*Vol. 17, No.2*

# JOURNAL

## of Wildlife Rehabilitation

*A Publication of the International Wildlife Rehabilitation Council*

Sample



**Sharing Nature with Children . . . . . p. 11**

## 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.

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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.

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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.

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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: Marge Gibson.**


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# Editorial . . .

## *Hacking The Way Through The Summer*

The other day I brought back from Lake Tahoe Wildlife Care several brancher Kestrels, a Burrowing Owlet and fledgling Bullock's Oriole. Working in conjunction with Alida Morzenti, the resident raptor biologist in the Avian Sciences Department at UC Davis, we have been hacking young birds out and following their transition back to their wild life. Alida made several calls to university faculty to locate someone familiar with Bullock's Orioles in our area. I was directed to a nesting site along a county road in Winters where we traveled on a hot July morning to release our young, self-feeding fledgling.

As we watched the young bird newly released among a cluster of oak trees and ripe elderberry vines, I reflected on some of the changes rehabilitators are making in the way they release their 'babies'. In the 1970's we were so thrilled just to have a live animal to release (they were after all, the minority of our caseload). With the increasing awareness of wildlife care and the ever increasing numbers of animals, we often took birds out to release more as a response to our workload than to the readiness of the animals. As we learned more biology, we began to understand that we were releasing animals late in the 'window for learning'. Later that day, I spoke with another rehabilitator calling on the hotline from northern California about two young Kingfishers. We considered the alternatives of continuing to hand-feed or fostering to wild parents. She noted that she regularly fostered Killdeer and ducklings in this way to alleviate her workload and to allow for more natural learning of living skills. Knowing the area, she decided to take the Kingfishers out to a pair to see if she could arrange an 'adoption'.

This is not the only conversation I have had about moving birds and mammals out at a younger age. Alida and I have our own "stupid prey" theory. In a nutshell, early in the baby season we have lots of new young prey species as well as young predators. If we as rehabilitators hold predators until late in the season, many of the young prey species have gained valuable experience in evading predators so our inexperienced rehab birds are then faced with a 'pruned crop' of prey species which have a better chance of evading them. Additionally, the summer months are the time when the specific skills need to be learned and practiced. For example, swallows in our latitude migrate south at the end of July. The new fledglings spend the last two weeks prior to migration learning how to fly with the flock, gaining flight skills, and learning to avoid predators when in flight. If we rehabilitators are too busy with other species to push the swallows through the rehabilitation process until the last week of July, we are likely to have created a genuine problem for the birds even if we can locate a flock in which to integrate them. We won't even consider what happens to a single swallow released alone (after the others have left the area).

My story of the week is about three young Red-tailed Hawks that Alida took to hack late in June. One was a bit mature for hacking (no down, fully developed tail feathers) and we were not sure it would be faithful to the hack box. Much to our surprize, it has remained in the area and the two younger birds have moved. Looking around to see where they went, we were surprized to find that they appear to have moved in on another family of Red-tailed Hawks a mile away and were being fed by the adults! We can also rely on these new foster parents to teach living skills to their 'adopted' young.

We spend so much of our efforts rearing the young of the year. Spending time making sure the release process provides the optimal chance for long-term survival is a small price to pay.

-Jan White, DVM-


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# A Post-Release Study Of A Juvenile Pallid Bat

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*ABSTRACT*

A juvenile Pallid Bat was found suffering from head trauma and dehydration. He was estimated to be just under six weeks old. After six weeks, he recovered and learned to fly. He was fitted with a radio transmitter and forearm band, and released in an attic very close to where he had been found. He remained in the attic for four days & nights, apparently without eating or drinking. He left the attic on the fifth night. On the seventh night the bat was observed in a nearby barn, with the main colony. He was captured and the transmitter was removed on the eighth night. His weight was within normal limits. He was seen, identified by his forearm band, in the midst of a cluster of bats hanging from the ridge beam of the barn, a month after his release.

**KEY WORDS:** Pallid Bat, *Antrozous pallidus,* radio telemetry, banding, rehabilitation, post-release study, prevolent

## Introduction

The desert Pallid Bat, *Antrozous pallidus*, is a large pale bat with big eyes and broad wings. The ears are widely separated and more than half as broad as long. These bats weigh 13-25 grams and have a distinctive horse-shoe shaped ridge on their noses. Their ability to produce quite concentrated urine allows them to conserve water and live in arid and semi-arid regions. There they can go for long periods without drinking, getting most of the water they need from their prey.

