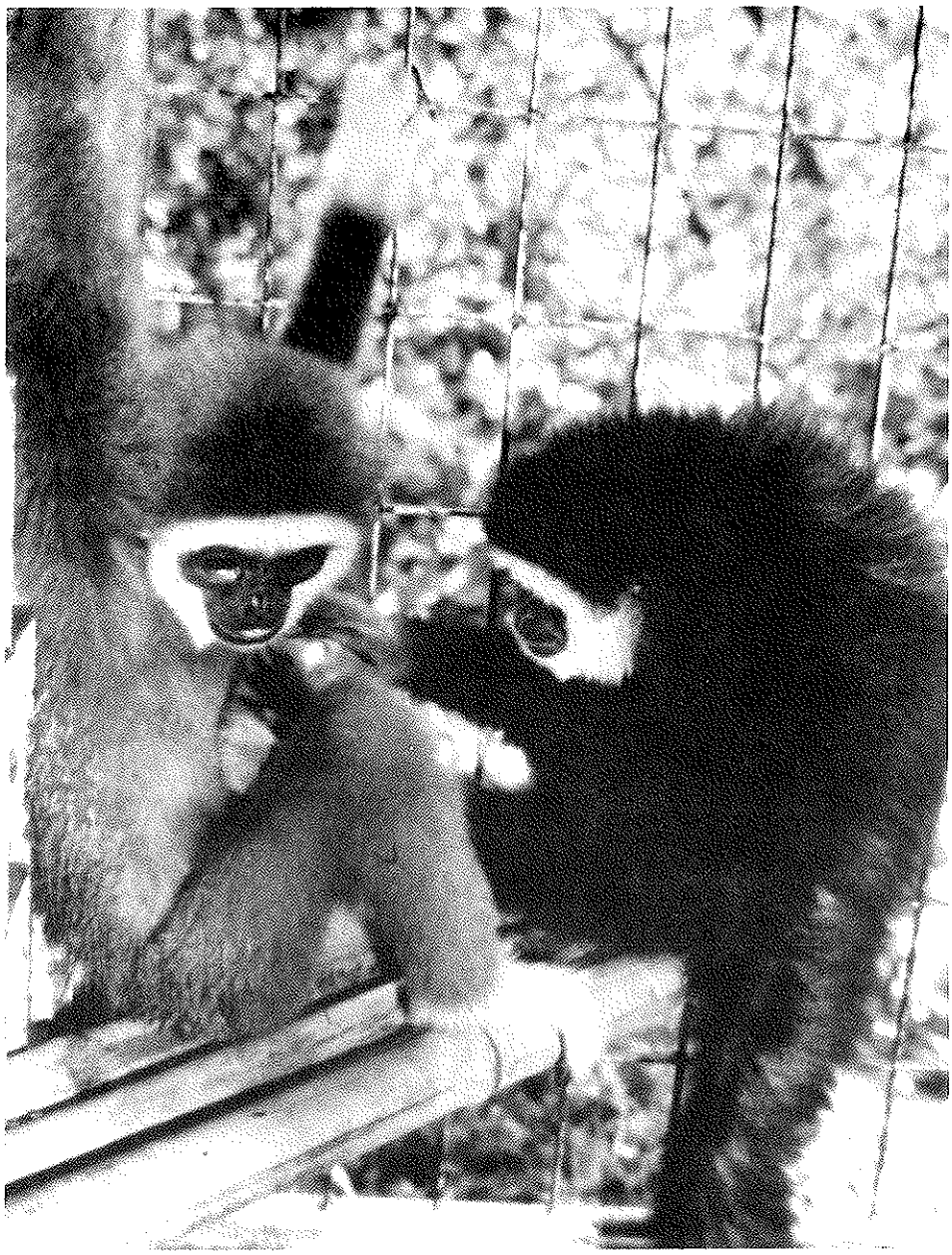
*Vol. 17, No.3*

# JOURNAL of Wildlife Rehabilitation

*A Publication of the International Wildlife Rehabilitation Council*



## Special Topics Issue: International Wildlife Rehabilitation

## Guidelines for Authors

The *Journal of Wildlife Rehabilitation* is designed to provide useful information to wildlife rehabilitators and others involved in the care and treatment of native wild species with the purpose of returning them to the wild. All feature articles are subject to a review process, and our staff and reviewers work with authors to produce the most accurate information possible in our ever-changing field.

The *Journal of Wildlife Rehabilitation* has various feature categories. We solicit submissions in the form of feature articles, rehabilitation notes, book reviews, news articles related to major events in the field, and selected case studies. Articles on veterinary medicine as it relates to wildlife rehabilitation are also welcome. We would like to expand the *Journal of Wildlife Rehabilitation* to include wildlife rehabilitation articles from countries outside the United States and welcome inquiries regarding such articles. We also have two short features we use for basic information: "For The New Rehabber" and "Simple Things That Make a Difference." They are intended for basic information or new ideas that are easily demonstrated with a short text and photos. All authors receive a $25 honorarium for each article accepted for publication or provide a one year membership or renewal.

**Submission Instructions**

1. An original and two copies of the manuscript should be submitted to the Editor, IWRC, 4437 Central Place, Suite B-4, Suisun, California 94585, USA. The manuscript should include references, photo legends, and footnotes, and should be typewritten, double-spaced, if possible. The author's name, address, and phone number should be placed on at least the first page of the article so it can be readily identified and the author contacted. Please note that each article should be accompanied by an abstract and a set of key words. If tradenames are used for products mentioned the author must indicate whether the product is ™ or ®. A product table at the end of the article should give readers the name and address of the companies involved and generic name or category of product.

2. The *Journal of Wildlife Rehabilitation* is prepared on a Macintosh personal computer with desktop publishing software. If papers are already on a personal computer disk, the submission cover letter should include that information, as well as what type of hardware and software systems were used. Obviously, being able to use the author's disk directly or translate it by machine to Macintosh format prevents input errors and speeds up the process. We are able to translate many IBM files provided that the software (including version) are written on the disk.

3. Manuscripts are received with the understanding that they have not been accepted for publication elsewhere. **It is the author's obligation to obtain permission or reprint rights if the submitted copy has been published elsewhere.** All accepted manuscripts are subject to editing. Unused manuscripts will be returned.

4. A separate page should be submitted with a short synopsis of information on the background of the author. Included should be the name, address, rehabilitation organization, phone number of the author and a biographical paragraph. Where appropriate, please list any academic degrees, special training, or experience that is relevant to the article (i.e., physical therapy—RPT, etc.) Articles pertaining to areas of veterinary medicine that involve tasks or decisions requiring a licensed veterinarian (e.g., soft tissue or orthopedic surgery) require a veterinarian as either the author or a co-author.

5. Black and white photographs are preferred for use in the *Journal of Wildlife Rehabilitation*. When no other option is available, color prints can be converted but this is costly and to be avoided when possible. Photo credits should be listed with the photographs.

6. Acknowledgments are limited to people who have contributed to the article in a major way.

7. References should be noted in the text with the last name of the author and the year published (i.e., Leighton, 1983) and listed at the end of the manuscript in alphabetical order in the following style:

LEIGHTON, FA; Peakall, DB; and Butler, RG. 1983. "Heinz-Body Hemolytic Anemia from the Ingestion of Crude Oil: A Primary Toxic Effect in Marine Birds." *Science* 20:871-873.

# JOURNAL of Wildlife Rehabilitation

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**Cover Photo: Supplied by The Gibbon Rehabilitation Project.**


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# Editorial . . .

