regular contact with the provincial government. Four of these five had very positive relations with other rehabilitators. For those facilities with federal permits, most rehabilitators reported much less frequent interaction with these agencies than with the provincial government, and had no strong feelings about the federal agencies. However, one rehabilitator stated that the Canadian Wildlife Service has "no clue" as to what is going on at their facility and several others indicated that they had never been inspected by a Canadian Wildlife Service representative.

Rehabilitators saw the role of the government agencies as establishing guidelines, conducting inspections, issuing permits, and addressing complaints about facilities. However, 20 rehabilitators suggested that rehabilitation guidelines are below standard or inconsistently regulated, or that inspections are not regularly conducted. Rehabilitators also discussed other examples of the lack of non-monetary support for rehabilitation, stating that in some regions permits are not issued promptly or at all in some years, and complaints about marginal facilities or the public keeping wildlife are not adequately addressed. They called for the enforcement of standards in order to maintain the quality of rehabilitation efforts. One rehabilitator stated, "the government by-and-large is not enforcing their own legislation," and pointed out that although the government has expectations of rehabilitators based on the permits and Acts, when rehabilitators have a problem with a person or organization not abiding by the Act, they are not supported by the government. As an example, one rehabilitator reported receiving an "emaciated" animal from a non-permitted individual conducting rehabilitation, but did not receive government support in trying to end this individual's activities.

Ten rehabilitators also wished they had practical assistance from government, including aid in animal transportation, resource materials, and advice on release sites and on non-native species. Two others recommended that government agencies should encourage the public to use only properly permitted facilities, and should clarify that rehabilitators are permitted but not funded by government. Three also recommended that the government should cooperate with the Network in developing non-technical pamphlets on wildlife laws for the public. Although the need for non-monetary support was highlighted by some rehabilitators, others just wanted a sense of validation from government agencies that their efforts were a legitimate option for injured and orphaned wildlife. However, one rehabilitator did not want any further government involvement, as that might increase government control over their activities.

Veterinarians' role and view of other stakeholders

According to the veterinarians, their role in rehabilitation is to provide direct medical care, whereas rehabilitators provide first aid and long-term care until release. Veterinarians emphasized that both groups are important. Three veterinarians claimed that too many rehabilitators have poor relationships with vets. Veterinarians recognized that the public, rehabilitators, and they themselves get "warm fuzzies" from helping wildlife. However, four veterinarians emphasized the importance of rehabilitators having appropriate motives; one criticized those doing it for personal gratification as merely "feeding their wildlife ego." All vets saw rehabilitators as good-hearted, wanting to help wildlife, performing a tough job for little return, and often making personal sacrifices. One veterinarian stated that rehabilitators are fiercely independent and do not like criticism of their practices, and further suggested that some "cannot handle" euthanasia. Another veterinarian criticized some rehabilitators for "practicing veterinary medicine without a license."

In their experience, three veterinarians saw rehabilitator-to-rehabilitator relations as a power struggle, caused by different ideas on the best treatments, and suggested that this can lead to poor communication of practices and limited resource sharing. Overall, those veterinarians familiar with the Network held a positive view of it and cited its role in communication and education. However, two veterinarians emphasized that the people most in need of upgrading their skills are not involved in the Network and may not be aware of the outreach programs that exist.

Veterinarians saw the government as the "owner" of wildlife and as decision-makers concerned about species protection but not individual animals. Two veterinarians indicated that because of this mandate, and because not all government wildlife personnel are "keen" on rehabilitation, there is often no recognition of "front line activities." They felt that, in many instances, the government creates impediments to rehabilitation. Generally, veterinarians viewed the permitting system as having a good

framework but lacking in enforcement and monitoring. Due to this lack of supervision and unknown levels of veterinary involvement, they suggested a need for cooperative efforts of all stakeholders to prevent the current "free-for-all," where rehabilitators treat and release what and how they want. Three veterinarians recognized that there are few resources in government, but emphasized that government does not necessarily need to fund rehabilitation directly; instead the veterinarians suggested that government could provide supplies, release sites, or educational opportunities for rehabilitators. Finally, one veterinarian suggested there is a need to educate government on rehabilitation's beneficial role in monitoring emerging animal diseases and environmental problems.

Government officials' role and view of other stakeholders

Officials saw their role in rehabilitation as setting its parameters, issuing permits, enforcing permit conditions and facilities, and receiving an annual report. They can also receive animals from the public, dispose of carcasses, address complaints, and for some provincial officials, find homes for legitimate non-releasable animals and give release-site guidance. Although government enforcement officers are intended to monitor activities through inspection, six officials recognized that little inspection is conducted. Seven officials stated they have no role in the standardization of care practices such as diet or euthanasia protocols, but regulate policies and procedures on possession, acceptable facilities, and caging guidelines. One provincial official said that animal care standards had previously been provided and monitored in their region. Further, four officials stated they would like to be able to provide guidelines on what is allowed to be released, humane methods of euthanasia, and standardized care guidelines. Two officials felt that the provincial office is weak at providing rehabilitation information to the regions; in one case, an official stated they felt that the caging standards were outdated and asked the provincial office to reassess them several times. Other officials stated

there is minimum involvement in rehabilitation training and that, generally, rehabilitators must seek out their own information.

All officials stated that there is little communication among provincial regions on rehabilitation, and that they are unaware of other regional policies and permit requirements; consequently, they recognized that regional inconsistencies exist. The provincial officials were unaware of the number of rehabilitators in their region that had Canadian Wildlife Service permits, since they generally had no communication with the Canadian Wildlife Service. Communication with veterinarians was generally limited to the opening of a facility, as veterinarian support is required to obtain permits, but officials stated that there is little on-going monitoring of veterinary participation.

Officials saw rehabilitators having a genuine interest in saving wildlife and recognized that some rehabilitators are very professional. They believed that rehabilitators are highly dedicated and generally do a good job with what they have. Five officials stated they have confidence in rehabilitators and believe that they are more knowledgeable about their practices than most government officials. Officials acknowledged that rehabilitators invest their own money and time but point out that they get personal enjoyment from their activities as well. Three officials suggested that rehabilitators are motivated by emotions and that sometimes they do not always think about its purpose. Further, these officials questioned whether rehabilitation is done to benefit the animal or to "make the rehabilitator feel better." Four officials believed that some rehabilitators can have unreal expectations; one noted that "some want to save everything" and can have difficulty euthanizing animals. All officials felt they have a good working relationship with their rehabilitators, but they recognized that "some government people could not care less about rehabilitation and make it known."

Two officials saw relationships among rehabilitators as competitive, and they felt that some rehabilitators can be defensive, secretive, and take criticism personally. The level of interaction that officials reported having with their local rehabilitators varied

from once a month to a few times per year. Rehabilitators' perceptions of the frequency of this interaction were reported only by a few and also varied from once a month to once a year; however, overall 14 of the 27 felt that non-monetary government assistance was insufficient.

Most officials believed rehabilitation will continue to be a low priority for government in the future. All officials agreed that government wildlife agencies focus on total populations and not individuals. They also believed that rehabilitation has no impact on population or species conservation, and since there is generally no post-release monitoring to show any conservation effect, the government cannot justify funding rehabilitation. Although several officials stated that the provincial government had previously been more involved, with cutbacks and new government policies, they are moving away from direct protection and direct contact with the public and rehabilitators.

DISCUSSION

Wildlife rehabilitation has been defined as "the process of rescuing, raising, and arranging for veterinary medical care of orphaned, sick, displaced, or injured wildlife with the goal of releasing them back to their natural habitats" (Pokras 1997). Although all three groups saw this goal, combined with public education, as the primary goals of wildlife rehabilitation, most rehabilitators and some veterinarians saw a wide range of additional goals. This difference may contribute to the perceptions each group has of their own role, that of others, and the value of rehabilitation efforts. For instance, rehabilitators saw themselves fulfilling many roles beyond a caregiver and educator. By contributing to research, developing expertise, and acting as an environmental indicator, rehabilitators believed they are not only serving injured animals and the public, but are also benefiting wildlife and the environment overall.

In contrast, officials may not attach the same value to rehabilitation efforts because they do not associate these broader aims with the practice; rather, officials saw their own traditional wildlife management role, acting at the population and ecosystem level, as serving to benefit wildlife and the environment. Although rehabilitators' values lead them to care for wild animals at the individual level, they also value the conservation of healthy environments and wildlife populations, and see themselves as benefiting populations and habitat indirectly through education and research. Similarly, a New York survey found that government personnel underestimated the importance rehabilitators placed on the conservation of ecosystems (Siemer and Brown 1993).

Differences in views on rehabilitation goals may also arise because most rehabilitators were care-oriented women volunteering their time and often money, whereas government officials were mostly men in paid positions in an organization originally founded to manage animals for hunting and consumption. Although government wildlife departments now focus on protecting the health of environments, rehabilitators feel that they should be accountable for individual animals as well.

Most participants recognized the limitations set by a lack of funding, but generally only rehabilitators cited a lack of non-monetary assistance or acknowledgement by government as a major impediment. In a National Wildlife Rehabilitators Association survey, communication or interaction with local officers and headquarters staff of government agencies were each cited as an impediment to rehabilitation by fewer than 10% of respondents (TEWRWG 2002). In contrast, in this study, over half of the rehabilitators saw low government involvement as an important impediment. These rehabilitators generally felt that their interactions with local government officials directly affected their practices since this relationship, plus the value officials place on rehabilitation, often determined the level of cooperation on issues of care, permitting, and enforcement. In contrast, only two officials acknowledged that a lack of government assistance could impede rehabilitation.

Some veterinarians and officials in the study questioned whether rehabilitation was done for the benefit of the animal or the rehabilitator. While they acknowledged both personal and humane motives of rehabilitators, overall, vets and officials tended to over-simplify the motivation of rehabilitators based on a narrower view of rehabilitation goals. Although a few rehabilitators acknowledged personal satisfaction as a goal for their activities, rehabilitators generally cited much more diverse motivations.

In the New York survey, Siemer and Brown (1992a) used Kellert's (1996) classification of attitudes towards animals to identify four main motivational themes: a moralistic concern for the ethical treatment of animals and reduction of human harm, a humanistic concern about the suffering of animals, a naturalistic focus that values human contact with wildlife and nature, and an ecologicistic concern that sees biodiversity as critical to human survival. Siemer and Brown (1992a) reported that a majority of New York rehabilitators felt morally obligated to help injured and orphaned wildlife, while fewer expressed humanistic, naturalistic, or ecologicistic motivations. In the study, although not specifically asked, moralistic motivations were explicitly observed in eight rehabilitators as a reason for involvement; these rehabilitators felt that since the majority of rehabilitation cases were human-caused, humans have a duty to reduce or compensate for this harm. Humanistic values were also observed in two of these rehabilitators and in an additional four rehabilitators, as exhibited by one who stated that "our whole rationale for doing it is purely for humane reasons, to reduce suffering." Ecologicistic and naturalistic values were observed less frequently but were reported by three rehabilitators who stated that "if we don't save our wildlife we are killing ourselves" and that despite their intimate contact with wildlife, "I didn't want to make pets of them, I respected and admired their wildness."

The findings show that in addition to their rehabilitation responsibilities, over three-quarters of wildlife caregivers in the study also cared for domestic animals and people in their families or, in a few cases, at paid jobs outside rehabilitation. Although

burnout was mentioned by only one rehabilitator and one vet as a major impediment to rehabilitation in BC, Slotkin (1991) discussed compulsive caregiving in the animal welfare field, referring to such individuals as "humane-iac." Typically, such individuals are vulnerable to burnout, and although they have a strong ability to sense the needs of animals, they rarely recognize their own needs, which can put themselves and the animals they care for at risk (Slotkin 1991). Vets and officials were concerned that those rehabilitators who want to "save everything" may fall into this category of compulsive caregivers who, if acting without guidance, veterinary support, and outreach services, can cause animals in their care to suffer.

Veterinarians and officials recognized the professional abilities of many rehabilitators despite a lack of guidance on animal care standards and monitoring from permitting agencies. Nonetheless, veterinarians expressed concern over the limited amount of veterinary support and outreach services that some rehabilitators seek out. Insufficient veterinary support, care standards, and enforcement appear to be further compounded by inconsistent and scarce communication between veterinarians, rehabilitators, and government, and within and between government wildlife agencies. The inconsistency in provincial dealings with rehabilitators has led to the current situation where government supervision varies greatly among regions. Although regional supervision of rehabilitators was designed to allow local government officials flexibility, the lack of consistency in communicating standard policies and practices to stakeholders is seen by rehabilitators as preventing them from achieving the level of professionalism they desire for their practice.

Better communication and coordination between rehabilitators and government could benefit both parties. Rehabilitators could assist government agencies to further their own conservation messages because rehabilitators generally reach non-hunting audiences that wildlife officials may not contact (Marion 1989). Governments could also use rehabilitators as resources for research and as "eyes in the field" for enforcement

purposes. Rehabilitators can also help governments develop care guidelines and resource packages (identified to be lacking by several officials, vets, and many rehabilitators), so that new and current rehabilitators can be assisted in promoting wildlife welfare. Conversely, rehabilitation in BC could benefit from governments connections to all BC rehabilitators, to promote consistent standards and training. Rehabilitators might also gain confidence and respect from the public if their activities were effectively monitored, and their educational messages were endorsed by government bodies.

A major aim cited by many rehabilitators is to increase the level of professionalism within their community and gain respect as a legitimate profession. To achieve these goals, and to address the identified impediments to rehabilitation, rehabilitators can promote training, ethics, and communication within their own community. The Network can play an important role in increasing the level of consistency, by involving members and non-members, and continuing to work towards standardized provincial practices and accessible training opportunities. Veterinarians can help rehabilitators achieve these goals by providing training. Further, the Network and individual rehabilitators need to be supported by government agencies in order to achieve these goals. Although rehabilitation may remain a low priority for government agencies, it is still possible that government acknowledge rehabilitation as a valid option for injured and orphaned wildlife, and support rehabilitators in finding current information and resources. However, in distancing themselves from direct protection and contact, government agencies are becoming unaware of the needs of rehabilitation stakeholders. In order to create effective relations between policy makers, researchers, and rehabilitators, it may be beneficial to have a designated government representative linked to rehabilitation at the provincial and federal levels.