Four subspecies are recognized in the United States. *Antrozous pallidus pallidus* (LeConte) occurs in the Southwest. *Antrozous pallidus pacificus* Merriam is a large dark race which occurs on the West Coast and is the subject of the present study. There is a form intermediate in size between the first two - *Antrozous pallidus cantwelli* Bailey, which ranges east of the Cascades in the Pacific Northwest. The rarest subspecies, *Antrozous pallidus bunkeri* Hibbard, is found only in a small area of Kansas and Oklahoma.

The Pallid Bat is one of the more abundant species at lower elevations throughout the Southwest. Colonies are relatively small, generally numbering less than 100 individuals. Their preferred daytime roosts are most frequently rock crevices and buildings. During the night they find open shelters readily accessible by flight. These bats are unique among North American bats in that they take their prey primarily on the ground and then carry it to the night roost to consume it there. The ground under these roosts is littered with the indigestible parts of these meals. Pallid Bats capture Jerusalem Crickets, grasshoppers, centipedes, scorpions and ground beetles. Their relatively large size makes it possible for them to kill these large arthropods. One report even records a Pallid Bat taking a Pocket Mouse (Fenton,1992).

In coastal California, the adult female bat usually bears one or two young in June. The sexes separate in the spring before the babies are born, with the females forming a separate maternity colony. The young appear to develop more slowly than the young of most species (Barbour and Davis, 1969). When six weeks old, they fly, and it is at this age that captive Pallid Bats begin eating mealworms (Barbour and Davis, 1969). They will continue to nurse as long as the female allows it, which is usually another 3-4 weeks.

The study site was my home in northern coastal California, where an old redwood barn houses a rather large colony of Pallid Bats. Throughout the spring and summer widely differing numbers of Pallid Bats are visible during the day and night, hanging from the ridge beam of the barn, some 25 feet in the air. As the barn is used

primarily for storage, they are seldom disturbed but the bats do actively move about on the property. Sometimes groups of them roost in an overhanging loop of roll roofing on the house. Smaller groups roost in the walls of an unused attic above the kitchen. Temperature seems to play a role in the location they choose for day roosting. On a hot summer afternoon, in full daylight, a large group of them was seen to quit a west-facing wall and fly to the cooler ridge beam of the barn.

On July 29, 1993, a weak and dehydrated juvenile male Pallid Bat was found on the steps of the house. He was given oral Pedialyte™ and placed 10 feet up, on the top of a truck. Two hours later the bat was still there, so he was transferred the next day to The California Bat Conservation Fund for rehabilitation. He was treated for dehydration and minor head trauma. Visually, he appeared to be just under six weeks old. He still had a fuzzy juvenile appearance, and was very clumsy when attempting to handle live prey. He recovered rapidly from the dehydration and head trauma, but exhibited very poor flight ability. This may have been a result of the head trauma, but it seemed more likely he was a prevolent (not yet flying) juvenile just under six weeks old. Eventually, in captivity, he did learn to fly. He started with short hops from hand to chest, gradually increasing his focus and distance. He appeared to be totally unfamiliar with the flip required to go from horizontal flying mode to upside down landing mode. His first flights all ended in crashes. In five weeks he had mastered flying, turning and landing within the confines of a house. He was an excellent candidate for a post-release study, especially in light of the prevailing opinion that prevolent juvenile bats are difficult to rehabilitate and, once separated, may not be successfully reunited with their colonies.

## Materials and Methods

A Holohil B2-B® radio transmitter was attached to the bat with Skin-Bond® surgical cement. The transmitter had an 8 inch antenna, and the combined weight of this apparatus was .65 grams. As the bat weighed 23 grams at the time of release, the apparatus weighed less than 3% of his weight. The maximum life span of the battery on the transmitter was estimated to be about twenty days. It was hoped that the bat could be successfully tracked in less than twenty days; the transmitter could then be recovered before the bat groomed it off. A British Mammal Society lipped band was placed on his forearm. He was tracked with a Custom Electronics CE-12 receiver with a maximum line of sight range of 9 kilometers.

## Observations

On September 11, many Pallid Bats were observed, hanging from the ridge beam of the barn. At approximately 8 p.m., the subject bat was released in the barn. He made several aerial circuits, then crashed behind a pile of plywood. After 45 minutes, with the signal from his transmitter still coming in strong from the pile of plywood, the experiment was concluded for the night. He was found hanging about two feet from the ground, brought inside and caged with mealworms and water. He ate and eliminated normally. There was concern that the transmitter might be too heavy, or that some subtle remnant of his original problem, undetectable indoors, might be making sustained flight too difficult for him. Perhaps if the bat was released in the attic over the kitchen, he would be more retrievable from this smaller, less cluttered space, if he failed to fly.