## *International Wildlife Rehabilitation*

Did you know that the World Society for the Protection of Animals has rehabilitated and released a Dolphin? Dr. Marco Antonio Carneiro has been following the animal which has radio telemetry equipment attached since it was released in 1993. Did you know that there are 25 wildlife rehabilitation centers in Denmark or that France has a similar network? Actually, there is a lot of wildlife rehabilitation going on in Central America, South America, Europe. We even have a member in Iceland that is actively practicing wildlife rehabilitation. So why don't we hear much about it? They are very busy raising funds, learning care techniques, and building organizations much as their North American counterparts! Over the last year, I have written to Australia (where they rehabilitate kangaroos and koala bears), Europe, Iceland, Thailand, Namibia, and anywhere else I could think of for our special topics issue on international wildlife rehabilitation. I did get some interesting replies but only two articles were submitted for this issue. However, they are both informative and fascinating!

Les Stocker chose to write an article about the Eurasian Badger because, he reasoned, it was close enough to the American Badger to be relevant to the typical member of IWRC. While we do have 150 international members, the rest of our members do live in the United States. From that point of view, he makes a good point. I was challenged by having to read an article with so many foreign medications and products—I guess I now know how our international members feel when they read about products to which we commonly have access.

The other article is from the Gibbon Rehabilitation Project in Thailand. Now here is an up and coming trend: taking former primate pets and teaching them how to live in primate society again. I think all of our members will find this article enlightening. These wildlife rehabilitators face the challenge of releasing an animal that can inflict severe damage on humans. In a recent fax from Terrance Dillon Morin, the Director of the project, he wrote, "Previously captive gibbons often regard human primates as their peer group and have no fear of this rather awkward, barely coordinated 'naked ape,'. There are reports of victims receiving 90 stitches, another received 50 stitches and I witnessed an attack that lasted only three seconds but resulted in arterial bleeding and 26 stitches. The victim looked like he caught a chain-saw." This is an ape with razor sharp canines where the lower arcade sharpens the upper teeth in normal wear. So when they release gibbons, they are armed with BB guns to keep their former charges at bay!

We hope this issue of the journal breaks some new ground. We welcome articles on wildlife rehabilitation from around the world. We hope that we can offer other such articles in the future.

-Jan White-


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# Gibbon Rehabilitation Procedures in Thailand

**Terrance Dillon Morin**
**Gibbon Rehabilitation Project**
**Bang Pae Waterfall**
**Pa Khlok, Thailand**
**Phuket 83110 Thailand**

*ABSTRACT*

This paper describes the rehabilitation procedures used by the Gibbon Rehabilitation Project in Phuket, Thailand. Specific information is given regarding diet, feeding, housing, and rehabilitation methods used to prepare gibbons for release.

**KEY WORDS:** Gibbon rehabilitation, White-handed Gibbon (*Hylobates lar*), pet gibbons

## Introduction

Gibbons are the smallest of the apes. While most species weigh about 5 kg, some can weigh up to 12 kg. At any weight, they are challenging to work with, especially when they have been raised captively. In spite of the fact that gibbons are currently listed as an Endangered Species and are listed on Appendix 1 of CITES, many are still taken by people as pets.

As young gibbons are captured from the wild and bought by pet lovers, large numbers are accumulating in captivity. While many of these receive loving care while young, they become dangerous and difficult to manage when they mature. They are usually kept on chains so they are not free to develop their legendary locomotor abilities. They are not given the food that gibbons are adapted to finding and eating in the forest. They have no chance to find a proper mate and enjoy a normal family life. They contribute nothing to the propagation of their own kind. Their songs go unanswered.

Clearly, the capture of gibbons for the pet market must be stopped and the raising of pets should be discouraged. It decimates the natural population and gibbons are not easily bred in captivity. Some of the gibbons in captivity might be returned to the wild, but successful reintroduction is difficult. One cannot just turn a pet loose in the forest and expect it to survive. Many people have tried this approach which results in either starvation or nuisance behavior.

Some studies have shown that with proper selection, preparation and supervision, some captive gibbons may be able to adjust to the wild and even reproduce. Apes that cannot be released are transferred to sanctuary facilities. Many captives, however, cannot make the adjustment. More research needs to be carried out to find ways to improve the chances of successful reintroduction. A reintroduction project should involve close cooperation between the "pet owners," veterinarians, forestry department personnel and primatologists who study behavior and ecology.

Bang Pae Waterfall is a wildlife park and a forest reserve located in the northeast of Phuket Island, Thailand. This is also the location of the



*The Gibbon Rehabilitation Project education facilities.*

Gibbon Rehabilitation Center (referred to as Phase I). We have established an Information Center at Phase I in order to educate both Thai and foreign visitors on how and why we rehabilitate.

## Intake Procedures

At present, there is a large supply of unwanted captive gibbons, particularly the white-handed gibbon (*Hylobates lar*). While infant and juvenile gibbons are kept as pets the adults can be aggressive and quite dangerous. This animal has long arms with strength and reflexes that are far superior to our own.

When a gibbon is received at the center a case history form is completed in an attempt to establish the geographical area the gibbon is from and also its age, sex, daily diet, health history, inoculations and identifying features. The animal is then anesthetized by a veterinarian, for a basic medical check which also includes a blood sample for virological testing, a tuberculosis test (TB) and de-worming. To date, two animals have tested positive for human hepatitis but none to TB. Morphological measurements are recorded by our Phase I manager. The animal is isolated in a quarantine cage where its feeding and behavior are closely monitored.

## Rehabilitation Procedures

After the animal has been judged to be healthy it is allowed to socialize with others of the same age. Socialization is one of the most important aspects of gibbon rehabilitation. Many captive gibbons have never seen (since capture) another gibbon, some may dislike the company of conspecifics and possibly consider themselves as "humans." This attitude changes with time, often within four weeks. Mature animals are given their own cage (same sex adults will normally fight), then we attempt to find and introduce a compatible mate. Juveniles are caged together as are sub-adults. We have had minimal problems with young animals sharing the same facilities. One of our enclosures houses as many as nine gibbons, two to three years old. They play well together and have little need for human contact. This is a rather unique situation where same-age gibbons have the opportunity to form play groups. Juvenile gibbons do not have same-age playmates in nature as do most other primate societies. It has been demonstrated at the Gibbon Rehabilitation Project (GRP) that observations of nine approximately same-age gibbons sharing the same enclosure have not displayed any apparent social dysfunctions. These animals play competitively, enjoy one anothers' companionship and have shown positive improvement in their social abilities.

The enclosures are designed for brachiation, swinging, jumping and climbing. This allows the animals to improve their locomotor skills while building muscle tone and hardens the inner surfaces of their hands and feet.

Our gibbons are fed twice a day at 0800 and 1300 with a mixture of fruits, vegetables, starches, leaves and protein. Fresh produce is purchased locally and is supplemented by an afternoon addition of "gibbon balls." The original recipe was designed for the gorillas in captivity at Apenheul in the Netherlands. The Phase I manager adapted the recipe to locally available products that help to fulfill the nutritional needs of the gibbons thus insuring they get their carbohydrates, proteins, fats, vitamins and minerals. Furthermore, it turns out that food spillage is greatly reduced, because the gibbons eat them with gusto, preferring them over other foods with the possible exception of bananas. A gibbon should consume about 24 to 32% of its body weight. The majority of their diet is plant material and should be administered under these approximate percentages: fruit 10%; vegetables 20%; starches 10%; leafy matter 50%; protein 5%. Candies, junk food, overripe fruits and all citrus fruits can cause diarrhea. It appears that tuberous plants must be steamed or boiled first because the gibbon, even though considered omnivorous, has a gut morphology designed primarily for eating leaves and unripened fruit. Produce and fruit must be washed to remove traces of fertilizer and insecticides. Workers using mosquito repellent are reminded to clean their hands before handling gibbon food.