REFERENCES

- Borgia, L. 2000. Member survey report. *The NWRA Quarterly* 18(4):17-18.
- Crang, M. 1997. Analyzing qualitative materials. In: Flowerdew, R. and D. Martin (Eds.). *Methods of human geography: a guide for students doing a research project*. Essex: Addison Wesley Longman Ltd. pp. 183-196.
- Government of Canada. 1985. Fisheries Act R.S. 1985, c. F-14. Available at: <http://laws.justice.gc.ca/en/F-14/56082.html> Accessed 6 December 2002.
- Government of Canada. 1994. Migratory Birds Convention Act, 1994, c.22. Available at: <http://laws.justice.gc.ca/en/M-7.01/79498.html> Accessed 6 December 2002.
- Haas, K.B. 1998. A history of wildlife conservation and rehabilitation, Part 1. *Wildlife Rehabilitation Today* 9(4):26-31.
- Kellert, S.R. 1996. *The value of life: biological diversity and human society*. Washington: Island Press.
- Marion, W.R. 1989. Wildlife rehabilitation: its role in future resource management. *Transactions of the North American Wildlife Resource Conference* 54:476-482.
- Pokras, M. 1997. Introduction to wildlife rehabilitation purpose and philosophy. In: Moore, A.T. and S. Joosten (Eds.). *National Wildlife Rehabilitators Association principles of wildlife rehabilitation*. St. Cloud: National Wildlife Rehabilitators Association. pp. 7-20.
- Province of British Columbia. 1996a. Wildlife Act [RSBC 1996] Chapter 488. Available at: http://www.qp.gov.bc.ca/statreg/stat/W/96488_01.htm Accessed 6 December 2002.
- Province of British Columbia. 1996b. Prevention of Cruelty to Animals Act [RSBC 1996] Chapter 372. Available at: http://www.qp.gov.bc.ca/statreg/stat/P/96372_01.htm Accessed 20 November 2002.
- Siemer, W.F. and T.L. Brown. 1992a. Wildlife rehabilitators' attitudes and motivations: insights from New York. *Wildlife Rehabilitation* 10:205-220.
- Siemer, W.F. and T.L. Brown. 1992b. *Characteristics, activities, and attitudes of licensed wildlife rehabilitators in New York*. Human Dimensions Research Unit Publication 92-1. Ithaca: Department of Natural Resources, Cornell University.
- Siemer, W.F. and T.L. Brown. 1993. *Key perceptions held by wildlife managers and wildlife rehabilitators in New York: an assessment of communication coorientation*. Human Dimensions Research Unit Publication 93-1. Ithaca: Department of Natural Resources, Cornell University.
- Slotkin, I. 1991. A guide to caring without co-dependence. *Wildlife Rehabilitation Today* 2(3):20-23.

TEWRWG (The Excellence in Wildlife Rehabilitation Working Group). 2002. *Informal survey of wildlife rehabilitation associations in North America*. Minneapolis: National Wildlife Rehabilitators Association.

Throne, E. 1994. Member survey report. *The NWRA Quarterly* 12(1):8, 12(2):7, 12(3):8.

WRNBC (Wildlife Rehabilitators Network of British Columbia). 2002. Available at: www.wrn.bc.ca Accessed 23 November 2002.

Chapter 3 – Conversations with stakeholders: contentious issues in wildlife rehabilitation²

INTRODUCTION

Given that wildlife rehabilitation deals with many types of species and injuries, and involves choices among various methods of care and euthanasia, there is great scope for disagreement among rehabilitators on many issues. Standard protocols and care guidelines exist for some aspects, but some rehabilitators may not access these resources either by circumstance, by being isolated or financially unable to participate, or by choice. Additionally, there are aspects of rehabilitation where standard care protocols are more difficult to implement and as a result, practices are left up to the judgment of rehabilitators.

One contentious issue is the rehabilitation of non-native species, with many arguments for and against the practice (Heckly 1997, Sproat 1997, Tonner and Penn 1997). Non-native species are those that have been introduced into an ecosystem in which they did not evolve, generally as a result of direct, indirect, deliberate or accidental actions by humans. Some facilities avoid the issue of non-native rehabilitation through specialization, and only accept and treat a narrow group of animals such as raptors or marine mammals. Proponents of specialization feel that it also contributes to quality care in rehabilitation because facilities are able to focus their knowledge, time, and energies, as well as caging and supplies, on specific types of animals. Many facilities must also decide whether to keep non-releasable animals permanently in their programs, although some government agencies explicitly prohibit the use of non-releasable animals in education programs.

In the first phase of this study of people involved in wildlife rehabilitation in British Columbia, Canada, the goals of, and impediments to, successful wildlife

² A version of this chapter has been accepted for publication by the *Journal of Wildlife Rehabilitation*, volume 26, number 2, published by the International Wildlife Rehabilitation Council. Reprinted here with permission from the IWRC.

rehabilitation as perceived by rehabilitators, veterinarians, and government officials were identified (Chapter 2). In so doing, several key points of disagreement or controversy over existing practices were acknowledged. This chapter explores these issues in detail and assesses what scope there is to achieve consensus. Specifically, this chapter addresses the handling of non-native species and non-releasable animals, factors that impact care quality, methods of euthanasia, and the role of permits and related enforcement as a means of monitoring rehabilitation practices.

METHODS

Forty semi-structured interviews were conducted between December 2001 and June 2002 with individuals involved in wildlife rehabilitation. These included five veterinarians, eight government wildlife officials, and 27 rehabilitation workers from 22 facilities. Participants, recruitment, interview methods and analysis are described in Chapter 2. In order to maintain confidentiality, participants will be referred to by group association: veterinarians, officials, and rehabilitators. Interview questions were developed based on data gathered from previous volunteer experience and questionnaires (Appendix VII). Briefly, open-ended questions were used to explore participants' practices and views on rehabilitation issues; in a few cases, a yes/no question was asked to ascertain descriptive data about contentious practices before participants discussed why they opted for such practices.

RESULTS

Conservation issues: rehabilitation of non-native species

Participants disagreed sharply over the rehabilitation of non-native species. All rehabilitators, veterinarians, and government officials agreed that there is generally no impact of releasing rehabilitated animals on species conservation, except in a few cases where released animals are endangered, or where large numbers are released into small

local populations. Of the 22 rehabilitators who commented on the care of non-native species, 12 said they approved of their treatment and release, feeling that there is no population impact of the "relatively few" animals released and that there are ethical reasons to treat non-native and native species alike. One such rehabilitator pointed out that domestic cats are a non-native species which also cause damage to native wildlife populations, yet they are not euthanized as a result. Another stated that since they are "not supposed to" rehabilitate non-natives in their region as per government recommendations, they will incorrectly record the species of the non-native animal upon intake (fox sparrow (*Passerella iliaca*) for house sparrow (*Passer domesticus*), for instance), and provide treatment. An additional three rehabilitators, who currently treat most non-natives, stated that they are considering future policy changes to reduce their treatment of non-natives significantly, based on their facility's capability and the abundance of these species in the wild.

Five rehabilitators opposed treating non-native species; they either euthanized all non-natives or used some as teaching animals for volunteers and/or to train predator species with live prey. Two of these rehabilitators also stated that they have caught healthy European starlings (*Sturnus vulgaris*) from the wild to train predator species. Two additional rehabilitators had looser policies, euthanizing most non-natives, but still treating a few in their "weak moments" or when there were no other animals in care for volunteers to learn from. Irrespective of whether they treated non-native species, a few rehabilitators showed favouritism towards predator species, since "they are longer living" and appear to "fight to survive." For example, one rehabilitator stated that they would make an effort to place a non-releasable owl in permanent care but not a robin.

Three veterinarians expressed differing views on treating non-native species. One stated they would not euthanize non-natives as they believed releasing a few would make no difference to the population. Another felt that all non-natives should be humanely euthanized, as precious money is wasted rehabilitating these animals which

damage ecosystems. A third stated they did not differentiate between "bad and good species" but rather on the basis of rarity, noting that "robins are a dime a dozen."

Five of seven provincial officials stated that they leave euthanasia decisions regarding non-natives to the rehabilitators in their regions. These officials agreed that releasing a few non-natives does not generally have an impact on the population. One such official believed that a "starling is no less valid than a robin for many" and others agreed that it is not ethical to kill these species merely because they are disliked. In one region, government wildlife personnel receive all animals before rehabilitators, and euthanize all non-natives. The final provincial official would "encourage" their rehabilitators to euthanize all non-natives.

Quality care: decisions, specialization, and staffing

Generally, rehabilitators stated that they decide whether to rehabilitate individual animals based on a combination of factors including injury severity, species, and potential for rehabilitation and release (Table 3-1).

Table 3-1 Number of facilities reporting different factors as the main basis for deciding whether to rehabilitate animals

Main basis for decisions	Number of facilities
Injury severity, overall condition	21
Species (fit to facility specialization, fit to non-native species policy)	13
Potential for rehabilitation and good quality of life	10
Potential for release in the wild	8
Facility capabilities (available resources, existing caseload)	6
Age	2

To a lesser degree, facility capabilities and age of animals were cited as main decision factors. Final care decisions in nine facilities were made by senior rehabilitators

only. In another eight facilities, senior rehabilitators made many decisions but sought veterinary advice for "grey" areas; in the final five facilities, both vets and rehabilitators made all decisions together.

Decisions relating to injury severity varied among rehabilitators. For example, one rehabilitator stated they will spend over an hour gluing together the skin of a mauled cottontail rabbit, whereas another suggested that some repairs should not be done even if they are medically possible. Two rehabilitators reported using some animals, which are to be euthanized, as "guinea pigs" to attempt new procedures, believing that rehabilitators have an opportunity to learn from the experience. In contrast, a few others strongly believed that testing procedures on animals is inappropriate as most practices have already been proven. To address these differences, many rehabilitators indicated a need for standard facility and care guidelines which recognize that facilities vary in means and methods; this was particularly stressed for new rehabilitators.

Rehabilitators indicated that the type of facility can also affect the intensity of treatment; for example, a few participants noted that homecare facilities generally have people constantly present and may have more time to monitor or keep animals longer. However, several rehabilitators stressed that generally homecare facilities need additional support, as many are not as connected to the rehabilitation community as larger facilities.

Veterinarians indicated that guidelines exist for assessing releasability and most were aware of rehabilitation triage manuals, but they were unsure of their use by rehabilitators. Veterinarians indicated that when they assess an animal before sending it to a rehabilitation facility, they may use stricter release criteria and might euthanize more cases than a rehabilitator would. Overall, veterinarians believed care decisions in a rehabilitation facility should be made by well-trained people or an authority figure, and when a medical decision is required, rehabilitators should consult a veterinarian. Several officials were unsure if government-approved care standards exist. Others suggested

that no such guidelines for care exist and some thought that the Wildlife Rehabilitators Network of British Columbia (the "Network") had standards available. Most officials indicated that the only government guidelines were for caging, and, as one official stated, these minimum requirements were outdated and had been developed for healthy zoo animals. In most regions, officials believed decisions should be made by rehabilitators based on their experience, but that veterinary advice should be sought in medical situations. However, in two regions where all animals must first be seen by government officials or vets before being transferred to a rehabilitator, initial care decisions are made by these individuals.

Of the 22 facilities, six strictly specialized in one animal type such as mammals or birds, or in one animal group, such as raptors. Another five facilities accepted and treated most species, but focused largely on one group such as large mammals, raptors, or waterfowl. All of these facilities believed that specializing allows rehabilitators to target resources effectively and to avoid excessive caseloads. However, several of these rehabilitators also pointed out that it is important that individuals working in these facilities be well-rounded and have a broad knowledge of wildlife care since they may encounter other species in practice. One participant felt that some rehabilitators may think that those who specialize are discriminating against other species. Although specialized rehabilitators indicated a fondness for the species they treated, many chose to limit their intake for other reasons: to improve care; because they began with one species or group and did not want to expand; because permits did not allow additional species; or in two cases, because rehabilitators had allergies to certain species.

All of the rehabilitators in the more generalized facilities had positive comments about specialization and recognized it is a natural progression in rehabilitation. Two of these rehabilitators stated they would like to specialize more if there were other rehabilitators in their region to take other species. An additional rehabilitator pointed out that in rural areas, where there is generally only one facility for thousands of square

kilometres, specialization could actually impede rehabilitation. Three veterinarians suggested that they would like to see more specialization. However, one veterinarian added that although some species do better in small specialized facilities, many species do very well in general facilities. All officials were positive about specialization, and felt that it contributes to streamlining the rehabilitation process.

The presence of paid staff was mentioned by some participants as affecting quality of care. Ten of the 22 facilities had one or more regular, paid staff, either part or full-time. Rehabilitators from these facilities commented that paid staff are highly trained, offer consistency and stability, and are accountable for their work. They also suggested that the ability to pay staff means that facilities can attract people with experience, and that experience can increase and remain within a facility. Several veterinarians and rehabilitators pointed out that although paid staff may be better than volunteers for consistency, paid staff in a larger facility are generally less consistent than a primary caregiver in a homecare facility; however, they felt burnout is higher in homecare situations. Facilities with paid staff recognized that they rely on volunteers, but stated that it is often difficult to find and keep good volunteers.

Public education and non-releasable wildlife

All facilities were involved in public education in some way including telephone advice, direct contact through incoming animals, off-site presentations, displays, on-site tours and open houses, and through websites, advertisements, and pamphlets. A major difference between facilities was the use of non-releasable wildlife as an educational tool. Eleven of the 22 facilities used non-releasable animals for educational purposes in presentations. Of the 24 rehabilitators who discussed the topic, 12 believed in the use of non-releasable animals in education and breeding programs, five strongly opposed keeping any wildlife in permanent captivity, and another seven, although keeping no permanent animals at their facility, occasionally transferred animals elsewhere for

permanent care and felt that limited numbers were valuable for education and breeding programs.