On September 12, at 7 a.m., he was placed on a wall in the attic above the kitchen, below several roosting Pallid Bats. He immediately crawled up into a space between two boards, next to the other bats. The signal was checked several times during the day. Although he was unable to be observed, the signal continued to come from the site of his release. At 8 p.m. that night the rustling of bats could be heard overhead. By 9:30 p.m., the sounds had ceased, while the signal indicated that the subject bat was still in the attic. At 10 p.m., he was still there. A small bowl of meal worms and a jar lid of water were placed where he could find it.

On September 13, at 7 a.m., the signal showed that the bat was still in the attic, although he could not be located visually. The water and mealworms appeared untouched. Between 8 p.m. and 9 p.m., the bats were active in the attic. For the first time, the signal indicated that the subject bat was also moving around. By 10 p.m., he appeared to have settled on the west wall; at 3 a.m., the signal still came from the west wall.

At 7 a.m. on September 14, the signal continued coming from the west wall. The food and water were still untouched and no bats were either visible or audible. Possibly, the investigator's activities had caused the other bats to abandon the area. Through most of the day, the signal came from the west wall. It changed to the north at 5 p.m. and the northwest corner at 8 p.m.. There, it stayed throughout that night, the next day and the next night. On the evening of the 15th, several bats were seen behind a board, but the subject bat was not visible. Perhaps his antenna had become wedged between some boards, immobilizing him.

On September 16, at 6:30 a.m., the strongest signal was from the northeast corner, indicat-

ing that he could still crawl about. The bat was not visible and the food and water remained untouched. At 8:15 p.m., the bats had left the attic and there was no signal. There was no signal either inside or outside in a 360 degree radius, although a large hill to the east could have blocked it. Beyond the hill lies a stock pond. As Pallid Bats drink from quiet water, it was likely he had gone there. There was no response until 10 p.m., when again, a signal was received from the attic.

On the morning of September 17, the signal was coming from the northwest corner of the attic. At 8 p.m., the signal was gone. At 9:30 p.m., the signal was back and moving outside the house. By 11 p.m., he was back in the north wall of the attic.

On September 18, at 7 a.m., the signal was coming from the north wall. At 8:30 a.m., the mealworms were still uneaten. At 6:45 p.m., the signal was present in the attic. At 7:40 p.m., the subject was both observed and tracked, flying into the barn. From 7:40 p.m. to 8 p.m., he flew around the barn, then settled down on the ridge beam with scores of other bats. The glint of his silver forearm band was visible as he hung among the others. Shortly after 8 p.m., he left the barn and flew outside. The signal gradually faded to the east, behind the hill. At 8:30 p.m., a distant moving signal was received. By 10:10 p.m., he was back in the attic. Not only was he was flying well, he had rejoined the main colony.

On September 19, the signal came from the north corner of the attic in the morning, and again, at 7:30 p.m. Amazingly, at 8:10 p.m., the bat was discovered in the kitchen, flying in circles. He was captured and the transmitter shaved off with a scalpel. The bat weighed 19 grams. This was less than his release weight of 23 grams, but still within normal limits. He was very alert, active and feisty.

At 7 p.m., on September 20, he was returned to the attic, this time encumbered only by his forearm band. On the evening of September 23, he was seen hanging from the ridge beam of the barn with the other bats. He was in the same location on October 3rd. On several occasions, the subject was difficult to observe due to the density of bats. When he was in the middle of a clump of bats, he was only distinguishable when he stretched his wings. He was seen again on October 8 and October 11, always right in the thick of the group. By this time it was concluded that the bat was successfully rehabilitated both physically and socially. Observations concluded at the end of October when the bats dispersed for winter.

## Conclusion

From this study, I believe that we can conclude that this juvenile, probably prevolent, Pallid Bat was successfully rehabilitated both physically and socially. He was observed, active and alert, a full month after he had been released; certainly if he had not been hunting successfully, he could not have survived that long on his own internal reserves. Unfortunately, his droppings were not saved and analyzed, therefore his diet remains unknown. Although this is a study of only one bat, it certainly suggests that juvenile Pallid Bats can be rehabilitated. Because of the excellent study site and access to essential equipment, this study will be expanded in the future to include newborn, hand raised Pallid Bats, and determine if they can be repatriated as successfully as this juvenile was.