### Gibbon Balls

(Serves 25 gibbons)

| | |
|---|---|
| sweet potato (boiled) | 3 kg |
| steamed rice | 350 g |
| boiled corn | 500 g |
| boiled soya-beans | 500 g |
| boiled eggs | 12 |
| oatmeal | 200 g |
| vitamin and mineral powder | 20 g |
| bananas (for a nice taste) | 6 |

For the vitamin and mineral powder we use at present a commercially available powder for young dogs, produced by Beapharm of Holland.



*Gibbon assessment in Puket, Thailand.*

To minimize fighting, gibbons are given their fruit first, starch second, vegetables third, etc. Dominant animals are fed first. The food baskets are scrubbed once a week, open water containers are rinsed daily and washed weekly. Water dishes have a tendency to accumulate a bacterial slime that must be removed. Food baskets must have all traces of food from the prior meal removed. Cages are cleaned twice a day, after feedings, and when possible leaf litter is put into the enclosures along with leafy lengths of bamboo to play with. Besides the possibility of bacterial contamination and spreading of disease, gibbons, which are very clean animals, do not like the smell or the flies caused by feces and decaying vegetable matter.

For human safety, an absolute minimum of human contact with the gibbons is recommended. Once a gibbon is in an enclosure it begins to socialize with its fellow cage mates and should not depend on keepers for grooming or affection. When it is necessary to enter an enclosure, the gibbons are kept occupied with food treats and have a second person standing by with a squirt bottle. When in range of aggressive animals one must *keep eye contact and not turn away!*

Animal caretakers are advised to wash their hands after any gibbon contact to prevent Salmonella contamination. Cuts and scratches should be disinfected immediately. Tetanus and hepatitis inoculation should be up to date. Keepers or visitors who have a cold, flu, virus, etc. are not allowed to approach or handle gibbons or gibbon food because the sicknesses of human beings can be lethal to a gibbon.

When mature animals are suspected of forming a pair bond in the isolated minimum-contact enclosures, they are observed closely for mutual grooming, duetting, possible copulation; oestrus cycles are logged. When the pair-bond criteria are met the animals are given another medical check, placed in a carrying cage and transported to a release site on the island of Ko Boi (Phase II).

Captive gibbons soon lose their fear of man. With superb reflexes and sharp canines they are able to inflict serious wounds. After release it is not uncommon for gibbons to wander into populated areas, the consequences being negative for both man and gibbon. Uninhabited islands with natural forest and a source of fresh water afford an ideal location for releasing gibbons. Any body of water provides a natural barrier to apes and most islands do not have existing gibbon populations. Ko Boi is a forest reserve, non-calcareous island of approximately seven square kilometers. Located in Phang Nga Bay with sixty degree gradients ascending to 185 meters, thick foliage, lack of beaches and shore rocks covered with razor clams make this island inhospitable to the passerby. Two other primate species live on this island, the spectacled langur (*Presbytis obscura*) and the crab-eating macaque (*Macaca fascicularis*).

The gibbons are put into an acclimation cage at the release site, while their diet and feeding schedule remain the same as in Phase I. It is very important to allow the gibbons to acclimate to their new environment otherwise they will wander off, possibly separate, may not find their feeding station. The animals could easily die due to stress and starvation. During a week of internment in the acclimation cage the animals realize that they are fed each day and they learn the new sounds and alarm calls of the local fauna. One person who is familiar with the personalities of both animals should accompany them to the release site, do the daily feedings and the initial follow-up behavior observations, as it helps to relieve stress when the apes can recognize someone in their new environment.

On the morning of the seventh day the cage door is opened and the gibbons begin to explore their new situation. They must teach themselves about rotten branches and will fall several times. Daily feedings are continued for four to five weeks while the gibbons are learning to feed themselves. During this "weaning" period they soon prefer natural foods over our intentionally bland supplements. By the fourth week the supplementary feeding is usually reduced to one rice ball per individual, of course this depends on how well they have been foraging.

The gibbons will originally remain in the

vicinity of the release site, yet each week the radius of their exploration becomes larger. After the supplementary feedings are discontinued the female may leave the male (personal observations) and go off to find her own territory, afterwards the male will rejoin her. It is very important to continue behavior observations on all released pairs. Adult animals should never be trusted, especially when they are in a free environment. As a safety precaution, we use two people when entering gibbon territories carrying a 1.5 meter section of bamboo. We have also discovered that an air-powered pellet pistol (BB gun) provides the best protection and discourages the gibbons from following. *(Note: the thick pelage of the animal prevents BB pellet penetration.)*

The gibbon is not a difficult animal to rehabilitate due to its innate behavior, intelligence and ease of locomotion, if the correct procedures are accurately followed: selection of animals, medical examination, rehabilitation, release site selection, public relations, release, and follow-up observations. These procedures have been developed by Dr. Warren Y. Brockelman, Mahidol University, Bangkok.

### *Selection of Animals*

Most gibbons in captivity are probably not suitable for release into the forest, for a variety of reasons. First of all, they must be strong and healthy, with no injuries that might impair their locomotor abilities, and their teeth should be intact. Second, they should be at home in the trees. Many gibbons raised in cages or around houses prefer to run on the ground, and therefore cannot adapt to forest life. Others may have been fed only a human diet and would not find natural foods to their liking.

### *Medical Examination*

All gibbons must be examined by a competent veterinarian to be sure that they are disease-free. Having been raised around humans, they can easily pick up human diseases and transmit them to other gibbons. Adult gibbons also must be in good reproductive condition if they are to be paired and released.

### *Rehabilitation Concepts*

The rehabilitation process for this species has three main focuses: locomotion, diet, and socialization. A gibbon management facilitiy should also attempt to socialize juvenile gibbons, by putting them together so they will play, groom, and sleep together. Human contact must be minimized and they must be allowed to seek other gibbons for companionship, not humans. Unfortunately, most gibbons in captivity were captured as infants while clinging to their mothers, and later learned to depend on human substitutes for their mothers. It is not fully understood if this damages their chances for later mating or reproduction appreciably, but baby gibbons must receive warmth and motherly love from somewhere.

### *Release Site Selection*

The release area should satisfy several criteria:

a) It should be good natural habitat for the species being released -- that is, the species must have once lived there. Preferably, it should be in the same part of the country from which the gibbon originated; that is, a northern Thai gibbon should not be released on the peninsula. There may be important genetic differences between the populations in widely different parts of the country, as implied above.

b) The forest area should not have many wild gibbons remaining, or they will probably drive out the released animals. The territory of a single group may be as large as 30 hectares.

c) The site should be part of a large forest area, not isolated patch, so that it may be able to hold a viable population, not just a few animals. There should be space for at least 100 group territories, as a general rule.

d) The site should be away from human activity: not near houses, roads or places visited often by humans, or gibbons may leave the forest and follow them. Adult gibbons raised with humans also readily attack humans and can cause serious injury with their canines.

e) The site should be in a park or wildlife sanctuary and actively protected by guards.