One veterinarian was positive and another was very negative towards the use of non-releasable animals for education, while the three remaining vets did not encourage it and emphasized that limits should exist. One of these three felt that without limits and monitoring, facilities with permanent animals can become "zoos acting under guise of public education." A second emphasized that "simply warehousing [permanent animals] so that the volunteers can go around and feel good about themselves is a mistake." Provincial officials overall discouraged keeping permanent wildlife except for rare or endangered species, which could be used either in breeding or fostering programs, and stated that few permits for non-releasables are given out. Provincial officials stated that they did not want a gradual build-up of non-releasables and felt it was important to limit the numbers of animals kept for education to those that are used often enough to justify a life in captivity. No federally regulated migratory species are allowed to be kept permanently for education purposes.

Rehabilitator education and training

All 27 rehabilitators stated they gained some or all of their training "on the job." Six initially volunteered or trained at facilities, and others had a variety of backgrounds prior to their rehabilitation experience: four rehabilitators had university degrees in animal science or biology; three were trained at zoos; four gained experience from raising domestic animals; two had animal health technician training; and another two were trained as nurses. Over half of the rehabilitators had taken the International Wildlife Rehabilitation Council basic skills training. Many rehabilitators indicated that training opportunities for new rehabilitators were limited, and that more formal local training and upgrading programs are needed.

Most veterinarians were unsure of the training requirements for rehabilitators and believed that most started as volunteers in other facilities or learned on their own through trial and error. One veterinarian claimed that this latter situation can create a "lot of needless suffering in the learning process." This veterinarian also suggested that rehabilitators improve with experience, but it is important that they recognize the limits of their abilities. Several veterinarians indicated that more rehabilitator education and training are needed, as learning and experience are key to making sound care decisions. Officials were aware that there is no formal rehabilitation training required or provided by the government agencies. Generally, officials viewed the level of rehabilitation experience and/or training as appropriate for the service provided, and believed that rehabilitators should consult a veterinarian if they are not confident making a decision or performing a procedure.

Euthanasia

All rehabilitators saw euthanasia as a form of release from suffering and many considered that they must be able to euthanize because injured wildlife have a right to a humane death. Veterinarians stressed that rehabilitators are not failing by euthanizing and, in fact, rehabilitation should include a significant amount of euthanasia. Two veterinarians believed that rehabilitators are currently not euthanizing enough. Officials stated there are no requirements as to who should perform euthanasia. Although one official felt a veterinarian should perform all euthanasia, the majority of officials stated that it does not matter who it is, as long as the methods are humane and the individual is properly trained. Most officials were not aware of specific rehabilitation euthanasia guidelines and stated that the government agencies do not provide such information. One official cited humane euthanasia guidelines of defined by the Canadian Council on Animal Care (a national body that oversees the use of laboratory animals, including

wildlife, in Canada), but felt that these guidelines are probably not familiar to most rehabilitators.

Euthanasia was performed by varying combinations of rehabilitators, vets, and animal health technicians in the 22 facilities (Table 3-2). Rehabilitators had a variety of euthanasia training. The majority of facilities had in-house training, conducted by either senior staff or their consulting veterinarian. Two rehabilitators had also taken euthanasia courses given by animal shelters and three stated that they learned how to perform euthanasia from books or on the Internet. Seventeen rehabilitators commented on the methods of euthanasia their facility employed (Table 3-3). Of the 16 facilities that used injections, nine also used other methods to euthanize certain species. For example, injections were often used for mammals and large birds and either gas or physical methods for smaller birds. Seven facilities reported using injections to euthanize all animals, and one facility stated they used only chloroform. Methods for euthanizing prey animals (generally mice) raised for feeding wildlife in care were discussed by several rehabilitators, with the majority performing physical euthanasia.

Table 3-2 Number of facilities reporting different types of euthanasia provider

Provider of euthanasia	Number of facilities
Rehabilitators only	8
Rehabilitators and consulting vet	6
Rehabilitators and on-staff vet	3
Consulting vet only	3
Rehabilitators and on-staff animal health technician	2

Table 3-3 Number of facilities reporting different euthanasia methods

Euthanasia Method	Number of facilities
Injections	
T61	3
Euthanol	3
Agent not specified	10
Total	16*
Physical	
Cervical dislocation	3
Blunt trauma to head	1
Gun shot	2
Total	6*
Gas	
Carbon Dioxide	3
Chloroform	1
Total	4*

*Some facilities use more than one method of euthanasia.

Permits, inspections, and enforcement

Generally, rehabilitators looked to the government process of permits, inspections, and enforcement to maintain consistent high care standards, although many were unsatisfied with the current system. One representative called for some form of centralized control:

There should be a strong central organization that all wildlife shelters would be mandated to join. This central 'head' should have experts to inspect and advise shelters (preferably a wildlife veterinarian) and the 'head' should have the 'teeth' to advise federal and provincial license providers to either grant or revoke any license. And the 'head' should have the power to bring unlicensed premises under their control. If we don't soon get rehabbers into a strong unit, we may find ourselves redundant - taken over possibly by [organizations] such as the SPCA - who here at least know next to nothing about wildlife.

Rehabilitators had varying experiences in obtaining permits. Although many stated that they had no difficulty obtaining provincial permits, most were aware of others who had some difficulties. Six rehabilitators stated they had encountered administrative problems in obtaining provincial permits, and, in fact, four of these did

not have permits to rehabilitate for several years. Additionally, a few rehabilitators admitted that they accept and treat animals that they are not permitted for. A few provincial officials stated they did not bother writing permits for some rehabilitation activities, particularly for temporary rehabilitators, who treat only a few animals and subsequently transfer them. Most rehabilitators with migratory species permits from the federal government stated that they did not have a problem obtaining a permit initially or in renewing their permits. They stated that the Canadian Wildlife Service was quick to send the permits without any inspection or communication. A quarter of these rehabilitators suggested that the agency is not stringent enough in their requirements and should regularly inspect facilities.

Although some rehabilitators had difficulty in obtaining permits due to a lack of administrative support, more than a third of rehabilitators still complained that the quality control of provincial permitting is not strict enough; as one rehabilitator stated, permits are "given to everyone and their uncle." A few rehabilitators also felt that permits should regulate the allowable number of non-releasable animals and how they are obtained. However, the biggest criticism by most rehabilitators was that permits are rolled over without inspection; they felt that in order for the permits to be valuable, facilities need to be inspected and permits must be enforced to ensure that legitimate species and numbers are in care. Twenty rehabilitators suggested the need for more permit inspections to assess species types, numbers, and caging, and spot checks for quality of care. A few rehabilitators also suggested that they are aware of situations where individuals are still taking in animals after their permits had been revoked, and that permits have been renewed to individuals who have had many complaints made about their care. Four veterinarians also perceived minimal monitoring and enforcement of rehabilitation, and felt that this creates a "free-for-all" where a rehabilitator can do whatever they want, a situation which may not always be beneficial for the animals.

Although provincial rehabilitation permits require that facilities be prepared for initial and annual inspections, officials stated that initial inspections are not done in some cases, and facility inspections are not conducted annually in all regions. Only two provincial officials reported a minimum of one annual visit in their regions and stated that permits were renewed partially based on this visit. Other provincial officials were uncertain about the frequency of inspections in their regions, and most were generally unaware of Canadian Wildlife Service inspection frequency. The federal official stated that the Canadian Wildlife Service aims to enforce rehabilitation permits once every four years, or more often for active facilities, and felt that there is currently adequate enforcement by both government agencies. Four of the seven provincial officials believed that there is enough enforcement at present and no increase is needed in their respective regions. Provincial officials stated there is no inspection for temporary rehabilitation permit holders, and that these individuals' applications can be approved over the telephone. One official suggested a need for additional enforcement for these rehabilitators but indicated there are no resources for this. A few officials recognized that government personnel are not necessarily qualified to make care assessments, as this is not their background.

All rehabilitators felt that, ideally, provincial and federal agencies should enforce regulations and monitor facilities to ensure that they abide by permit conditions; however, only three believed that the current level of provincial enforcement was sufficient at their facilities. Overall, rehabilitators believed that Canadian Wildlife Service enforcement was insufficient, as many facilities have never been federally inspected. Indeed, of the six facilities reporting on the frequency of migratory bird permit inspections, only two had had one inspection since their facilities opened. Several rehabilitators attributed the low frequency of inspection to government understaffing and lack of time. They recognized that officials who drop animals at facilities can gain some awareness of a facility's practices from this contact, but they do not see these

visits as official inspections. Overall, rehabilitators and officials had different views on the purpose of enforcement; rehabilitators see enforcement as a quality control, whereas officials stated enforcement assesses whether a facility is operating according to permits and wildlife regulations, and does not address care standards, although they indicated that they are able to act on cruelty or neglect cases which are covered by the Prevention of Cruelty to Animals Act (Province of British Columbia 1996).

In light of government's little interest or ability to increase their involvement in permit enforcement and care inspections, several rehabilitators suggested that the Network become involved in enforcement or certification of facilities; however, just as many rehabilitators disagreed, stating that the Network's internal politics might influence its judgment and obscure its objectivity; also, it was pointed out that the Network has no legal authority to enforce standards. There was agreement, however, among many rehabilitators and several vets and officials, all of whom called for standards in animal care, release criteria, record keeping, training and policing, as well as specific government regulations for facilities, euthanasia, and non-releasable animals. Additionally, some members of all groups agreed that any care enforcement should be conducted by a team of individuals representing different wildlife stakeholder groups.

DISCUSSION

The results identified several key areas of disagreement among wildlife rehabilitators: the treatment of non-native species, the use of non-releasable animals, methods of euthanasia, and the purpose of permitting and enforcement.

The treatment and release of non-native species was a major point of contention, with just over half of the study's rehabilitators approving such treatment, and most officials stating they do not require their local rehabilitators to euthanize non-native species. Arguments for the rehabilitation of non-native species, both in this study and in previous literature, include suggestions that rehabilitators often learn from working on

high numbers of non-natives, that these species have the same right to live as natives, and finally, that there is a negligible effect of released non-natives on the overall population (Sproat 1997, Tonner and Penn 1997). In contrast, those opposed to non-native rehabilitation argue that non-native species are taking up precious resources which could be better used for the treatment of native species, that non-natives are a hazard to native wildlife and the environment, and that there are limits to the carrying capacity of the environment which may be exceeded by releasing non-natives (Heckly 1996, Sproat 1997, Tonner and Penn 1997). The split in opinions of BC rehabilitators, based on many such arguments, is compounded by a lack of regulatory guidance, and presumably leads to mixed messages being sent to the public about these species.

Moreover, some facilities used non-natives, particularly pigeons and starlings, to train volunteers and to train predator species with live prey. Although live prey training is important for the rehabilitation of many predatory species, as Orendorff (2002) suggests, prey animals need to be treated with the same care as those animals to which they will be fed.

The second key area of disagreement was the use of non-releasable animals in educational programs. Several rehabilitators opposed any permanent captivity; many others used non-releasable animals for public education, although most felt that the number of non-releasables per facility should be limited.

For both of these issues – non-native species and non-releasable animals – most participants perceived a need for defined regulations and enforcement in order to provide consistent quality care to these species, consistent messages to the public, and to relieve tensions among rehabilitators.

Euthanasia was a third area where practices differed, raising some controversial issues. Some rehabilitators were not aware of the most current acceptable euthanasia practices and what other rehabilitators used. For example, chloroform is no longer recommended as a euthanasia agent due to its toxicity and carcinogenicity to humans

(Canadian Council on Animal Care 1993), but it was used by one facility. Ether, although not used by any survey participants, has had recent use in other areas (Wolff 1992), but is not recommended because of danger to handlers (Canadian Council on Animal Care 1993, Richards 1993). The non-registered injectable T-61, although taken off the market in the US against the wishes of some rehabilitators and vets (Richards 1993), is an acceptable euthanasia agent according to the Canadian Council on Animal Care (1993) and is used by some BC rehabilitators despite being described as an inhumane method in the Network protocols of care (WRNBC 1991). Research may be needed to determine the humaneness of this product.

Overall, there is a need to inform rehabilitators and officials about the most current standards for euthanasia and to provide a forum for stakeholders to communicate about issues surrounding euthanasia training and methods. Although some rehabilitators have veterinary input on most of their euthanasia cases, many do not have frequent contact with veterinarians and need to be qualified to handle a variety of species. Therefore, it may be of benefit to offer rehabilitators euthanasia training programs similar to those offered by humane societies.

Members of all participant groups identified a need for standards for facilities and care practices. Both the International Wildlife Rehabilitation Council and the National Wildlife Rehabilitators Association provide ethical and care guidelines for rehabilitation and establish criteria and standards to promote professionalism in the practice. Together, they jointly produced Minimum Standards for Wildlife Rehabilitation (Miller 2000) including standards for cleaning, disease control, caging, euthanasia, release criteria, and record keeping. The organizations also produce publications addressing ethics, handling, diets, and post-release studies, in addition to offering basic and advanced rehabilitation skills seminars and workshops. In Canada, care guidelines for wildlife, including euthanasia methods, are also available through the Canadian Council on Animal Care (1984, 1993, 2002).

Although the above standards are freely available, their use does not appear to be widespread, and their use may be confined to those rehabilitators who access them through professional associations. A lack of consistency in the use of standard care protocols appears to create uncertainty among rehabilitators; for example, one rehabilitator suggested that it is difficult to make decisions to transfer animals to other facilities, since they are not certain of the receiving facility's care standards. Improved communication and support of existing care protocols among rehabilitators, and between other stakeholders, is required in order to achieve a high level of animal care in rehabilitation. Specialization was also suggested by many participants as effectively contributing to quality care, although it was recognized that there is a valid role for both general and specialized facilities.

Although most officials felt that current rehabilitation training levels were sufficient, rehabilitators and vets disagreed, and indicated a need for locally relevant and accessible training, not only for Network members but for all rehabilitators. There is a need to inform rehabilitators of the resources available and perhaps direct them to more sources with content relevant to their particular jurisdictions, particularly on legislation and permitting. Government agencies, who are also not fully aware of the information available from these organizations, could also become more informed in order to direct new and current rehabilitators to the most recent practices and research. In particular, temporary rehabilitators should be informed and trained, since these individuals often are isolated, have less experience, are not monitored, and yet deal with a large variety of animals and injuries.