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BARNARD, Susan M. 1991. *The Maintenance of Bats in Captivity*, Morrow, Georgia: Georgia Dept. of Natural Resources, pp.6-7.

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### Products Mentioned in the Text

***Holohil B2-B Transmitter:*** Holohil Systems Ltd., 3387 Stonecrest, Woodlawn, Ontario, Canada K0A3M0 (613) 832-3649

***Customs Electronics CE-12™ Receiver:*** Custom Electronics of Urbana, Inc. 20009 Silver Court W., Urbana, Illinois (217) 344-3460

***Skin-Bond® Glue:*** Smith and Nephew United, Inc. Largo Florida 34643

***British Mammal Society Bat Rings (Bands):*** Dr. Robert Stebbings, The Stebbings Consultancy, Ltd., 74 Alexandra Rd., Peterborough, Cambridgeshire, England PE13DG

***Author Profile***

*Cindy Dicke is the Assistant Director of Animal Care at WILDCARE, a newly formed organization merging the California Center for Wildlife (San Rafael, CA) and the Terwilliger Nature Education Center.*

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# You And Your Wildlife Education Program

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*ABSTRACT*

Few wildlife rehabilitators are educators or public speakers by design, yet find themselves doing both. With the help of a few guidelines you can give an organized and effective presentation, and feel great doing it. The reader is taken step-by-step through planning and development of a wildlife education program. The use of educational aids is discussed, as well as helpful information on how to make a decision whether to use live animals or other educational props.

**KEY WORDS:** wildlife, education, natural resource, public speaking

## Introduction

Many times we get into public education almost by accident. One day you are a wildlife rehabilitator stuffing orphaned mouths and bandaging wings; the next you give in to a friend's request to say a few words about what you do for wildlife at the local 4-H club. You encourage yourself to show up; after all, you know the kids and families involved. It will be like talking to friends. All goes well. The people were genuinely interested, and you survived! Better than that, you actually felt good about it, and the group did, too. But what's this? Soon, the word is out that you are available to give wildlife programs. Before you know it, you are doing programs for every club and classroom in your community. You hate to turn anyone down, because by this time you are convinced that you can make a difference with education. You can prevent some of the problems with wildlife BEFORE they happen. Great concept! Prevention becomes a worthy endeavor. You suppress any shyness or apprehension and sally forth. But wait a minute! When did you have time to sit down and decide what you want or need to include in your "education program"? After all, you still have those orphaned mouths to stuff, cages to clean and appointments with the veterinarian to keep! Like an amoeba, public education has slowly engulfed you. Now before you are swallowed up, STOP! Let's get organized and design your program.

## Identify Your Goals

What do you hope to accomplish with your program? What will the focus of your presentation be? (Aslett,1989) Do you want to spotlight indigenous wildlife, or do you see your programs growing to include introduced species such as the opossum, or exotic non-natives? Perhaps you will use a combination of native and non-native. There is nothing wrong with that concept; if the audience is clearly aware that you are discussing both, and stressing the differences between them. Remember, compare differences in laws, both federal and those of your state, as they apply to native and non-native wildlife. It is even acceptable to include a domestic animal in some programs, if there is no danger of disease transfer to your wildlife species, and if it fits in with your topic. An effective use of this concept is to point out that domestics are bred to be pets, and wild creatures breed for survival (Gibson 1994). An example I use, understood by audiences, is one of large dogs. Dogs that make the best family pets have few strong survival instincts. They are bred to be gentle and remain unaggressive even when treated roughly by small children (e.g., pulling on ears or stepping on tails). This is a good quality in pets. In wild creatures we expect and applaud survival skills. The same instincts that allow them to survive in the wild make them an unacceptable pet (Hope, 1994). This example jogs your audience to realize that "Yes! There is a difference!" Less chance, that one may someday

try to make a "pet" from a native species and instead appreciate them for the wild, free-living being they are.

Your long term goal could be one of habitat protection. It could be as simple as to provide a greater understanding for a single species, or as ambitious as starting an outdoor education program in your school district.

## Specific Needs in Your Region?

Your region may have a specific need that you should address in your presentation. Perhaps there is a problem species that is causing crop damage, erosion or endangering a threatened resource (Johnson, pers.comm.). If so, research the problem with your state natural resources agency. Find out the facts on both sides so you can present them effectively to your audience.