*Gibbon socialization in a rehabilitation setting.*

## *Fish Hatcheries, Opportunistic Fish-Eating Birds, and Wildlife Mortality from Gunshot and Target Poisoning*

**Maggie Jones, Blue River WI**
**Marge Gibson, Antigo, WI**

Anyone who has rehabilitated birds long enough has experienced the problem of some private fish hatchery operators (and on some occasions, state-run hatcheries) and their antagonism toward birds that are attracted to the "free lunch" supply of fish that these facilities provide. This antagonism too often means that birds are shot or poisoned. Herons, egrets, Osprey and Belted Kingfishers are the most common victims in the Midwest. For years, federal and state law enforcement has looked the other way.

Now we have a window of opportunity to effect a change, but our help is needed to further and support these positive developments. Very recently, a man in Langlade County, Wisconsin was fined $2,000 for mortally wounding an Osprey. Due to the remote areas that these fisheries are in, it is rare that there is an actual conviction. The aquaculturists have taken the tack that it is their right to kill predator birds and furbearers that take their stock. They claim it is too expensive to enclose the trout runs or rearing ponds. Kill permits are still issued by the federal government to hatcheries to kill migratory species, including Great Blue herons, Belted Kingfishers and other species. The problems arise when the owners take the matter into their own hands and use the kill permit as an open season on hundreds of individuals, including threatened species. The predator problems are not well investigated, if at all, before kill permits are issued. Further, the individual hatchery owners are not investigated as to credibility before they are armed with a permit to kill wildlife.

We need to contact our state and federal officials as well as our legislators to verbalize support for the law enforcement people. They must be able to continue to do their jobs and arrest individuals that violate the law when killing these birds. We must insist on legislative changes to better govern the hatcheries and game farms. These changes should include successful abatement methods being implemented as part of the design stage of the hatchery to ensure wildlife safety.

For too many years, the theory was to "Shoot, Shovel and Shut up" when it came to fish hatcheries. Many states still adhere to this practice. Fish hatchery owners and operators must be held accountable for these acts, just as any other private citizens. Killing is not an appropriate abatement measure. They cannot be considered above the law.

Please investigate the situation in your area. Contact your local wildlife law enforcement warden and your local paper to publicize your concerns via letters to the editor and articles on the subject. Most of the time, the public is unaware of the situation. They may not be so eager to support hatcheries by buying farm-reared fish in grocery stores and restaurants if they realize that protected wildlife died to increase profit margins in the name of private business.

We need action to register a voice and create change. This is an area where we, as rehabilitators, can make a difference. We can prevent death and injury to many species of wildlife before it happens as well as underscore the protection of wild creatures that we all teach and believe in, and that wildlife laws support.

## *Return of the Robin*

**Liz Thunstrom, Asst. Wildlife Care Manager**
**Wildlife Rescue Association of**
**British Columbia**
**From the *NetWork News*, Summer 1994**

We all wonder a little at this time of year as we see the year's crop of fledglings go free, "Do they make it out there? Was our best good enough?" Undoubtedly, some of the youngsters don't. This summer, an adult robin was brought to Wildlife Rescue in Burnaby. He had been badly mauled by a cat. Upon examining the bird, we noticed that he had been banded!

Since there are not many people banding robins at this time, there was a strong possibility that it was originally one of ours. A check of the records revealed that this was indeed the case. The robin had originally come to us as a cat-injured fledgling. It had been treated and released in Vancouver in August 1989!! With the hazards

of urban life and a couple of severe winters, few robins make it much beyond their third year in the wild. Despite this, our bird was one of the strongest robins I've handled - and certainly the oldest! He is slowly recovering from his wounds and regrowing his feathers in an outside aviary. It is hoped he will soon be able to return to the wild in a garden in Vancouver.

## *UNRELEASABLE STARS*

**Louise Shimmel**
**Cascades Raptor Center**
**Eugene, OR**

According to Tami Tate-Hall, USFWS, Portland, OR, your unreleasable bird, or even a releasable wild one, could be a movie star. Tthe allowed use of an educational animal is that it must be "of benefit to the resource". So what does that mean? Educational animals may not be used if it is going to lead to harmful or incorrect perceptions of them.

The display permit attachment to a federal migratory bird permit reads: "Migratory birds possessed or transported under the authority of this permit MAY NOT be displayed in any manner which may imply personal use by the permittee nor representation, promotion or endorsement of any products, merchandise, goods or services except the permittee's approved educational activity." So, using them in a Jeep Eagle ad would not be okay.

Filming a release of a rehabilitated bird would be acceptable, but it is best to run it by your local USFWS Special Agent first. Personally, I don't see much difference between media filming a release and using release footage as part of a documentary or infomercial or whatever, if the release site is appropriate and all other release criteria are met.

For the local news end, Cascades Raptor Center's unreleasable raven was used in a Disney TV movie tentatively called The Four Diamonds, to be aired in Fall, 1995. Two other local rehabbers used a juvenile raccoon release and a juvenile Green-backed heron release as part of a Georgia-Pacific infomercial on salmon stream restoration.

Marge Gibson was featured in a Garth Brooks video, "Let Us Be Free". NBC footage from Prince William Sound, Alaska in 1989 was used in the video. It was a Bald eagle release, July 4, 1989. According to Marge, both birds, a pair, were in rehab for cleaning from the oil spill for four days. We released them together back into their territory. It was a beautiful day, a beautiful feeling to know that they were going home clean, to a clean environment.

Becky Barron, from Key West, had two brown pelicans in Arnold Schwarzenegger's movie True Lies.

So, dust off the feathers. Appropriate use of educational animals can make more friends for wildlife and educate the public to the nature and needs of wild things.

## *GIVE YOUR VET OR VOLUNTEERS A WILD GIFT FOR CHRISTMAS*

What better gift for your veterinarian, whom you call upon at all hours for help with injured wildlife, than a gift subscription to The ***Journal of Wildlife Rehabilitation***? For $38.00 membership dues, in his or her name, you can give a practical and much appreciated gift of four issues of *TJWR*, plus the Proceedings of the year's annual conference, the Newsletter, discounts on IWRC publications and frequent mailings of interest to all in the field of wildlife care. A special note announcing the gift from you is sent with each subscription.

Your special volunteers would also appreciate their own copies of these publications, especially if they have to wait to read the center's single copy until it is dog-eared and grubby from frequent use. A pristine copy of their very own is a thoughtful way to say "Thank you".

Christmas is coming! Call now and charge subscriptions to your Mastercard, Visa or Diner's Club, or send a check and a list of names of people you want to receive this special gift of wildlife care to IWRC, 4437 Central Place Suite B-4, Suisun, CA 94585 Phone: (707) 864-1761

## *BATS - LIMITED TIME OFFER*

**Polly Brunken**
**WildCare, Inc.**
**Ft. Worth, TX**

One of the things WildCare Inc. tries to do is to educate the public about wildlife, but sometimes this turns out to be a two-way street. While manning a wildlife awareness booth at a function at one of the local parks, we had a few non-releasable animals, including a Mexican Free-Tailed Bat with us for "show and tell". All day long, people kept asking, "Do you have anything else to give away?" Thinking that they were referring to the handout, I tried to find more printed information to give them, but they seemed disappointed. Then, a young man stepped up and asked, "Am I too late to get one of them tail bats?" I must have looked awfully puzzled, because he pointed to the sign that we had put on the bat cage which stated boldly: FREE - TAIL BATS.

Okay, so nobody said you had to be a good speller to be a rehabber!