Rehabilitators suggested that effective enforcement would also contribute to professionalism in rehabilitation. Most rehabilitators and vets felt there was a lack of monitoring and inspection, which allowed some rehabilitators to continue their activities without permits or with unauthorized animals. Both an increase in inspection frequency and intensity were called for by these groups to improve quality control of care, whereas

officials believed that current enforcement was sufficient to assess permit compliance. Government wildlife personnel are not necessarily trained in wildlife identification or species care, nor are all rehabilitators aware of proper care practices for all species. This situation might be addressed by following the model of the Alberta provincial rehabilitation association, whereby inspection panels are composed of government wildlife officers, a veterinarian, a member of a humane society, and executives of the provincial rehabilitation organization (Wittner 2002). Overall, there appeared to be consensus that any care assessments should be undertaken by a team of stakeholders, although most officials felt that such assessments would not be a priority for government resources. However, in order to assess rehabilitation efforts over the long term, there is a need to consistently monitor rehabilitation care practices.

For some of the contentious issues raised, it may be possible to achieve a degree of consensus. By promoting standardized care and euthanasia policies and establishing limits to the use of non-releasable animals, stakeholders might achieve greater consistency. Some issues, such as rehabilitation of non-native species may never reach consensus, but by clearly outlining their rationale, disagreeing facilities can at least consistently inform the public about both sides of the issue. Finally, there is call by many rehabilitators and veterinarians for more inspection to maintain quality of care and facilities. While additional inspections are unlikely to come from government, there was consensus that a team of rehabilitation stakeholders should serve in this capacity.

REFERENCES

- Canadian Council on Animal Care. 1984. Guide to the care and use of experimental animals, volume 2. Available at:
http://www.ccac.ca/english/gui_pol/guides/english/toc_v2.htm Accessed 7 December 2002.
- Canadian Council on Animal Care. 1993. Guide to the care and use of experimental animals, volume 1, second edition. Available at:
http://www.ccac.ca/english/gui_pol/guides/english/toc_v1.htm Accessed 7 December 2002.
- Canadian Council on Animal Care. 2002. CCAC guidelines on the care and use of wildlife, second draft. Available at:
<http://www.ccac.ca/english/gdlines/wildlife/memo.htm> Accessed 26 January 2002.
- Heckly, S. 1996. Introduced species: options for wildlife rehabilitators. *International Wildlife Rehabilitation Council 1996 Conference Proceedings*:148–152.
- Miller, E.A. (Ed.). 2000. *Minimum standards for wildlife rehabilitation, third edition*. St. Cloud: National Wildlife Rehabilitators Association.
- Orendorff, B. 2002. Raising laboratory mice for food. *Wildlife Rehabilitation Bulletin* 20(2):36–37.
- Province of British Columbia. 1996. Prevention of Cruelty to Animals Act, [RSBC 1996] Chapter 372. Available at:
http://www.qp.gov.bc.ca/statreg/stat/P/96372_01.htm Accessed 20 November 2002.
- Richards, J. 1993. Euthanasia in wildlife rehabilitation. *Journal of Wildlife Rehabilitation* 16(3):3–17.
- Sproat, T. 1997. The controversy of rehabilitating "nuisance" wildlife. *The NWRA Quarterly* 15(2):8–9.
- Tonner, H. and E. Penn. 1997. Should non-native species be rehabilitated? *Wildlife Rehabilitation Today* 8(2):23–24.
- Wolff, K. 1992. Euthanasia and quality of life. *Wildlife Rehabilitation Today* 4(1):50–51.
- WRNBC (Wildlife Rehabilitators Network of British Columbia). 1991. Guidelines for protocol of care. Vancouver: Wildlife Rehabilitators Network of British Columbia.
- Wittner, D. 2002. Wildlife biologist and rehabilitator. Rockyview Wildlife Recovery, Madden, Alberta. Personal communication, 17 December 2002.

Chapter 4 – Defining and measuring success in wildlife rehabilitation³

INTRODUCTION

In order to assess the accomplishments and identify areas of improvement for wildlife rehabilitation programs, we need to define "success" in rehabilitation and agree on appropriate measures. According to one common view, successful rehabilitation requires the release of animals that can function like, and are indistinguishable from, other wild animals in their native environment (Pokras 1997, Mackey 1989). In line with this view, many facilities use their records to measure and convey their successes to the public and government agencies. The main success measure is release rate and, in a few cases, post-release monitoring of survival. However, there are problems with using such records to express facility success, in that facilities differ in how they calculate release rates. Moreover, the release of animals may not be the sole measure of a program's success; for example, educational and research outcomes created by the program may also be important elements of success (Williams 1990, Cox 1998).

In the first two phases of this study of rehabilitation stakeholders in British Columbia, the views of rehabilitators, veterinarians, and government officials on the goals and impediments of wildlife rehabilitation (Chapter 2), and on contentious rehabilitation issues such as the release of non-native species and methods of euthanasia (Chapter 3), were explored. This chapter assesses the effectiveness of release records in measuring rehabilitation success, then investigates how the three groups of stakeholders define success with respect to the identified goals of rehabilitation, and finally discusses other potential criteria of success. As Smith (1996) notes, standard evaluation of practices can help to provide justification for rehabilitation efforts that are often considered emotive and unscientific.

³ A version of this chapter has been submitted for publication. Dubois, S. and D. Fraser. 2003. Defining and measuring success in wildlife rehabilitation. *Wildlife Rehabilitation*.

METHODS

Summary records

Rehabilitators in British Columbia are required to submit annual summary records of animal intake to their respective permitting agencies. Annual permits for BC rehabilitators are administered by federal and provincial agencies as described in Chapter 2. Summary records include (if known) characteristics for each animal admitted: species, sex, age, source location, cause of injury, general diagnosis, and final disposition (released, died in care, euthanized, dead on arrival, or transferred to another facility). The date received, as well as the final disposition date, are also recorded by some facilities. From these records, release rates are calculated by many facilities in order to monitor their success in releasing rehabilitated animals to the wild.

Annual rehabilitation summary records from facilities and government agencies in BC were collected in the summer of 2000. Hard copy records from six facilities were entered into a newly created database. In 2001, further records from two facilities were gathered and entered into the existing database, and electronic records from three facilities were assembled, edited to conform to the database format, and combined with the previous data. All records were edited to adhere to standardized categories for age, sex, species, and final disposition. Categories of causes and diagnoses were generated from common terms used among facilities (Appendix III and IV). The number of days in care was calculated for those records that included dates of intake and final disposition. Informal discussions with rehabilitators and officials clarified terms and codes used in recording data.

The final database included 29,613 records representing individual wild animals from 11 BC facilities between 1990-2001, with each facility contributing data from 1-12 years (Table 4-1). Three facilities admitted fewer than 200 animals per year, five admitted between 200-500 annually, and three admitted over 2000 annually. Combined, these facilities treated a total of 221 bird, 49 mammal, and six amphibian and reptile

Table 4-1 Summary of records for 11 facilities between 1990-2001

Description	Animals	
	Number	Percent
Intake		
Birds	24,439	82.5%
Mammals	5,156	17.4%
Amphibians/Reptiles	12	0.0%
Total	29,613	100.0%
Disposition		
Released	11,533	40.4%
Euthanized	6,230	21.8%
Died in care	4,139	14.5%
Policy euthanized*	3,807	13.4%
Dead on arrival	1,702	6.0%
Transferred	714	2.5%
Used for research	200	0.7%
Pending	143	0.5%
Permanent care	38	0.1%
Escaped	18	0.1%
Total records with disposition listed	28,524	96.3%
Age categories (birds)		
Adult	8,618	35.2%
Sub-adult	503	2.1%
Juvenile	13,698	56.0%
Egg	62	0.3%
No age listed	1,558	6.4%
Total	24,439	100.0%
Age categories (mammals)		
Adult	850	16.5%
Sub-adult	49	1.0%
Juvenile	4,038	78.3%
No age listed	219	4.2%
Total	5,156	100%
Sex categories (birds)		
Female	3,169	13.0%
Male	3,311	13.6%
No sex listed	17,959	73.5%
Total	24,439	100.0%
Sex categories (mammals)		
Female	1,388	26.9%
Male	1,260	24.4%
No sex listed	2,508	48.6%
Total	5,156	100.0%

*Euthanized because of the policy of the facility, for example to euthanize non-native species.

species. Almost 83 percent of the records were birds and 17 percent were mammals; three facilities specialized in birds and one in mammals. Almost 87 percent of records included a diagnosis of the animal's injury, but less than a third listed a cause. Over half of the birds and 78 percent of the mammals admitted were juveniles. For those animals with sex recorded, there was approximately the same number of males and females for both birds and mammals. Almost all records noted a final disposition (Table 4-1).

Interviews

Forty semi-structured interviews were conducted between December 2001 and June 2002 with individuals involved in wildlife rehabilitation. These included five veterinarians, eight government wildlife officials, and 27 rehabilitation workers from 22 facilities. Participants, recruitment, interview methods and analysis are described in Chapter 2. In order to maintain confidentiality, participants will be referred to by group association: veterinarians, officials, and rehabilitators. The open-ended questions during the interviews focused on individuals' interpretations of the meaning of, and means of assessing, success in rehabilitation, including practices that surround release rates (Appendix VII).

RESULTS AND DISCUSSION

Summary records

The summary records were assessed to determine their usefulness in measuring the success of rehabilitation. According to widely recognized standards (Miller 2000), release rates used to compare facilities should be calculated as:

$$\text{Release rate} = \frac{\text{Total animals released}}{(\text{Total animals admitted} - \text{dead on arrival} - \text{still in care} - \text{transferred})}$$

Overall, 40.4 percent of all the animals were released, 21.8 percent were euthanized either for humane reasons or because of a facility's policy to euthanize certain species

(some facilities did not distinguish between causes of euthanasia), an additional 13.4 percent were euthanized specifically because of facilities' policies, and 14.5 percent died in care (Table 4-1).

Release rates of the 11 facilities varied from 14.5 to 88.8 percent (Table 4-2). However, these rates do not provide an accurate comparison of facilities. For example, for the facility with a release rate of 14.5 percent, three-quarters of their records were missing a final disposition and thus could not be included in the calculation. Moreover, at least one facility in the study did not record animals dying in the first 24 hours in their own calculations of release rates. Thus it is important to qualify conditions impacting the rates and also explicitly state how they were calculated. Although standardized methods of noting final disposition and calculating release rates are available through the International Wildlife Rehabilitation Council and the National Wildlife Rehabilitators Association (Miller 2000), their adoption by facilities is not known.

Table 4-2 Release rates and percentage of deaths by euthanasia in 11 facilities

Facility	Average release rate	Percent euthanized*
1	14.5%	41.5%
2	42.0%	28.5%
3**	52.3%	89.9%
4	29.5%	29.3%
5	48.0%	19.5%
6	56.0%	40.8%
7	88.8%	39.3%
8	65.3%	1.3%
9	41.5%	28.2%
10	29.4%	36.2%
11**	25.9%	74.5%

*Animals euthanized as a percentage of all animals that were euthanized or died in care.

**Facilities with an explicit policy to euthanize certain species.

The number of animals euthanized as a percentage of all animals that were euthanized or died in care also varied widely among facilities (Table 4-2). Some of the variation was due to specific policies of the facilities. In particular, the two facilities with the highest euthanasia rates (89.9 and 74.5 percent) had a policy of euthanizing all non-native species, and the highest release rate (88.8 percent) was from a facility that admitted only raptors (which generally have higher release rates than passerine birds) and did not accept non-native species. Among the remaining facilities, however, there was a tendency for a low rate of euthanasia to be associated with a high release rate (correlation $r = -0.663$). In particular, facility no. 8 where euthanasia accounted for only 1.3 percent of deaths, had a remarkably high release rate of 65.3 percent. It seems possible that animals that would have been euthanized in other facilities were being released from this facility, thus further casting doubt on the use of release rates to indicate success.

One cause of variation was the different release rate for different species (Table 4-3). Release rates were generally lower for non-native species of birds, at least partly because some facilities have a policy of euthanizing non-native species, and other facilities euthanize non-natives preferentially when the facility is at maximum capacity. The northwestern crow (*Corvus caurinus*) also had a low release rate; although native, crows are considered a "non-protected species," and facilities are encouraged by the provincial government not to release them. Apart from these differences due to policy, there were major differences between native species in release rates; for example, 83.8 percent of mallards (*Anas platyrhynchos*) but only 50.2 percent of American robins (*Turdus migratorius*) were released, and 63.5 percent of striped skunks (*Mephitis mephitis*) but only 29.0 percent of mule deer (*Odocoileus hemionus*) were released. Hence, release rates may be expected to vary significantly among facilities based on the mixture of species they admit.

Table 4-3 Release rates for the top ten bird species and top seven mammal species in 11 facilities

Species	Total intake	Release rate**
Native birds		
American robin (<i>Turdus migratorius</i>)	3002	50.2%
Northwestern crow* (<i>Corvus caurinus</i>)	2023	16.0%
Mallard (<i>Anas platyrhynchos</i>)	1518	83.8%
House finch (<i>Carpodacus mexicanus</i>)	1060	59.0%
Barn owl (<i>Tyto alba</i>)	821	66.9%
Steller's jay (<i>Cyanocitta stelleri</i>)	657	58.2%
Glaucous-winged gull (<i>Larus glaucescens</i>)	605	53.7%
Non-native birds		
European starling (<i>Sturnus vulgaris</i>)	1825	11.1%
Rock dove (<i>Columba livia</i>)	1775	29.4%
House sparrow (<i>Passer domesticus</i>)	953	30.7%
Native mammals		
Raccoon (<i>Procyon lotor</i>)	707	37.7%
Douglas' squirrel (<i>Tamiasciurus douglasii</i>)	202	62.0%
Mule deer (<i>Odocoileus hemionus</i>)	133	29.0%
Striped skunk (<i>Mephitis mephitis</i>)	119	63.5%
Non-native mammals		
Eastern cottontail (<i>Sylvilagus floridanus</i>)	1587	34.4%
Eastern grey squirrel (<i>Sciurus carolinensis</i>)	1181	39.0%
Virginia opossum (<i>Didelphis virginiana</i>)	581	29.9%

*The northwestern crow is a native species but is a 'non-protected species' and facilities are encouraged by the provincial government not to release them.

**Calculated from the ratio of animals released to those admitted alive and that either die in care, are released, are euthanized for injury or policy reasons, remain in permanent care, or escape.