## *A CHRISTMAS TALE*

***Peggi Rodgers***
***Veneta, OR***

*'Twas the night before Christmas and all through the house,*
*Not a creature was stirring, not eagle nor grouse;*
*The bats they all hung on the mantle in pairs,*
*The squirrels had the hallways, the opossums the stairs;*
*The wolves were all snuggling deep down in their beds.*
*While visions of caribou danced in their heads.*

*When down in the kitchen there arose such a clatter,*
*I jumped from my bed to see what was the matter.*
*I ran to the stairs taking two at a time,*
*My long winter's robe flowing out from behind.*
*I leapt over the opossum at the foot of the stairs,*
*Crashed through the door and tripped on a chair.*
*A flick of the light and there to behold,*
*Six young raccoons escaped from the cold.*

*There were boxes of cereal strewn everywhere,*
*Three bags of flour, canned peaches and pears.*
*They'd found every package, cleared every shelf;*
*To clean up the mess, I'd need more than one elf.*

*There was sugar on the counters, the table, the floor;*
*A pile of it grew where I'd opened the door.*
*The happy invaders, all covered in stuff,*
*They looked so darned cute it was hard to be gruff.*
*Their little masked faces were all streaked with white;*
*The bread was demolished; they'd savored each bite.*
*They sat on the counters, the table and chairs,*
*Petite little footprints tracked everywhere.*

*In the blink of an eye, they were away in the night.*
*I stood at the window 'til they were well out of sight.*
*Then looking around I observed in dismay,*
*I couldn't face cleaning. I'd wait for the day.*

*As Christmas Day dawned, I slipped from my bed,*
*went down to the kitchen, a feeling of dread.*
*I flung open the door and there in the light,*
*The counters were clean, all was put right.*

*As I stood in amazement, I heard someone say,*
*"Merry Christmas to all, and to all a good day."*

## *IWRC Board Elections are Coming!*

**IWRC is always looking for for a few good leaders. The board meets bi-annually and is very active in policy making and program development. If you have 2- 5 hours a week to donate towards improving our profession, we would like to talk to you. Call or write our office for a board application. Working team members are a must!**



## *FORUM CORNER*

**Marge Gibson**
**Raptor Education Group, Inc.**
**N2160 W. Rollwood Rd.**
**Antigo, WI 54409**

*Dear Forum Corner Readers:*

*It has been great hearing from and getting to know so many of you, both by mail and by phone. It is so exciting for me to meet the great people that make up our membership. The high standards you have set for yourselves and your centers allows me to see more clearly the increasing degree of professionalism that has come to the field of wildlife rehabilitation.*

*Remember, we work on the premise that there is no such thing as a dumb question. The fact is, if the question has occurred to you, it probably has to the rest of us at one time or another as well. We all wear the same label: "wildlife rehabilitator." Some have just had it on longer.*

*Also remember that we have a few months lead time for publication in the Journal, so if you have a pressing problem you need help with, call me so you don't have to wait. Please let us know how you like the Forum, or what I can do to improve it.*

*Advisingly yours,*
*Marge Gibson*
*715-623-4015*

Dear Ms. Gibson:

For sometime, concerned individuals in Sonoma County, California have attempted to address the problem of free-ranging cats by proposing local ordinances with only limited success. Opposition by groups promoting the establishment and maintenance of feral cat colonies as well as pet owners have been well-organized and effective in preventing control measures. Rehabilitation groups have not provided much assistance to the few environmentalists involved.

Sonoma County is an average sized county. University of California at Davis biologists estimate 500,000 birds annually are victims of cat predation in our county, and small mammal figures are probably comparable.

The cat problem is undoubtedly the most simple to correct of all the many threats to birds and wildlife and one that deserves greater emphasis from rehabilitation organizations with national prominence. My question is: why have rehab

they so frequently have to deal with the results?

A.J. and Yolanda Wood
Sebastopol, California

*Dear A.J. and Yolanda:*

*Your letter pinpoints two rehabilitation problems. One is the nationwide problem with feral or free-ranging cats causing injury or death to wildlife. This problem is so serious that I cannot do it justice in a column. I promise to do a full-length article.*

*Your question, why don't rehabilitators or rehabilitation organizations do more to address wildlife problems when we see the results so frequently, is a tough one to answer in a concrete way. I did some research in the way of an informal poll of several groups as well as individual rehabilitators. I found the reasons to be as varied as rehabilitators themselves. The results are listed below in order of most responses.*

*1. TOO BUSY: Most frequently, people said they were just too busy to do anything other than care for the animals that came through the door to think about getting involved in publicity for wildlife protection.*

*2. MAKES ME UNCOMFORTABLE: My best guess is that this goes back to the basic personality types. Most people that get involved in rehabilitation tend to be "quiet and nurturing" types. (I know, this is news to some of you, but we are generalizing here.) Caring for animals is one thing, but tackling organized groups in a public forum can be outside one's comfort zone.*

*3. NOT MY JOB: Our purpose is to care for injured animals, not to be animal or political activists.*

*4. FINANCIAL PROBLEMS: This is a biggy for almost everyone. Most that I have spoken with have the concept that becoming active in wildlife protection requires financial involvement (not true), and almost everyone is under-funded or running on shoestrings.*

*5. PUBLIC IMAGE: Some felt that being active in animal protection compromises their image as a rehabilitation center.*

*So there you have it. Far and above the biggest reason is that centers are just too busy to do anything other than rehabilitation. Some wildlife problems occur during our "busy" or "baby" season. This is the time when young animals' inexperience gets them into trouble with cat predation and situations leaving them vulnerable to injury.*

*It is unfortunate, because, as you point out, we spend so much time caring for individual animals that have suffered many injuries from causes that are correctable. It makes sense that we would be the ones to bring those facts to the attention of the public, press or even the legislature, if appropriate. I fail to see where it would be construed as a compromise of image. Addressing issues would seem beneficial to the overall image of caring for animal welfare.*

*On a positive note: I was most encouraged to hear how many groups were already involved in protection issues. Some groups utilize a volunteer to be their "legislative connection". One group has a freelance writer as a volunteer. She frequently writes articles that address wildlife concerns in their area. There are so many ways to use volunteers. Cleaning and feeding our patients is not everyone's cup of tea. It would seem putting a writer or politically-oriented individual to work would be an excellent way to expand the horizons of a rehabilitation center. In that way, it would be more of a full-service animal care and protection center.*

*It certainly is much easier and makes sense to prevent injury whenever we can. Rehabilitation is a wonderful profession and needed in our society. So is the activist side of wildlife care. We should strive to become more involved whether on a local level or something more universal. My advice would be: Don't sit around wondering why somebody isn't doing something to fix an issue. REMEMBER, YOU ARE SOMEBODY AND YOU CAN DO SOMETHING TOO. We are the ones with intimate knowledge of the grief and pain these critters suffer, so who could do it better? A short letter to the editor of your local newspaper does wonders. Perhaps you can send a reminder to your local wildlife protection agency to include a note in their next newsletter that addresses a problem. How about including addresses of legislators in your own newsletter, in the event your supporters want to write and address an issue? You are already important to wildlife. Don't wait for somebody else. You may just be the somebody that will make a difference. So, as the ad says..."JUST DO IT!" Thanks for your letter!*

## 1993 Conference Proceedings Update!!

This long-awaited publication is finally on its way to our eligible members. Our apologies for the delay, but there has been a long list of problems, from editing, to printing, to mailing. We hope that when you see how well the book turned out, that you will feel it was worth the wait! There are a limited amount of extras available for purchase at $20.00 per copy, so don't delay if you would like to order one! We thank you for your patience and your support of the International Wildlife Rehabilitation Council. Hope to see you at our upcoming 17th annual conference in San Diego, California, November 3-6, 1994!!