Interviews

Given the problems in interpreting release rates, interview data were analyzed to explore how rehabilitators and others define rehabilitation success and what other measures of success could be used.

Defining success

When asked to identify "what success is in wildlife rehabilitation," most stakeholders identified more than one element (range 1 to 5, median 3), which could be divided roughly into two categories: actual components of success and factors that influence success (Table 4-4). Although releasing healthy animals was mentioned by the greatest number of rehabilitators, many stressed that release is not the most important component of success. Fourteen rehabilitators felt that public education was an important element of success; as one rehabilitator stated, true rehabilitation success is "not just dealing with symptoms of the problem, but trying to address the causes" by educating the public to not cause injuries. Rehabilitators also cited other components of success of a facility including quality care and pre-release conditioning. Several saw euthanasia as another form of "release," in that it reduces pain and suffering of animals, and they believed that it is an important component of rehabilitation success. The service provided to animals, and hence to concerned public, were also cited as elements of success. Additionally, almost half of the rehabilitators felt that success is greatly influenced by their knowledge and skill level, and they believed a successful rehabilitator must be constantly learning and commit to education and training. Many felt that the use of ethical, standardized policies and practices contributes to success, and several cited the support of the community as influencing rehabilitation success (Table 4-4).

Table 4-4 Number of participants (rehabilitators, officials, and veterinarians) suggesting various components of rehabilitation success and factors that influence success

	Number of participants		
	Rehabilitators (27)	Officials (8)	Vets (5)
Components of rehabilitation success*			
Releasing animals that survive in wild	15	6	2
Preventive public education	14	3	1
Quality care and pre-release conditioning	11	5	3
Reducing animal pain and suffering through euthanasia	6	1	1
Public service	4	1	0
Factors that influence rehabilitation success*			
Education and learning of rehabilitators	13	2	1
Ethical, standardized policies and practices	11	3	2
Community support	6	2	1

*Participants could respond with multiple components or factors; hence, column totals do not sum to the number of individuals per group.

Veterinarians saw success in rehabilitation as a combination of elements which affect the care and outcome of animals in the facility, and the use of this knowledge to educate rehabilitators and the public (Table 4-4). One vet also felt that euthanasia equals success for those suffering animals that are unable to meet strict criteria for release. An important contributor to success was described as having ethical, standardized policies and practices.

Most officials saw rehabilitation success as centring on releasing healthy animals and providing high quality care and pre-release conditioning (Table 4-4). Several also emphasized that success is not just based on the number of animals released, but also on the value of preventive public education that creates awareness, concern, and support for wildlife. The success of a facility was seen by officials as being influenced by

its adhering to ethical and standardized policies and practices, and by the education and learning of rehabilitators.

Thus, although many rehabilitation programs use release rates to advertise their 'success', the research findings suggest that a truer assessment of rehabilitation success would include the impact on the individual animals involved, the public, and even on the rehabilitators themselves. While members of all groups identified multiple components of rehabilitation success, more rehabilitators had a broader view of success than members of the other two groups. This may be explained by the wider range of rehabilitation goals recognized by rehabilitators versus other stakeholders (Chapter 2). The greater emphasis placed by rehabilitators on public education as a component of success, and on rehabilitator education as a factor that influences success, may be explained by their enhanced perception of their role as educators and learners in addition to caregivers.

Discussing release rates as the current measure of rehabilitation success

Although release was the most widely acknowledged component of success among stakeholder groups, most of those who cited release emphasized that release rates cannot be compared between facilities, nor can facilities be judged solely on release rates. However, several rehabilitators pointed out that when assessed by species or where conditions are consistent, release rates can give some idea of rehabilitation success. They felt that honest release rates can indicate quality of care within a facility, and when analyzed in a standardized manner, can be used as a guide to improve care and practices. Three veterinarians suggested that release rates are only a measure of the care within a facility, and several officials also felt that release rates are only a measure of animals surviving the duration of care. More than half of the members of both groups stated that release rates give no indication as to an animal's survival in the wild, and that they are influenced by many factors such as: reason for being brought into care (raising a healthy orphan is more likely to result in release than treating a

severely injured animal), source (animals referred by a veterinarian as fit for rehabilitation are more likely to be released than those brought by the public), and species.

Rehabilitators also believed that release rates are a function of many factors including species type (raptors generally fare better than songbirds in care), time between injury and intake, care intensity (which is dependent on rehabilitator and facility resources), staff experience and training, risk taken (if a facility is active in research, developing new techniques, it may have a higher death rate), facility policies (whether a facility treats all species or specializes, and whether they treat potentially non-releasable animals or euthanize them), and uncontrollable factors (disease outbreaks and oil spills often lead to high death rates independent of the level and quality of care given). Several rehabilitators also cited release criteria as a factor and suggested that some facilities are less careful in what they release. All veterinarians further stressed that not all animals released will survive, and one was not confident that rehabilitators are capable of judging the likelihood of survival.

Stakeholders expressed further reservations about release rates. Several veterinarians suggested that release rates can be used to build egos and are often a deterrent to success because rehabilitators feel they need to have high rates. Also, the veterinarians and some rehabilitators felt release rates can be seen as competition. All officials in this study stated that they do not use release rates to evaluate facility success or to compare facilities. However, officials suggested that release rates are often discussed in the context of rehabilitation because they are tangible. Further, they stated that release rates could be an indicator of bad rehabilitation and/or any of the above factors. Officials indicated they want to see high rates but would question extremely high or low rates and would try to determine a reason for such rates. Overall, all groups felt that release rates do not reflect the success of the entire rehabilitation process as they give no indication of release condition or survival after release. More than half of

veterinarians and rehabilitators perceived no standardization of rehabilitation records and recording practices, and some believed that records are "fudged." Many respondents from both groups suggested that some facilities do not record or include animals that are euthanized at intake or those that die within the first 24 hours into their release calculations. Also a few rehabilitators suggested that some facilities take in animals that do not need rehabilitation, thus inflating rates. Although several rehabilitators recognized that standardized methods exist for the calculation of release rates, most facilities use their own formula which may or may not reflect these methods.

Assessing rehabilitation success beyond release rates

Participants discussed how rehabilitation success could be effectively measured, and they listed a variety of measurement methods (Table 4-5). For rehabilitators, the measure mentioned most often was to assess the facility's operation, housing, and hygiene in relation to accepted professional standards. Although monitoring survival after release was cited by eight rehabilitators as a way of measuring success, they recognized that these studies are often difficult for facilities to carry out. Several suggested that the success of a rehabilitation program can be determined by surveying feedback from participants following educational programs and by surveying the community to gauge their support of the program.

Although veterinarians stated release rates are only one measure of treatment success, three still felt that standardized, release rates and statistics would be an easy and valid quantitative measure for the rehabilitation process (Table 4-5). Other measures included the assessment of care quality (handling, nutrition, treatment) and the operation of the facility (housing, hygiene) against accepted professional standards. Two veterinarians also felt that facility policies can be assessed over time and compared to accepted standards and ethics.

Table 4-5 Number of participants (rehabilitators, officials, and veterinarians) suggesting different measures of rehabilitation success

Measures of success*	Number of participants		
	Rehabilitators (27)	Officials (8)	Vets (5)
Assess facility: operation, housing, hygiene, etc.	11	3	2
Monitor survival after release	8	6	1
Assess care: handling, nutrition, treatment, etc.	4	4	3
Survey feedback from educational programs	7	0	1
Survey community to gauge support	5	2	0
Calculate standardized release rates and statistics	4	0	3
Assess behaviour and condition of animals in care	5	1	0
Compare number of animals treated that were legitimately in need of care versus those brought in from uninformed public	4	2	0
Test rehabilitator expertise and knowledge with exams	2	2	1
Assess policies compared to accepted standards and ethics	1	0	2
Survey peers to gauge facility reputation	0	1	1
Calculate number of educational visits	0	1	1

*Participants could respond with multiple measures; hence, column totals do not sum to the number of individuals per group.

For most officials, post-release studies to monitor survival and reproduction would have to be conducted in order to measure true rehabilitation success (Table 4-5). However, several recognized that success could be assessed by monitoring facility operation (housing, hygiene) and quality of care (handling, nutrition, treatment). Since monitoring survival after release is generally not conducted, a few officials felt that the success of a rehabilitation program could be measured by either surveying the community to determine whether the rehabilitator is perceived as serving a purpose, by monitoring the number of animals legitimately admitted (as this should decrease over time with public education), or by testing the expertise and knowledge of rehabilitators with exams.

GENERAL DISCUSSION AND RECOMMENDATIONS

A number of studies have combined multiple-facility data to generate overall release rates. In one of these, Kirkwood and Best (1998) summarized standardized data from 35 U.K. facilities between 1993–1995, and reported release rates ranging from 35 to 60 percent; as in the present study, there was a large variation among species. A 1992 member survey of the National Wildlife Rehabilitators Association also reported overall release rates for 458 facilities, for birds (31 percent), mammals (37 percent) and amphibians/reptiles (39 percent) (Throne 1994). Finally, in a survey of 40 US facilities, 40 to 76 percent of the cases were released, with higher release rates occurring in facilities with fewer admissions (Gidner-Worthington 1997). Although these studies illustrate the use of data to lend credibility to rehabilitation, standard methods of data recording are needed in order for the data to be interpreted accurately. In this investigation, it appeared that methods of data collection differed so significantly among facilities that at this time comparisons of release rates would not be warranted.

All participant groups recognized that release rates are not a true measure of rehabilitation success, partly because they depend greatly on both controllable (e.g. quality of care) and uncontrollable factors (e.g. disease). Both rehabilitators and veterinarians felt that standardized and honest rates can give an indication of care, but all groups agreed that they do not reflect release condition or survival in the wild.

All participant groups distinguished between the success of treating animals versus the success of other aspects of a rehabilitation program. This distinction is important in developing a shared understanding of success and its measures. Assessing treatment success could involve comparing an operation, its policies, and its quality of care against professional standards. Calculating release and euthanasia rates were also suggested as a measure of treatment success. Post-release monitoring was mentioned by some, including most officials, as an effective measure of treatment success, although participants recognized the financial imposition of this measure. A number of

studies provide excellent examples of monitoring survival after release, either through banding or radio-telemetry (Duke et al. 1981, Martell et al. 1991, Wasserman and Clumpner 1995, Smith 1996, Sweeney et al. 1997, Convy and Zaremba 1998, Reeve 1998, Goldsworthy et al. 2000, Lander et al. 2002). The effectiveness of other aspects of the program could be measured for example through surveying community support, peer recognition, and the impact of education programs.

Given the difficulty in interpreting release rates and the infeasibility of post-release monitoring of animals, three measures of success stand out as the most practical and well supported. The first is the assessment of facilities and their care programs against established standards of housing, hygiene, handling, nutrition, and treatment practices. Standards described by Miller (2000) provide a useful guide for purposes of comparison. Second, summary records can be used as a supplement to the above information as long as data recording and analysis are done in a standardized way. For example, calculating the number of care days from records, which can be further divided into the number of days of intensive and supportive care, will enable facilities to evaluate their management of caseloads and resources. However, such records, although useful to describe the benefits of a program and to monitor improvements, should not be used to compare facilities because of the wide variation due to species intake and uncontrollable factors. Third, because education of the public to prevent wildlife injuries is seen as a common goal of rehabilitation programs (Chapter 2) and component of rehabilitation success, surveys of feedback from participants at education programs could also play a role in evaluation.

REFERENCES

- Convy, J.A. and M. Zaremba. 1998. Post-release survival and movements of captive-reared bobcats (*Felis rufus*). *Wildlife Rehabilitation*, 16:115-122.
- Cox, M. 1998. What is wildlife rehabilitation? *The NWRA Quarterly*, 16(2):16-18.
- Duke, G.E., P.T. Redig, and W. Jones. 1981. Recoveries and resightings of released rehabilitated raptors. *Journal of Raptor Research*, 15:97-107.
- Gidner-Worthington, C. 1997. Statistics and wildlife rehabilitation: survey summary. *Journal of Wildlife Rehabilitation*, 20(4):6.
- Goldsworthy S.D., M. Giese, R.P. Gales, N. Brothers and J. Hamill. 2000. Effects of the Iron Baron oil spill on little penguins (*Eudyptula minor*). II. Post-release survival of rehabilitated oiled birds. *Wildlife Research*, 27:573-582.
- Kirkwood J.K. and J.R. Best. 1998. Treatment and rehabilitation of wildlife casualties: legal and ethical aspects. *In Practice*, 20:214-216.
- Lander, M.E., J.T. Harvey, K.D. Hanni and L.E. Morgan. 2002. Behavior, movements, and apparent survival of rehabilitated and free-ranging harbor seal pups. *Journal of Wildlife Management*, 66:19-28.
- Mackey, D. 1989. Scientists scrutinize release, relocation practices. *Wildlife Rehabilitation Today*, 1(1):26-27.
- Martell, M., P. Redig, J. Nibe, and G. Buhl. 1991. Survival and movements of released rehabilitated bald eagles. *Journal of Raptor Research*, 25:72-76.
- Miller, E.A. (Ed.). 2000. *Minimum standards for wildlife rehabilitation, third edition*. St. Cloud: National Wildlife Rehabilitators Association.
- Pokras, M. 1997. Introduction to wildlife rehabilitation purpose and philosophy. In: Moore, A.T. and S. Joosten (Eds.). *National Wildlife Rehabilitators Association principles of wildlife rehabilitation*. St. Cloud: National Wildlife Rehabilitators Association. pp. 7-20.
- Reeve N.J. 1998. The survival and welfare of hedgehogs (*Erinaceus europaeus*) after release back into the wild. *Animal Welfare*, 7:189-202.
- Smith, S. 1996. Report on eight years of banding rehabilitated birds. *Corella* 20(1):20-25.
- Sweeney, S.J., P.T. Redig and H.B. Tordoff. 1997. Morbidity, survival and productivity of rehabilitated peregrine falcons in the upper Midwestern U.S. *Journal of Raptor Research*, 31:347-352.
- Throne, E. 1994. Member survey report. *The NWRA Quarterly*, 12(1):8, 12(2):7, 12(3):8.