*Continued from page 6*



*White-handed Gibbon.*

***Release***

The animals to be released, usually a mated pair, should be kept temporarily in a cage or enclosure at the release site to become accustomed to the area and local foods. This may induce them to stay around after release and not wander far away. They should continue to be offered food after release until they learn to rely on natural foods. They should not be allowed to follow humans. This may be considered to be the final - and most important - stage of rehabilitation.

***Post-release Observations***

After release, the gibbons must be carefully observed to determine how well they adjust to the wild. Notes are taken on their movements, ability to move through the trees, natural foods eaten and singing behavior. If they fail to behave like normal gibbons or if they follow people out of the forest, they may have to be returned to captivity. During the first year, they are checked for several days each month. Local persons near the release site may be hired to regularly report on the animals. It is crucial that we observe whether each reintroduction was successful or not in order to be able to improve chances for animals released in the future.

***Public Relations***

If any villagers or other people live near the area they should be informed about the reintroduction so that they will not be surprised or puzzled to see the gibbons. They should be instructed about what to do if the gibbons approach or attack anyone. If possible, local people should be hired to help observe or protect the animals.

***Future Plans***

It is our intention to capture the feral-born offspring when they become young adults and reintroduce them to forest reserve areas that are presently depopulated.

One of the problems with rehabilitation is that we receive very young animals. Gibbons, being monogamous and forming small stable family groups, cannot be released into the wild until they form a pair-bond upon reaching sexual maturity (approximately seven years of age). Therefore, a two year old gibbon received for rehabilitation would have to remain in a cage for five years awaiting adulthood. An alternative to incarceration is an island sanctuary where the animals, on a daily basis, are fed and observed in a free setting. Upon reaching adulthood the gibbons would be transferred to another area. Ko Tai, a small island less than one kilometer square, has been selected as a release and study site for juvenile lar gibbons and will be known as Phase III. This unique opportunity to study juvenile gibbon social behavior in a same-age grouping should yield some interesting results. Phase III will begin as soon as we have staff.

## Conclusion

While this project is small (due to lack of funding) and our efforts may have little influence on the future populations of lar gibbons, we do hope that the Gibbon Rehabilitation Project may serve as a model for similar projects. We have made extensive efforts to inform both the public and the scientific community of our program. Last year the director made a lecture tour at major universities in Europe in order to attract the assistance of graduate students as well as inform the general public about this important endangered species. We hope that what we do here will make a difference in the quality of life for the animals we seek to assist.

***Author Profile***

*Terrance Dillon Morin is a zoologist/film maker. As an undergraduate in Marine Zoology, he discovered a new species of slipper lobster in Hawaii. He was a graduate student at the University of Hawaii and directed a film that was instrumental in saving a Costa Rican nesting site for the endangered Leatherback Turtle.*

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# Rescue and Rehabilitation of Badgers in Britain

**Les Stocker, M.B.E.**
**The Wildlife Hospital Trust**
**Aston Road, Haddenham**
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**HP17 8AF**

## Abstract

European badgers present the types of rehabilitation problems that may occur with American badgers. Their rehabilitation can be successfully undertaken provided they are handled safely, given the right first aid treatment and suitable caging. They respond well to surgery and medication but do seem to incur massive dental problems that should be addressed before release. Release is crucial as badgers are strictly territorial and are unlikely to accept strangers.

**KEY WORDS:** *Meles meles*, Eurasian Badger, rehabilitation, *Taxidea taxus*

## Introduction

The Wildlife Hospital Trust, affectionately known as St.Tiggywinkles, is Britain's foremost wildlife rehabilitation centre catering for in excess of 15,000 casualties each year. About 200 of these are Eurasian badgers *(Meles meles)* which are similar in many ways to American badgers *(Taxidea taxus)* although generally they are slightly larger.

This paper covers the rehabilitation of Eurasian badgers, the techniques of which could literally be applied to their American counterparts. All drug dosages have been developed by our veterinary consultant, Dr. John Lewis of International Zoo Veterinary Group, who is responsible for all veterinary supervision at our hospital.

Prior to the Trust taking in badger casualties, very little work had been carried out on these powerful animals, with most being euthanised in situ with no attempts at rescue. Consequently, the Trust had no one with expertise they could call upon and had to evolve its own methods of capture, handling, housing, treatment and release.

## Biology

Badgers are members of the Mustelidae and are represented by nine species in seven genera. They are mostly carnivorous with powerful jaws and carnassial teeth. The jaws of, in particular, the Eurasian badger cannot be dislocated like other mammals, giving it that extra powerful bite and making it imperative that any handler does not get bitten.

Eurasian badgers weigh between 20 and 30lbs and attain a length of about 40 inches. They have short muscular legs with powerful claws for digging. However, these claws are not used either for defense or attack and can be ignored in a handling situation except that they may well be used to rip off any muzzle.

Badger sows practice delayed implantation wherein they mate at various times of the year but, by delaying implantation of the fertilised egg, they will all give birth in specific months. In Britain, this tends to be February and, as I understand it, April, in the United States. This is particularly important in rehabilitation centres as long term badger patients may well start to gestate even if they have had no access to a boar badger for some months.

## Types of Casualty

In Britain, we see two main types of badger casualty: those that have been in a collision with either cars or trains and those that have suffered severe bite wounds in territorial disputes with other badgers. Even then these wounds will have to become grossly infected before the badger becomes sick enough to be seen and captured. Apart from other badgers, the British population

has no natural enemies other than man. Victims of man's inhumanity, either through legal snaring or illegal baiting with dogs, do occur but hopefully, snaring may be made illegal and strict policing will reduce the incidence of baiting with dogs.

Other casualties are generally the result of the badger's brash foolhardiness like falling into swimming pools or wells and entanglements with netting or fencing.

## Handling

Never attempt to handle a badger without first testing its bite reaction with a thick wooden "biting stick". Often even a seemingly comatose badger will still turn like lightning to bite the unwary hand so no attempt is made to even "scruff" the unconscious badger unless the head is held with the stick. Badgers have very thick powerful necks with very little loose skin so finding enough to "scruff" as you would a domestic cat or fox can be very difficult and should not be attempted on a wary badger.

Once firmly scruffed, and with the now free hand lifting the skin over the rump, the badger can be quickly deposited into a carrying basket. This very wary, careful procedure is also adopted with sedated or anaesthetised badgers. Gloves, of any sort, are no protection against the bite of a badger and would be a serious inconvenience in any handling situation.

If there is any doubt about holding a badger by the scruff then do not take any chances, as the badger will win. If scruffing is not possible then and only then, use a catch-pole to restrain the animal. Even then badgers have very thick necks, small ears and a small head and can often thrash themselves out of a catch pole. With a very irascible adult badger, pull the noose as tight as possible and be sure to include one leg in the noose. It is most unlikely that you would be able to strangle it in the short time before it is securely in a carrying basket.

Badgers will quickly demolish most animal carrying cages especially if they are plastic or fibre glass. We now have the special carrying baskets made of thick close-meshed steel with a 'crush' arrangement to facilitate medication and sedation. However, in all handling situations beware of the badger with a suspect broken jaw who will often further damage itself by clamping onto either the "biting stick" or catchpole.