Wasserman, J.A. and C.J. Clumpner. 1995. Post-release survival and movements of captive-reared black bear cubs (*Ursus americanus*). *Wildlife Rehabilitation*, 13:153-169.

Williams, T.D. 1990. Rehabilitation of wildlife animals. *Journal of the American Veterinary Medical Association*, 197:554-555.

Chapter 5 – Conclusion

This study used a descriptive and exploratory approach to investigate the practices and views of wildlife rehabilitation stakeholders (rehabilitators, government officials, veterinarians) in BC. Employing a variety of techniques, including participant observation, summary record analysis, questionnaires, and in-depth interviews, this research attempted to provide an initial understanding of the range and diversity of issues in wildlife rehabilitation. These methods, being grounded in the experience of the participants, were not used to test a research question; rather they were used to discover what the right research questions were through inductive use of the data. This was achieved, as demonstrated by the modification of the interview questions throughout the process of data collection.

Through interviews, the views of wildlife rehabilitation stakeholders were sought on the goals and impediments of rehabilitation, and the roles and relationships of these groups. Participants in all three groups saw the primary goals of rehabilitation as the humane care of injured and orphaned animals until release or euthanasia, and public education to prevent such problems. Rehabilitators, but not government officials, also cited many additional goals including contributing to research, the development of expertise, reducing human impact on wildlife, and contributing to the monitoring of emerging diseases and environmental problems. Most participants cited money as an important impediment to these goals; however, over half of the rehabilitators felt that a lack of non-monetary assistance or acknowledgement by government were important impediments which may be more realistically overcome. Many rehabilitators felt that their interactions with local government officials directly affected rehabilitation, since this relationship often determined the level of cooperation on issues of care, permitting, and enforcement to maintain high standards in rehabilitation.

Interviews were also used to explore the range of stakeholders' views on contentious rehabilitation issues and what scope there is for consensus on these issues. Major disagreements exist among rehabilitators on the care of non-native species and the use of non-releasable animals for education. About half of the rehabilitators treat native and non-native species alike, whereas others do not rehabilitate non-natives or do so as a lower priority. Five rehabilitators were opposed to keeping any wildlife in permanent captivity, while the remainder either use or transfer non-releasable animals for use in educational activities. Euthanasia methods varied widely and included gas, injections, and physical means, with some facilities using controversial methods (chloroform, T61). In general, stakeholders identified a need to promote awareness of existing care and euthanasia guidelines among rehabilitators and government agencies, and for assistance to access relevant resources. Additionally, rehabilitators and veterinarians believed there is a need for locally relevant and accessible training for all rehabilitators, and they felt that government agencies do not adequately monitor and inspect facilities. Many rehabilitators and veterinarians saw the system of government permits and related enforcement as a potential means to maintain consistent high care standards, but rehabilitators were dissatisfied with lax controls on permits. Although five officials disagreed on the need for more inspections, there was a consensus that any care assessments should be made by a team of stakeholders, including government officials, wildlife rehabilitators, veterinarians, humane association representatives, and biologists.

Analyses of rehabilitation annual summary records were conducted to evaluate current measures of rehabilitation success. Release rates varied from 14.5 to 88.8 percent among facilities (40 percent overall). There was important variation among species, a trend for high release rates in facilities that euthanized relatively few animals, and inadequate standardization of how facilities calculated the release rates they report. Hence, release rates have important limitations as measures of success. As a result,

interviews were used to determine how stakeholders define rehabilitation success, to discuss the effectiveness of release records in measuring success, and explore other potential criteria of success. Most participants, especially the rehabilitators, identified multiple components of success and/or factors influencing success, and a number of potential measures. These included: assessing facility operation (housing, hygiene) and care methods (handling, nutrition, treatment), in relation to accepted professional standards; monitoring survival after release; and surveying the impact of public education conducted by the facility.

Increased awareness of differing beliefs and perceptions among stakeholders could promote more effective communication and coordinated action within the rehabilitation community. Also, the study's findings can help rehabilitators to assess their current practices and identify areas to focus rehabilitator education and training. Finally, by developing a shared understanding of success and its measures, this will allow a more effective evaluation of rehabilitation practices and outcomes, so that its activities can be seen as a profession.

Many new questions have been raised by this research. One of the most important is, how feasible is it to have local and BC-relevant training for wildlife rehabilitators? Although this research provides insight into what type of training would be beneficial, it still remains to be determined who, where, and how this training would be conducted. Having many experienced rehabilitators, veterinarians, and biologists with overlapping wildlife interests in BC, the potential is great. Another area where there is great interest for additional inquiry is the analysis of summary records. By recognizing the need for standardization as suggested by this research, these questions may be answerable in the near future.

Appendix I – Report on the current and future role of rehabilitation summary records in BC

According to rehabilitators, the primary purpose of recording summary data on each animal admitted into their facility, is to submit the information to the respective government permitting agencies. One suggested that the records "justify to the [government] that there is a need for what I do." However, many felt that the records have a very important role in their facility as well. These rehabilitators stated that summary records enable them to assess: types of animals admitted; total number of animals released, died, or euthanized; types of injuries and causes for intake; and how these numbers change over time. One rehabilitator stated that summary records can help them to predict when animals will be arriving in future years, in order to direct feed purchases, caging needs, and their annual budget. Another suggested that they are a professional requirement for a rehabilitator's "business," and that rehabilitators need to know what has been handled so that they are able to identify what is happening in the environment to inform the public and the government for management decisions. A few rehabilitators also suggested these data may help to identify illegal actions towards wildlife and be useful in prosecution.

Most facilities in BC submit annual summary records on their own forms to provincial and federal permitting bodies. Only five rehabilitators were aware of government-issued provincial record forms, from having used them in the past; two of these rehabilitators used the government forms at the time of the study, filling in the data by hand. Further, one of the two was very surprised that this was not done at other facilities, and neither knew that they could submit data on their own forms. Three rehabilitators admitted that they do not record every animal or complete every summary record, as they are often too busy with animal care and have no time for data or just forget. Four stated that their records could be more organized; and one suggested this

was because they "prefer animals to bookwork." One such rehabilitator stated that Chubb's (1996, 1998, 2001) use of data was "an inspiration and is where the data should be." One veterinarian also discussed this body of work and commended its thoroughness.

Almost all of the rehabilitators stated that they received very little to no feedback regarding the content of their summary records from either government agency and four questioned what the officials do with the reports. Five also stated that there is no acknowledgement that the data are ever received. Most believed that government officials do not read the reports or at least do nothing with them. One rehabilitator stated that:

We send in the report and I'm sure they don't read it, in fact, to be honest one year I didn't even send it in because I wanted to see... And another year in fact I put in there GORILLA! And they didn't say nothing, absolutely nothing!

Two rehabilitators suggested that nothing is done with the records because officials are busy with more pressing matters, one questioned their degree of interest since the records would not contribute to population predictions, and another suggested that the agencies' perception of rehabilitation might be why nothing is done.

Veterinarians perceived the role of summary records as documenting treatment and its success, but felt that they give no indication of long-term survival or procedure success. One stated that there is no uniformly accepted recording practice, despite professional guidelines existing. None of the three small animal veterinarians currently submitted any wildlife summary records, but two submitted detailed records in the past. One of these stated they were once told by a government official that the records were not looked at, and as a result, they felt that completing the records was a waste of time. Overall, most of the veterinarians believed the records are filed and never used; as one commented, they get "lost in the shuffle." None of the officials were aware if any rehabilitators were using standard government forms, but most were satisfied with the information currently submitted. Four stated they briefly review the records out of

curiosity and to gain perspective, while others admitted that that they are not looked at or analyzed due to a lack of resources. The current recording system; as one official put it, it is "a stupid system." However, some suggested the records contain lots of information that could be useful.

In the future, rehabilitators would like to see the summary data records used as an educational tool, for research, and analyzed further to produce statistics. They suggested the information could be used to educate the public about human impacts on wildlife, for example, the number of wildlife attacked by domestic cats (Appendix V). Also rehabilitators believed that the data could be used to a greater extent in facilities, to assess their effectiveness, and by government agencies, to inform management decisions. Many stated they would like to access combined records from all facilities and that a province-wide database would be a useful, especially for facilities with smaller annual intakes. Many facilities currently have, or are working towards, electronic annual summary records and five have created databases. Four rehabilitators suggested that the government could provide them with a computer program to enter and submit their data, which could then be incorporated into a provincial database. Although, three rehabilitators stated that they would have no personal use for the pooled data, they did not object to the government or the Wildlife Rehabilitators Network of BC, using the information.

Participants discussed the possibility of an independent wildlife organization assembling rehabilitation records province-wide, and most rehabilitators were open to the idea and would be willing to submit their data, as they believed that it should be shared to benefit all rehabilitators and wildlife interests. Four rehabilitators stressed that any such organization would need to be objective and could not judge rehabilitation practices, as this might alienate some rehabilitators. Others wanted to ensure that the information could not be sold and that it would be available to all. Three rehabilitators stated that any such organization would need to be responsible for collecting the

information, but others emphasized that with the increasing availability of technology, it would be possible to send electronic copies of the information to such an organization. Many rehabilitators stated that records would need to be standardized in order to pool and analyze data provincially. These individuals said they would be willing to use a standardized format for data recording in order to achieve this. Those that did not mention standardization directly, were asked if they would be willing to use a standard form or format and all were open to the idea, although three believed the data were standardized already. Two rehabilitators also suggested they would like to have standardized intake or daily care forms as well, all of which would facilitate information transfer when animals are moved between facilities.

There were several cautions regarding pooling records. Firstly, four rehabilitators stated that they would only change their current data practices if requested by government or if there was proof that someone was going to use the information. Additionally, it was pointed out that certain facilities have more staff and time, therefore standardized recording must be feasible for all facilities to achieve and not overwhelm with them with paperwork. Also it was suggested that rehabilitators be involved in the standardization process, as they are more aware of what information is useful than the government agencies. Finally, two pointed out that not all rehabilitators have computers and that alternatives should be considered for those individuals when creating any standardized form or format.

All veterinarians agreed that little information from rehabilitation records is used now, but that there is huge potential for them to be used if they were standardized and readily available in a database format. One stated that this "would change what is now to me a joke, to something that would actually be useful." The small animal veterinarians suggested they would be more inclined to keep records if they were used and if feedback was given. The veterinarians believed that future analyses could be conducted on disease indicators, breeding records, condition upon arrival, blood work,

pesticide screening, success of procedures, care and policy monitoring, care duration, and the number of animals dying in care. Further, they suggested it would be helpful if new rehabilitators had a standard form to follow, and that a central recording place and feedback are needed. However, they cautioned that any organization overseeing this information would need to share it effectively.

Five officials believed that if resources were available, there could be a future role for the summary records, which could include pooling the information provincially into a database. Three suggested that instead of paper copies, regions could request records be submitted electronically, which could then be forwarded to the provincial office for database input. They suggested this could help to identify hotspots for injury causes and assess establishment trends, which could affect management decisions. However, at this time, officials agreed that the records are a low priority and there is no time or resources for this activity, and generally no interest. As a result, officials believed that requiring standardization or creating a standard form for rehabilitators may be an imposition on rehabilitators. Four officials stated they would like rehabilitators to conduct analyses themselves and only standardize their records if it is beneficial to them. Opinions were split regarding having an independent organization gather and analyze the summary records. Three officials believed such an organization to be unnecessary as rehabilitators could do it themselves, while three others thought it would be fine as long as the organization was objective, had honest motives, and did not charge for the information.

In summary, consistent recording and analysis of data have not been a priority when weighed against the pressures of increasing caseloads, unstable sources of funding, and large dependence on volunteer labour. The time and resources needed to record, assemble, and analyze data on release rates often exceeds the capacity of facilities. The lack of feedback on records from government further fuels poor recording practices. During the data collection, it was observed that some rehabilitators will

destroy or electronically delete previous years' records once the necessary information has been submitted to permitting agencies. Also observed in a few cases, was that not all animals may be recorded in order to avoid violating permit quotas, which limit the number of animals or species types to be rehabilitated. These missing data could be very valuable in estimating the total impact of rehabilitation in the province over time. Both rehabilitators and veterinarians saw value in having standardized forms and a pooled database, and since government is unlikely to start such a project, having an independent organization direct these activities may be a possible solution that stakeholders can agreed upon. As Casey and Casey (2000) suggest, analyses of data on conditions seen in wildlife admitted for care could be used to design training, facilities, and conference content, as well as identify areas for research and rehabilitator skill development.

REFERENCES

- Casey, A.M. and S.J. Casey. 2000. A survey of conditions seen in wildlife admitted for wildlife rehabilitation. *Wildlife Rehabilitation* 18:143–160.
- Chubb, K. 1996. *Beaks, brains, and bones, volume 1: experiences in wild bird trauma*. Verona: Avian Care and Research Foundation.
- Chubb, K. 1998. *Beaks, brains, and bones, volume 2: experiences in wild bird trauma*. Verona: Avian Care and Research Foundation.
- Chubb, K. 2001. *Beaks, brains, and bones, volume 3: loons, ospreys and grebes*. Verona: Avian Care and Research Foundation.

Appendix II – Report on the BC Society for the Prevention of Cruelty to Animals' recommendations on wildlife rehabilitation

In June 2001, the British Columbia Society for the Prevention of Cruelty to Animals (BC SPCA) initiated a community consultation to seek public input on animal welfare issues across the province, including the Society's role in promoting the welfare of wildlife. Although public feedback was limited on this issue, a member of the independent panel leading the consultation, who had experience with rehabilitation, expressed concerns about the level of humane treatment in rehabilitation facilities and the education of rehabilitators (BC SPCA 2001). Overall recommendations from the panel called for the BC SPCA to regularly inspect and enforce the Prevention of Cruelty to Animals Act (Province of British Columbia 1996) in rehabilitation facilities, and to consider the development of standardization and accreditation for facilities in the long-term (BC SPCA 2001).

When discussing the BC SPCA's proposal to accredit rehabilitation facilities with rehabilitators in this study, most were sympathetic to the idea of accreditation and care standards. However, the majority felt that ideally government wildlife agencies should be regulating any accreditation process. Seven rehabilitators were very negative towards the BC SPCA, stating that they only have experience with domestic animals and have enough problems within their own shelters. Many others suggested that the BC SPCA might not be the best organization to accredit facilities because they have little wildlife knowledge, expertise, and resources. Three rehabilitators felt the BC SPCA would be acceptable in the absence of government care enforcement, if they were appropriately trained. Overall, rehabilitators preferred that care standards be enforced by a panel of wildlife stakeholders. Four rehabilitators suggested that care standards already existed through the National Wildlife Rehabilitators Association and the International Wildlife Rehabilitation Council (Miller 2000), and that these could be used in any accreditation.

Rehabilitators stressed that any standardization and accreditation would need to be objective and should not reflect one individual's personal view, since different facilities have varying levels of resources and different methods to animal care, which can all be valid.

Veterinarians' views on the proposal ranged from supportive to negative. One veterinarian felt that regular inspections and spot checks are needed from a properly trained independent body, while another veterinarian referred to the BC SPCA as an animal rights organization. Others warned that feedback and representation from rehabilitators are needed and that providing funding for accredited facilities may be an important factor in convincing rehabilitators to participate. It was also cautioned that the BC SPCA has limited resources and high ideals for domestic animals, which would not be plausible for wild animals.

Most officials were generally unaware of the BC SPCA proposal. Four officials were negative towards the proposal and were not confident that the BC SPCA has the expertise or wildlife knowledge to create and enforce care standards. One of these officials suggested that the BC SPCA already has internal problems and that their "right to life attitude is worrisome." These officials also felt that the BC SPCA should remain in their current role by continuing to act as an intermediary between the public and rehabilitation. The other four officials were positive about the idea proposed by the BC SPCA and suggested that in the absence of government, care enforcement needs to be conducted. They felt that the BC SPCA would be acceptable if they were well trained and followed professional guidelines. Further, these four felt that if the proposed actions were effective in improving conditions and rehabilitators followed them, then they were worthwhile. Overall, most officials recognized that the government agencies have no resources to conduct care checks and would not be able to implement what the BC SPCA proposed.

In conclusion, although the BC SPCA proposal for standardization and accreditation brought about mixed feelings from stakeholders, overall there is consensus that any care assessments should be undertaken by a team of stakeholders including BC SPCA representatives, government wildlife officials, veterinarians, wildlife rehabilitators, and biologists.

REFERENCES

- British Columbia Society for the Prevention of Cruelty to Animals (BC SPCA). 2001. Community Consultation Summary Report and Recommendations, Wildlife. Available at: http://www.sPCA.bc.ca/community/cc_Wildlife.htm Accessed 30 November 2002.
- Miller, E.A. (Ed.). 2000. *Minimum standards for wildlife rehabilitation, third edition*. St. Cloud: National Wildlife Rehabilitators Association.
- Province of British Columbia. 1996. Prevention of Cruelty to Animals Act, [RSBC 1996] Chapter 372. Available at: http://www.qp.gov.bc.ca/statreg/stat/P/96372_01.htm Accessed 20 November 2002.

Appendix III – List of cause categories generated from common terms used by facilities

Cause	Definition
Attack	attack no species given, or >1 species
Attack - cat	cat attack, caught, got, possible
Attack - conspecific	species aggression, intraspecific, territory dispute
Attack - dog	dog attack, caught, got, bite, possible
Attack - orphan	orphaned and attacked, dog/cat/crow/predator
Attack - predator	crow, eagle, hawk, raccoon, other bird attacks
Burned/Fire	burns (not oil or electrical burns)
Disoriented	disoriented
Drowning	drown, near drowning
Electrocution/hit electrical wire	electrocution, hit electrical wire, possible
Entanglement	netting, plastic, line, string, barbed wire, twine, fence, nest; caught
Entrapped	trapped by, in building, trap/snare
Falconer escape	falconer's bird, escape
Fell	fell from X (not nest)
Fell from nest	blown out of nest, fell from, pushed from, thrown out of; possible
Fell from nest - attack	fell from nest and attacked, dog/cat/crow/predator
Fish line/hook/net	fish line/net entangled, caught; fish hook in mouth/throat/ingested
Glue/Paint/Tar/Sticky stuff	glue, paint, tar, sticky substance, hotfoot, tanglefoot, molasses, grease, metal fillings, gear oil, cooking oil, motor oil (non-spill oil), gas, peanut butter
Human interference	human contact/interference (orphan not indicated), kidnapped; nest disturbed, no indication of orphaned given, lawnmower, no indication of injury
Impact - object	golfball, axe, fan
Impact - plane	hit by plane, helicopter
Impact - vehicle	hit by car, truck, train, boat; possible
Impact - window/building	hit window, building, wall, glass doors, door, fence
Impact/Collision	impact, collision, window/car?, tree
Imprinted	imprinted, tame, hand raised/fed
Natural	birth defect, congenital deformity, old
None	born at facility
Object	pellet, foreign object in throat, swallowed object
Oiled	oil spill - canola, petroleum, diesel; fish oiled; oil and burns
Oiled - attack	oiled and attacked, dog/cat/crow/predator

Cause	Definition
Orphan	orphan, OY, O/Y, abandoned
Orphan - habitat destroyed	nest destroyed/removed, tree cut down, logging, from construction site, nest tree falled
Orphan - human interference	kidnap, removed from nest, mother scared by human, abducted
Orphan - parent killed/injured	mother killed/shot, parent injured; orphan as result
Poisoned	lead/toxin/barbituate/carbofuron/mercury/avitrol/pesticide/rat poison/ antifreeze/ toxicity; possible poison
Relocate/seized/project	relocation, banding program, seized, remove, taken, found in home
Shot	gunshot, pellet, bullet hole
Soiled	sewage, manure
Unknown	NAI, no diagnosis/explanation, problem - *, emaciation, thin, weak, dehydration, debility, blood, down, feather damage, lesions, paralysis, hypo, starvation, CNS (non trauma), chilled/wet, infection, salmonella, parasites, disease, lethargic, soiled, stressed, down, shock, SUB Q EMPH, stunned, critical/poor, deformities, skinned, nerve damage, tumor, bloat, enteritis, gangrene, unable to stand/walk/fly
Unknown trauma	> 1 possible cause HBC/cat/dog/window; diagnosis = trauma/injury/fracture/ bruise/wound/abrasion/CNS injury/amputation
Weather	storm damage, exposure, battered, victim, stranded, X due to weather
Young	nestling, hatchling, fledgling (orphan not indicated), too young, supportive care, egg, immature, premature, eyes closed/not open

Appendix IV – List of diagnosis categories generated from common terms used by facilities

Diagnosis	Terms used by facilities
Abrasions	abrasions, X abraded, road rash
Abscess	abscess, abscess
Amputation	general/metacarpal; no X, severed X, missing X, X lost; no body part given
Amputation - foot	foot/feet/toe/metatarsal/digit/talon; no X, severed X, missing X
Amputation - head	headless, decapitated, head removed
Amputation - leg	X missing, X hanging by flap of skin, X cut off, X torn off
Amputation - mouth	mandible/beak; X missing, X gone, X off
Amputation - tail	X missing, lost X, no X
Amputation - wing	wing/wrist/wing tip/wing digit; severed X, missing X
Bloat	bloat
Blood	general; blood loss, bleeding
Blood - ear/mouth/nares/throat	mouth/ear/cere/throat/nose/nares/beak; blood in/from/on/around, bloody, coughing blood
Bruising	pelvis/back/ear/feet/chest/cere/abdomen/head/eye/penis/spine/bladder; bruising, bruises, contusion, hematoma
Bruising - forearm	wrist/radius/ulna bruised, bruising
Bruising - leg	leg/hip bruised, bruising
Bruising - shoulder	shoulder bruising, bruised
Bruising - sternum	keel bruised, bruises, bruising
Bruising - wing	wing bruised, bruising, hematoma
Burns	burns, electrical burns, singed fur, feathers burned
Chilled/Wet	cold, wet, exposure, chilled, frostbite
CNS/neuro	neurological/CNS; severe, critical, signs, damage, problems, disorder, (no injuries)
CNS/neuro - injury	neurological/CNS; trauma, injury, hit window, impact, (other injuries)
Condition - critical	critical, critical X, critical condition
Condition - poor	poor condition (general not feathers)
Convulsions	convulsions, convul., seizures
Debility	debility

Diagnosis	Terms used by facilities
Deformities	congenital deformities, leg/beak/foot/wings deformities
Dehydration	slight, moderate, extreme, severe dehydration
Disease	disease suspected, possible
Disease - avian pox	avian pox, pox lesions, pox virus
Disease - baylis	signs of, possible baylis (<i>Baylisascaris procyonis</i>)
Disease - bone	bone disease, rickets
Disease - distemper	distemper
Disease - Newcastle	newcastles, paramyxo (<i>Paramyxovirus</i>)
Disease - rabies	rabid, rabies
Disease - Salmonella	salmonella, salm
Disease - Trichomoniasis	possible trich, trichinosis, trichomoniasis, trich infection
Down	down, on ground, grounded
Drown	drowned, near drowning
Emaciation	moderate/severe/very emaciated
Emphysema - Sub Q	SUB Q EMPH, SUBQ
Enteritis	enteritis, bacterial enteritis
Feather damage	feathers clipped, cut, missing, damaged, destroyed, broken, matted
Fish Oiled	fish oiled
Fracture	ribs/tail/comp fx (not multi/fxs specified), fracture
Fracture - back	fx/broken back
Fracture - digit	fx/broken digit, phalanges; unknown front or hind limb; no leg/wing tarsal/carpal specified
Fracture - foot	fx/broken foot/ankle/digit/toe/foot joint/tarsus/tarsal/metatarsal/metatarsus/tarsometatarsus /talon
Fracture - forearm *BIRDS*	fx/broken humerus/ulna/radius/wrist/wing/metacarpal/elbow/carpals; multiple wing fx
Fracture - joint	joint fx/broken, fx at joint (general joint, no location given)
Fracture - leg *MAMMALS*	fx/broken leg/hip/knee/femur/fibula/tibiotarsus/tibia/fibiotarsus/hind/hock/mult X fxs
Fracture - mouth	fx/broken beak/upper, lower mandible/bill/maxilla/jaw
Fracture - multiple	mult/multiple fxs/broken, MF, fractures, fxs, broken several places (not used if bone/area specified)
Fracture - neck	fx/broken neck, cervical

Diagnosis	Terms used by facilities
Fracture - old	old fxs, broken (general, all body parts)
Fracture - pelvis	fx/broken pelvis
Fracture - shoulder	fx/broken shoulder/shldr/coracoid/clavicle/interclavicle, shattered
Fracture - skull	fx/broken skull
Fracture - spine	fx/broken spine/spinal column/vertebra/vert, spinal
Fracture - sternum	fx/broken sternum/keel/breast plate
Gangrene	gangrene
Glue/Paint/Tar/Sticky stuff	glue, paint, tar, sticky substance, hotfoot, tanglefoot, molasses, grease, metal fillings, gear oil, cooking oil, motor oil (non-spill oil)
Hyperthermia	hyperthermia, high body temp
Hypothermia	hypo, hypothermia
Infection	general toe/lung/penis/internal/wound/viral/bacterial/throat/head
Infection - Aspergillosis	aspergillosis, asperg
Infection - bumblefoot	bumblefoot
Infection - eye	eye inf, infection
Infection - foot	foot/lobe/toe infection
Infection - leg	leg/knee infection
Infection - respiratory	resp inf, upper respiratory infection
Infection - wing	wing infection, inf
Injury	ext inj, dislocation, crushed, damaged
associated with trauma	general/lateral/side/penis/tail/thorax/chest/abdomen 'wounded' general
Injury - back	back injury
Injury - eye	eye wound, injury, trauma, blood, lacerations, damage, scratch, punc, swollen, cut, tear, destroyed, blind (only when injury specified), loss (with other injury or known cause)
Injury - eye, head	eye/head/ear injuries, concussion (head), damage, trauma
Injury - foot	injury, dislocation, damage, swelling, torn, crushed, nail/foot/ankle/toe/digit/tarsus/tarsal/metatarsal/metatarsus/tarsometatarsus/talon
Injury - forearm	injury, trauma, sprain, dislocation, damage, swollen, angelwing, mangled; humerus/ulna/radius/wrist/wing/metacarpal/elbow/carpals/
Injury - head	crushed/shattered skull, head injury, trauma, concussion, swollen; head/face
Injury - impact	impact injury, trauma (general no body part specified)
Injury - internal	internal injuries, bleeding, trauma, damage, ribs crushed

Diagnosis	Terms used by facilities
Injury - joint	injury, trauma, swollen
Injury - leg	injury, dislocated, damaged, sore, shattered, swollen knee/leg/hip/femur/tibia/ fibia/hock
Injury - minor	minor injury, concussion, head trauma (all minor)
Injury - mouth	injury, cracked, trauma, chipped, debeaked, torn, hook, cut, beak/mandible/teeth
Injury - multiple	mult/multiple injuries, injuries (not used if area specified unless > 3)
Injury - neck	injury, damage; throat injury
Injury - old	old injury, break, dislocation (any location on body)
Injury - pelvis	pelvis broken, injured, crushed
Injury - shoulder	injury, damage, trauma, dislocation, swollen, separation, shoulder/coracoid
Injury - spinal	injury, damage, trauma, spine/brain stem/spinal cord/vert
Injury - sternum	injury, damage, sternum/keel
Lesions	non-avian pox lesions, not mouth/throat lesions, body lesions
Lethargic	lethargic
Maggots	maggots, flesh fly maggots
Nerve damage	leg/foot/wing/general nerve damage
No apparent injury	NAI, no injury, healthy, no apparent injuries
No diagnosis	null, unk, attack/window with no diag
No problems	no problems (unknown meaning), born at facility
Oiled	oiled, oil spill, % covered, canola oil (not fish oiled, other oil)
Orphan	orphan, OY, O/Y
Paralysis	no use of X, paralysed, unable to move X, X don't work, X non- responsive, no X movement, ("useless, not using" under problem)
Parasites	endoparasites, parasitic flies, internal parasites, gapeworm, mites, feather lice
Pneumonia	bi/lateral pneumonia, aspiration pneumonia
Poison	lead/toxin/barbituate/carbofuron/mercury/avitrol/pesticide/rat/antifreeze/ botulism/toxicity; possible
Problem - air sac	airsaculitis (inflammation of air sacs), ruptured, punctured
Problem - balance	balance poor/no/off/problem
Problem - crop	crop, burst, puncture, sour, hole, swollen, stasis, impacted