## Initial Admittance

Fully trained rescue teams from the Hospital may provide first aid and life saving treatments at the rescue site - in Britain non-veterinarians may employ first aid and life saving techniques for any animal including the use of drugs under the direction of a veterinary surgeon - while rescuers with no medical training bring the animal directly to the hospital.

On admittance, each badger is weighed in its carrying basket and an admittance card made out detailing the precise site of rescue and circumstances in which it was found.

We assume that any wild animal easily caught is compromised in some way and our experience has shown that the vast majority, are in some form of shock and will probably die if not given remedial therapy.

Our regime of countering shock in all larger mammals and birds is with intravenous infusion. Many of the badger casualties are reluctant for us to work that closely so those that are uncooperative are mildly sedated with intramuscular diazepam at 1mg/kg. Even after sedation or with an unconscious badger one operative is given the job of closely controlling the badger's head during any medical procedures. Muzzles can be used but there is always the danger of an animal vomiting and inhaling material from the closed mouth.

For intravenous infusion the cephalic is the vein of choice but in extreme cases the jugular can be used. We use an over-the-needle type 20g x 1 1/4" catheter and immediately collect a blood sample for laboratory testing. A warmed colloid solution of the gelatin type Gelofusine® (Millpledge) Haemaccel™ (Hoechst) is infused fairly quickly (total volume = 10 ml/kg) to increase blood circulating volume.

Simultaneously we also administer meth-



*Most badgers are released where they were found. Note the "biting stick".*

ylprednisolone (Solu-Medrone V™-Upjohn) at 25-50 mg/kg and repeat in 4-6 hours if there is no improvement in the condition of the animal. This drug helps improve perfusion of the tissues by causing dilation of the venules. It also helps to stabilise lysosomes and therefore helps to reduce tissue breakdown in hypoxic areas.

Flunixin meglumine (Finadyne™ for dogs - Schering Plough) at 1mg/kg is also given intravenously not only for its anti-inflammatory properties but it also provides some analgesia and can help counter the toxicity of long standing infections. As an analgesic it can be used for three days post-admission and provides more long term pain relief than other short-acting analgesics. However, its use should be resisted if bloody diarrhoea or other signs might signify gastro-intestinal disfunction.

Pain relief for fractures or severely traumatised patients is provided intravenously with buprenorphine (Temgesic®-Reckitt & Colman) at 10-20 micrograms/kg, repeated 8 hourly. Buprenorphine is never used when there are head injuries apparent.

Broad spectrum antibiotic cover is provided subcutaneously with long acting amoxycillin at 15mg/kg. Any infected wounds are swabbed for laboratory testing.

Any further application of drugs at this time is at the discretion of the veterinary surgeon.

Once the required amount of colloid plasma substitute has been infused the intravenous line is replaced with warmed Hartmann's solution to which has been added 10% Duphalyte (Duphar®), a complex containing B vitamins, electrolytes, amino acids and dextrose, at calculated drip rates.

The use of fluid therapy with head trauma cases is carefully monitored because of the danger of cerebral oedema. Providing oxygen therapy has been found helpful with head trauma cases.

No further treatments are attempted at this time except for the removal of blow fly maggots, the temporary splinting of fractures, the suturing of any fresh wounds and stemming of any haemorrhage. Infected wounds are left for at least 24 hours before any attempt is made to clean them. However, they will be doused with Dermisol Multicleanse Solution™-SmithKline Beecham; benzoic, malic and salicylic acid, which will start erosion of infected and necrotic tissue in the wound site.

## On-Site First Aid

With a very seriously debilitated badger, casualty-trained rescue teams will provide intravenous colloids or fluids on site. Methylprednisolone is also administered at the standard 25-50 mg/kg.

Often a single operative will set up the intravenous drip by using a tourniquet to raise the vein required and a portable electric clipper to shave the entry site. Infusions are warmed with Safe & Warm™' re-usable pads held in special holders.

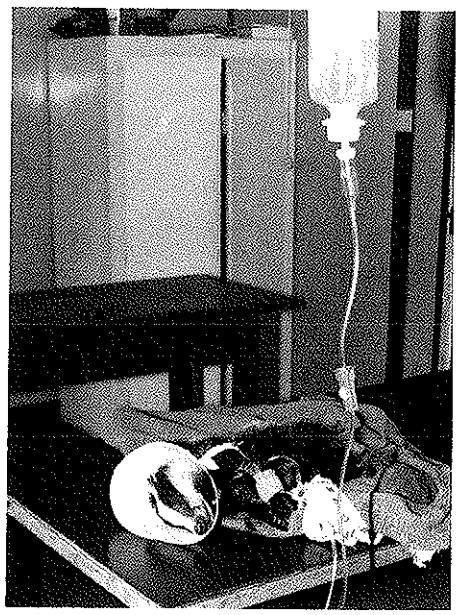
On-site procedures have proven very useful both in hypothermic, hyperthermic and severely shocked casualties.

## Housing

The badgers are then held in ShorLine® stainless steel cages with radiant heat lamps if necessary. They are offered heavy bowls of Lectade™ (SmithKline Beecham), an oral electrolyte replacer and monitored constantly for damage to their intravenous drips.

Excited or severely stressed badgers may call out in a typical "whickering" manner. These are mildly sedated with diazepam at 1.0mg/kg , for short term sedation or Zuclopenthixol acetate (Clopixol-Acuphaze®-Lundbeck) at 1-2mg/kg which will provide sedation for up to 5 days.

They are offered food after 12 hours which may be day-old chicks, canned dog food or mice. Care has to be taken that there is no mouth injury, as they may attempt to swallow day olds whole and may choke. It is very common for a newly admitted badger not to eat for 3 or 4 days. Provided they are a good weight, they are perfectly capable of going without food for several days and in the wild will regularly stay underground for some time if the weather is cold or wet.



*Use of an IV line to provide fluid therapy to an injured badger cub.*

Many badgers seem to suffer general paralysis with concussion injuries but most will recover in time. Trained operatives will hand feed this type of patient with a 50 ml syringe that has a long nozzle. We have never attempted to stomach tube a badger as the bite risks are too great.

The liquid food products we use are manufactured by Abbott Laboratories (Ensure®, Enrich™, Pulmocare® and others). We are just starting to try Reanimyl-Virbac® as an alternative taste.

## Hospital Regimes

Most badger procedures in the hospital situation, except of course for seriously ill patients, demand that the animals be anaesthetised.

Small badger cubs can be held and masked directly with Isoflurane but all large badgers are initially anaesthetised with medetomidine hydrochloride (Domitor™-SmithKline Beecham) at 100-150 micrograms/Kg, and ketamine (Vetalar™-Parke-Davis) at 5-7.5 mg/Kg intramuscular injection using the crush facility of the carrying cages. Anaesthesia is then maintained with Isoflurane and oxygen.

Medetomine can be reversed with atipamezole (Antisedan®-Farmos) at 250-500 micrograms/kg slowly intravenously or intramuscularly.

Antibiotics are usually given in oral form, a tablet or capsule secreted in a day-old chick or mouse. Badgers that are not feeding and those with jaw fractures are maintained on injectable antibiotics but are changed to oral medicaments as soon as possible - to cut out the trauma to both the animal and handler.

Long-acting amoxycillin or enrofloxacin have proved suitable for injection. Fractures, osteomylitis, dental problems and deep-seated infections are treated with clindamycin (Antirobe® -Upjohn) at 10-15 mg/kg twice daily. Cephalexin tablets at 10-15 mg/kg twice daily have also proved suitable for infected bite wounds. All infected wounds are swabbed for culture and sensitivity testing in our diagnostic laboratory.

## Anabolic steroids

Most of our badger and fox casualties are provided with anabolic steroids-ethylestrenol (Nandoral®-Intervet) at 50 micrograms/kg daily during their stay at the hospital. We recommend anabolic steroids because, frequently, the animals are thin, have major injuries and are suffering from severe stress. The steroids help them regain full condition in the shortest possible time. Empirically, they appear to facilitate rapid recovery.

## Dental Care

Most of our casualties show some degree of dental wear or damage. Each is given a detailed examination by our veterinary consultant, Dr. John Lewis, and if necessary are treated at the hospital by an experienced exotic animal dentist, Peter Kertesz. Common dental lesions include fractured canines with pulp exposures, slab fractures of carnassial teeth and fractures of incisors and pulp exposures.

Root fillings can be crucial in saving damaged canines. The use of restorative crowns is contraindicated as they invariably come off with the pressure of daily use.

Some teeth are extracted if necessary, a procedure in badgers, the dentist assures me, is more difficult than in most polar bears. All dental patients are prescribed clindamycin pre-operatively for 24 hours with a two week post-operative course of the capsules coupled with one or two days analgesic with buprenorphine or flunixin.

## Snare Injuries

Many badgers are found trapped in wire snares. When released they may appear not to be injured but our experience has shown that the compression of the snare will have caused tissue damage which will erupt after two or three days and can lead to rupture of the abdomen. In view of this, all snared casualties are kept for observation for at least two weeks.

## Release

Badgers in Britain are strictly territorial and will in many incidences attack and seriously injure any strange badgers. However, we find they will accept a member of their group back into the fold even if it has been in care for some months. The exact locality, to the nearest yard, of each casualty is noted when it is rescued. After treatment, the badgers are then returned to exactly the same spot where they do appear to recognise a familiar environment. All badgers are released at night, preferably after midnight when traffic has generally ceased.

However, if there is a query over the origin of the casualty or if it has been the victim of disturbance or attack by other badgers then it is introduced to a completely badger-free territory, usually into a man-made sett.

Each year we take in several of these "outlaws" and coupled with the numerous orphans we rear, we try to establish intimate groups of one adult and three or four fully grown cubs for each situation.



*An unconscious or semi-conscious badger can often be "scruffed". Photo courtesy of Bucks & Herts Newspaper.*

In the main, in spite of their fierce reputation, badgers in captivity seem to accept other badgers and will rapidly integrate but should be released in a badger free area in a man-made or "bachelor" sett.

## Identification

We do not actually mark our released badgers but the use of microchip transponders may be useful in some situations.

## Non-releasable Badgers

These do occur occasionally usually through imprinting of orphans by inexperienced "do-gooders" or geriatric badgers with dental deficiencies or more commonly spondylosis of the vertebral column.

There is always discussion on the morality of keeping animals that cannot be released but even after 16 years of taking casualties we only have four permanent residents: one habituated to humans, one geriatric male, one young female with a rigid front leg all of which live as a family group. The other female was the victim of a head injury and appears to attack any other badger she encounters. She is a small animal and would be seriously at risk if she were to be released.

## Orphans

As with any species there is always a danger of imprinting. As the experience of others has already shown, a tame badger can be an unpredictable, dangerous animal and we do all in our power to prevent this happening.

In Britain, generally, we are discouraging the rearing of single cubs and are advocating "creches" with three or more to each group. These groups, when finally grown, can be released in badger-free territories through man-made setts. Milks or milk substitutes used in hand-rearing have been goats milk or Esbilac™.

## Conclusion

The badger is a powerful, irascible animal that is built like a bulldozer, but if handled carefully with every safety precaution will recover well from the most incredible trauma. It will, after a few days, become resigned to hospitalisation and will soon respond to treatment enough to eventually be ready for release back to the wild.

*My thanks to Dr. John Lewis M.A., Vet.M.B., Ph.D., M.R.C.V.S for reading the draft of this paper.*

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***Author Profile***

*Les Stocker founded, in 1978, the Wildlife Hospital Trust which became popularly known as St.Tiggywinkles, Britain's busiest rehabilitation centre. In 1990 he was awarded the Rolex Award for Enterprise and in 1991 opened a purpose built wildlife teaching hospital just northwest of London. In 1992 he was honoured by the Queen by being made a Member of the Order of the British Empire (M.B.E.). He has several books published including The Complete Hedgehog, The St.Tiggywinkles Wildcare Handbook and just recently The Complete Fox. St. Tiggywinkles deals with about 15,000 casualties each year.*

*Les also founded the British Wildlife Rehabilitation Council but he has since left to form the European Wildlife Rehabilitation Association, a coordinated network of autonomous groups all working to a Code of Practice.*

# *St. Tiggywinkles Wildcare Handbook: First Aid & Care for Wildlife*

**Les Stocker**
**The Wildlife Hospital Trust**
**St. Tiggywinkles**
**Church Farm, Aston Road**
**Haddenham, Aylesbury, Bucks HP17 8AF**
**Great Britain**
**1st Edition, 1992**
**£9.99 net in United Kingdom, 204 pages**

Upon first examination of this book, you might get the feeling that it is more of a "storybook" than a manual. However, as you get further into the book, you realize that there is a lot of very useful information given, but very basic information seems to be interspersed with the more advanced, so it does require a bit of hunt and search.

While much of the information is geared towards the animals of Britain (which is understandable), much of it can generally be applied, in some form, to similar animals in North America.

Some of the statements made in the text of the book are a bit hard to take, for instance, "I have had no known incident of one disease passed to another bird." Anyone who has done any extensive bird rehabilitation knows that this is a very real problem. The author also makes a statement that infers that subcutaneous replacement fluids have little immediate effect on an avian patient in shock. Often, this is the only route of administration possible because you cannot administer oral fluids due to the animal's condition, and you do not want to discourage this treatment, which will certainly benefit the patient. One also gets the feeling that the author has a very real preference for mammals over birds as demonstrated by the statement, "Birds are simple-minded and seem to take any situation in their stride; they do not have the capability of being happy or unhappy."

This book does give the 'man-on-the-street' some very good insights into initial treatment, but some of the information may be too advanced or complicated for the untrained to attempt. There are also some omissions of pertinent information, like antibiotics are often recommended, but dosages are not covered; mammal capture and restraint is covered, but safety to the handler is not stressed; when covering wing fractures, compound fractures are not discussed; when talking about record-keeping, asking if anyone has been bitten or scratched by the animal is not mentioned; cautions on fluids given internally being warmed to body temperature before admission is not stated; electric hair dryers are recommended for drying birds, with no mention of what setting should be used for the safety of the animal; dunking birds with hyperthermia into cold water is recommended, but no suggested temperature is given.

Some areas that could use a bit more development might be zoonotic disease and parasites, drug dosage calculations, release procedures and criteria, and record keeping to document the intake to release procedures.

The general approach of the book is to take the reader through sets of pertinent questions as one considers what to do with the animal. These questions will be welcomed by the novice who may not know what priority issues need to be addressed early in the rehabilitation process. There are simple charts on useful parameters such as how to judge dehydration in mammals.

Overall, the book is a satisfactory basic caregivers guide as it does cover almost any given situation, but should be used in conjunction with other care manuals and not as a sole source of treatment procedures.

-Mary Reynolds-

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*A Wildlife Christmas Tale*
*See Page 91*