Diagnosis	Terms used by facilities
Problem - diet	malnutrition, weight loss, weaner, bad diet, vit/nutrient def. metabolism disorder, not eating
Problem - digestive	impaction, inanition, blockage, couldn't swallow
Problem - eye	blind, poor pupil response, dilated, missing, swollen, ulcer, blown, cataract, slow, protruding, sensitive, discharge, problem, sunken, hemorrhage, no vision, scar
Problem - feathers	poor, bad, abnormal, no feathering, alopecia (bald), no water proofing
Problem - flight	unable/can't/not/won't fly, no/poor lift
Problem - foot	talon/foot, limited/poor use of, clenched, slow grip, swollen, wear, weak, growth, frostbite, chafing, sores, twisted, tangled, blown
Problem - forearm	limited/poor/little use of, not using, useless, stiff, lazy, blown, musc exposed, loose, droop, favoring, fused, blister, splayed, hanging, tight, clipped, wear; wing/forearm/radius/ulna/ humerus; part with no trauma associated
Problem - head	head tilt/twist/twitch, face cyst
Problem - leg	limited/poor/little use of, not using, useless, favors, unstable, splayed, problem, uncoordinated, stiff, leg/femur
Problem - mouth/throat	mouth/throat, tooth, lesions/mucus/growth/plaques/abscess/tissue/colouring/pellet lodged; beak problem/overgrowth/weak/malaligned
Problem - multiple	multiple problems
Problem - neck	torticollis, neck unstable
Problem - respiratory	laboured/raspy breath, gasping, poor resp, problem, resp distress/failure, smoke inhalation, critical breathing, aspirating
Problem - shoulder	shldr stiff, scapula shifted
Problem - stand/walk	unable/can't/does not stand/walk, stands on heel
Problem - sternum	lump, bent, wear
Puncture wounds	punc wounds/punctures/mult, not specified body part except abdomen/body/side/breast/ chest/sternum/thorax, not old punc wounds
Shock	shock, shk
Skinned	head/leg/beak skinned, scalped
Soiled/Dirty	feathers/body soiled, dirty, sooty, manure, sewer
Starvation	starvation
Stressed	stress, stressed
Stunned	stunned
Tame	tame, imprinted, hand raised/fed

Diagnosis	Terms used by facilities
Thin	moderate/severe/very thin, wasting, skinny (not emaciated)
Too young	too young, eyes shut/closed, eyes not open
Toxin, disease	Toxin or disease unknown
Trauma	mauled/battered/storm damage/HBC/cat/dog/window/plane trauma, non-specific (not CNS/ head/wing/leg/spinal/internal/impact - all injuries)
Tumor	intestinal/oral cavity, tumor/tumour
Weak	weak
Wounds	lacerations/wds/gunshot/pellet wds/flesh flies/bite/tear/scratches (not mult), areas other than below, general areas, no area given; NOT 'wounded'
Wounds - back	laceration/tear/wounds/wd/wds/punc wds/skin off on back
Wounds - foot	cut/lacerations/tear/wds/hook, heel/foot/pads/paw/ankle
Wounds - forearm	laceration/gunshot/fish hook/pellet/wounds/tears/hole/scratch/punc/cut, wrist/elbow/radius/ humerus/ulna/metacarpal/wing
Wounds - head	lacerations/pecks/wounds/punc wds/tear, head/face/cranium/ear/eye
Wounds - leg	laceration/punc/wounds/tear, hip/knee/leg/femur/thigh
Wounds - minor	laceration/punc wds/scratch/wound, minor
Wounds - mouth	cut/scratch/wd/fish hook wd, mouth/lips/beak/mandible
Wounds - multiple	multiple/many/mult (must have mult specified or >1 location not just wds, not used if area specified unless >1), lacerations/wds/tears (not punc)
Wounds - neck	lacerations/wound/hematoma/punc wd/fish hook/exposed, neck/throat
Wounds - old	wounds, old (any location on body)
Wounds - shoulder	tear/wounds/punc, coracoid/shoulder/shldr
Wounds - sternum	punc wds/wound, keel

Appendix V – Data analyses

Table A-1 Total number and percentage of birds and mammals admitted by cause at 11 facilities between 1990-2001

Cause	Birds (6,349)	Mammals (1,705)
Orphan/Young	1,586 (25.0%)	1,119 (65.6%)
Cat attack	1,430 (22.5%)	217 (12.7%)
Vehicle impact	587 (9.2%)	129 (7.6%)
Window impact	567 (8.9%)	0 (0.0%)
Oiled	433 (6.8%)	0 (0.0%)
Impact/Collision	315 (5.0%)	5 (0.3%)
Poisoned	259 (4.1%)	6 (0.4%)
Predator attack	153 (2.4%)	4 (0.2%)
Fell from nest	143 (2.3%)	12 (0.7%)
Shot	116 (1.8%)	3 (0.2%)
Electrocution/hit wire	108 (1.7%)	6 (0.4%)
Glue/Tar/Sticky Stuff	99 (1.6%)	5 (0.3%)
Dog attack	69 (1.1%)	71 (4.2%)
Entanglement	64 (1.0%)	11 (0.6%)
Entrapped	55 (0.9%)	36 (2.1%)

Table A-2 Percentage of total species intake by cause for the top ten bird species at ten of the 11 facilities which treated birds between 1990-2001

Cause	American Robin	North-western Crow	European Starling	Rock Dove	Mallard	House Finch	House Sparrow	Barn Owl	Steller's Jay	Glaucous-winged Gull
Orphan	23.1%	38.7%	27.5%	4.8%	41.1%	34.0%	69.9%	28.4%	32.6%	8.0%
Cat attack	47.8%	0.0%	39.4%	0.7%	37.7%	44.3%	4.2%	8.8%	10.6%	45.0%
Vehicle Impact	7.2%	15.1%	5.6%	19.7%	0.0%	2.4%	3.9%	17.6%	5.5%	5.0%
Window Impact	7.2%	0.7%	2.1%	0.0%	7.4%	4.3%	0.0%	2.7%	1.8%	10.0%
Oiled	0.3%	2.6%	3.2%	40.1%	1.7%	2.0%	6.3%	1.1%	0.9%	1.0%
Unknown impact	2.5%	0.3%	3.2%	3.4%	2.9%	4.7%	0.9%	8.8%	5.8%	10.0%
Poisoned	0.0%	0.3%	2.8%	2.7%	0.0%	0.0%	1.2%	1.1%	26.6%	2.0%
Predator attack	5.5%	1.0%	8.8%	0.7%	1.1%	0.8%	0.9%	2.3%	4.0%	8.0%
Fell from nest	1.6%	20.7%	2.5%	0.0%	0.0%	0.8%	0.6%	3.1%	1.1%	0.0%
Shot	0.1%	1.0%	0.4%	11.6%	0.0%	0.0%	0.6%	5.7%	1.1%	0.0%
Electrocution	0.0%	0.0%	0.0%	3.4%	0.0%	0.0%	0.6%	2.3%	1.1%	0.0%
Glue/Tar/Sticky Stuff	0.0%	2.6%	1.1%	3.4%	2.3%	2.8%	0.0%	1.1%	3.8%	1.0%
Dog attack	1.3%	0.0%	1.4%	0.7%	1.1%	0.4%	1.8%	4.6%	0.4%	2.0%
Entanglement	0.4%	1.6%	0.4%	2.0%	0.0%	0.4%	0.9%	1.1%	0.2%	0.0%
Entrapped	0.1%	5.6%	0.0%	0.0%	0.0%	0.4%	0.0%	0.8%	0.2%	2.0%

Table A-3 Percentage of total species intake by cause for the top seven mammal species at nine of the 11 facilities which treated mammals between 1990-2001

	Eastern Cottontail	Eastern Grey Squirrel	Raccoon	Virginia Opossum	Douglas' Squirrel	Black-tailed Deer	Striped Skunk
Orphan	40.4%	71.5%	83.5%	74.7%	61.7%	22.4%	81.7%
Cat attack	43.4%	6.5%	0.3%	5.7%	19.1%	0.0%	1.4%
Vehicle Impact	3.0%	7.1%	7.3%	5.7%	6.4%	49.3%	1.4%
Dog attack	7.8%	4.0%	1.3%	9.2%	0.0%	11.9%	1.4%
Entrapped	0.0%	0.2%	3.0%	2.3%	0.0%	4.5%	4.2%
Entanglement	0.0%	1.1%	1.0%	1.1%	0.0%	7.5%	1.4%

Appendix VI – Facility demographics questionnaire

Name : _____
Role at facility : _____
Facility name : _____
Location : _____
Facility established : _____

Facility

1|¹ Intake (approximate annual average)

- ☐ < 200
- ☐ 200 - 500
- ☐ 500 - 1000
- ☐ 1000 - 1500
- ☐ 1500 - 2000
- ☐ > 2000

1|² Source (approximate percentage)

- ☐ Public
- ☐ SPCA / animal protection group
- ☐ Provincial wildlife agency
- ☐ Federal wildlife agency
- ☐ Other rehabilitation centres
- ☐ Other: _____

2|¹ Facility staff high season (paid or unpaid)

- ☐ Full-time (4-7 days/week)
- ☐ Part-time (2-3 days/week)
- ☐ Casual (1 day/week)
- ☐ Interns

Position length: _____

☐ Other: _____

Time commitment: _____

2|² Facility staff low season (paid or unpaid)

- ☐ Full-time (4-7 days/week)
- ☐ Part-time (2-3 days/week)
- ☐ Casual (1 day/week)
- ☐ Interns

Position length: _____

☐ Other: _____

Time commitment: _____

3|¹ Veterinarian visit frequency

high season (at your facility or their office)

- ☐ Never
- ☐ _____ times a year
- ☐ _____ times a month
- ☐ _____ times a week
- ☐ On staff / Intern

3|² Veterinarian visit frequency

low season (at your facility or their office)

- ☐ Never
- ☐ _____ times a year
- ☐ _____ times a month
- ☐ _____ times a week
- ☐ On staff / Intern

4|¹ Are there any types of animals your facility does not admit/treat ?

(ex.: not permitted for, no non-natives)

- ☐ No, accept and treat all species types.
- ☐ Yes, the facility specializes on only (ex.: raptors, mammals) _____
- ☐ Yes, accept and treat most species except:
- Species types: _____
- Reasons: _____

4|² If you answered "yes, accept and treat most species except" above, how do you deal with any incoming animals of these species ?

- ☐ Accept animals and transfer to another facility.
- ☐ Accept and euthanize these animals.
- ☐ Do not accept.
- ☐ Do not accept and advise where animals can be taken.

5|¹ Is your facility currently a member of:

- | | | |
|---|------------------------------|-----------------------------|
| International Wildlife Rehabilitation Council (IWRC) | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| National Wildlife Rehabilitators Association (NWRA) | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Wildlife Rehabilitators Network of British Columbia (WRNBC) | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

5|² If you have been a member of one of the above organizations in the past but are not currently, what was/were the reason(s) for not continuing membership ?

6|¹ Does your facility have an educational component ? (within answer circle which applies)

- | | |
|---|---------------------------------------|
| <input type="checkbox"/> School visits - with/without animals | <input type="checkbox"/> Web site |
| <input type="checkbox"/> In centre talks/tours/info room | <input type="checkbox"/> Open house |
| <input type="checkbox"/> Pamphlets | <input type="checkbox"/> Other: _____ |

Rehabilitator

7|¹ Rehabilitation experience

- ☐ 0 - 2 years
- ☐ 2 - 5 years
- ☐ 5 - 10 years
- ☐ > 10 years

7|² Rehabilitation background

(please mark all that apply)

- ☐ Self taught
- ☐ Volunteered/trained at facility
- ☐ IWRC Basic skills workshop
- ☐ Other workshops/courses:

8|¹ I will be conducting personal interviews with founding directors, CEOs, or senior rehabilitators in order to discuss their opinions and concerns regarding the goals of wildlife rehabilitation. If you are the founding director, CEO, or senior rehabilitator of your facility would you be willing to participate in an interview ?

- ☐ Yes, please contact me at the following number/email:

- ☐ No, at this time I do not wish to participate.

If you have another role in your facility but think that an individual in one of the above roles would like to participate, please note their contact information:

9|¹ Comments

Thank you for your participation.

Appendix VII – Interview schedule

(Questions in [?] for veterinarians and government officials)

Code name:

Date/Time:

Location of interview:

Affiliation:

Position/duties:

Length in position:

Other rehab experience beyond this facility:

- How did you get involved in rehabilitation? [What is your involvement with rehabilitation?]
- How has your previous experience/education prepared you for working as a rehabilitator? [with rehabilitators?]

Goals and Impediments

- To you, what are the main goals of wildlife rehabilitation?
- What do you think are the biggest impediments to these goals?

Success and Measures

- What do you think success is in wildlife rehabilitation?
- What are ways to measure success of rehabilitation?
- What do release rates signify to you? Are they a true measure of rehabilitation success?
- Can 'success' be improved in your opinion? If so how?

Communication

- How often do you communicate with other facilities? [Facilities, other researchers, vets, officials regarding rehabilitation?]

- For what purposes? How achieved?
- What facilities do you communicate with? [what other organizations, positions, communicate with?]
- Has the Wildlife Rehabilitators Network of BC increased your contact with other facilities, rehabilitators? How?

Facility

- When an animal comes into your facility how do you make a decision whether to rehabilitate it? [What should decisions be based on?]
- Who makes final decisions about treatment? [Who should be making decisions?]
- Who performs euthanasia in your facility? Their training? Methods? [Who should perform euthanasia? Their training? What methods should be used?]
- What do you think your facility is doing that others could benefit from? [What could facility benefit from?]

Records

- What is the role of rehabilitation records at present? Importance?
- Potential/another role in the future?
- What is the importance of standardization? Interest in participation?
[What is a typical form? Is there a standard? Policy for submitting?]

BC SPCA

- Are you aware of BC SPCA Community Consultation?
- What are your opinions on the proposal?