Perhaps your region is home to an endangered or threatened species. This may be an area you want to include in your presentation. If an endangered animal once lived in your area and has been extirpated, you may have an active introduction or reintroduction project going on. Find out, so you can inform your audience about it. Have available for your audience, a source through which they can become involved in the project if they are so motivated.

It may be that the wildlife itself has specific needs in your area. Perhaps you are dealing with rapid habitat loss, heavy use of garden pesticides, youngsters with B-B guns, or parents unaware of laws governing wildlife. Try to present some solutions (Gibson, 1991). This leaves the community not only informed, but allows them to play an active role in helping their wildlife. Always stress that the wildlife is THEIR wildlife. BECAUSE IT IS!!

## What is Your Message?

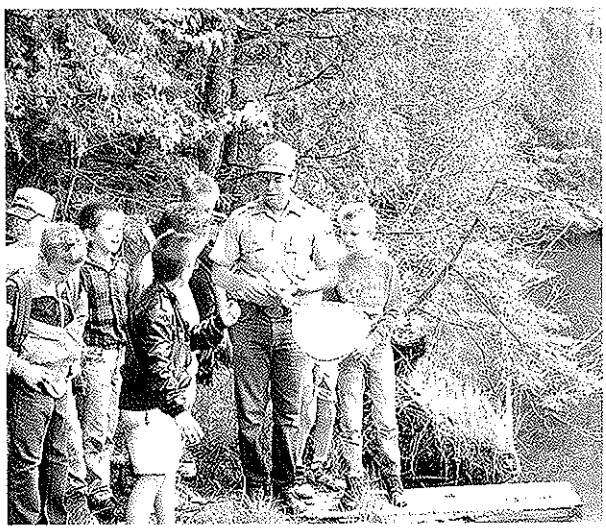
If an audience were to remember just one concept from your entire presentation, what would you want that one thing to be? This will be your message. The message is something you feel strongly about. We all have a topic that is particularly close to our heart. You will find that you are most effective when you include this topic. Because you have strong feelings on the subject, you will exhibit a sense of conviction that makes you an effective speaker. Your message will be as individual as you are. You may want to focus on local issues or include recent news articles that you can relate to your area or the group to which you are presenting. You may simply want to stimulate people to learn more about the wildlife in your area, to put up bluebird houses to enhance a sagging local population, or confront a problem of feral cats (Coleman and Temple, 1993).

Whatever your message, identify it for yourself before you begin speaking. In that way you will have a clear sense of where your presentation is going. Your message will change as new problems surface and are resolved. Sometimes it changes with the season or the group you are addressing. Again, ask yourself before you begin talking, "If I said only one thing this evening, what would it be?"

## Your Audience: Who Are They and How Many?

Just as your message is what you want people to remember, the audience has different expectations of what they want from you (Gibson,1991). Some groups wish only to be entertained. Some groups are comprised of serious environmentalists already interested in your topic. They may hope to garner direction for a new project. The ages will vary too, senior citizens may want to share their own wildlife memories from the past. Young children may be getting their first exposure to nature, (Herman et.al.,1991) Active adult groups may want to know how they can better manage their own land for wildlife (MN,DNR, 1987). Your message to all may be the same! The way you present it will be the variable.

Group size will vary also. This is an area where you will want to exercise some control. It is very difficult to give a quality educational pro-



*A educator sharing the importance of habitat with grade school children. Photo courtesy of the Wisconsin Dept. of Natural Resources.*

gram to a large group of youngsters particularly one that encompasses all age levels. Children in the K-3 age level have shorter attention spans and are less able to digest detailed material than older elementary age youngsters. If you design your programs for the K-3 level, older children tend to be restless, even bored.

When dealing with children's groups the smaller the number of students the better the material is retained. Remember when you were in school? Assemblies were greeted with great joy, as it was a time away from the classroom! A time away from learning where you could whisper with your friends about what to wear tomorrow or if you could go to the movie on Saturday. Don't allow yourself to be used as a "vacation from learning". Wildlife education is much more important than that. You may have one opportunity to approach this particular group. You must concentrate on presenting a quality educational effort, not pure entertainment.

When you book your presentation, get all the information you can about your audience and the location of your presentation. Ask the age of the people, and how many are expected to attend. Inquire whether it will be outdoors or indoors. Clearly state your guidelines and the reasons for them. Discuss your fee schedule if you have one. If you have concerns, don't be afraid to state them. People will respect you and better understanding will result. *Never allow your animals to be put into an uncomfortable or unhealthy situation.*

## Setting Limits: Is Any Program Better Than None?

Rehabilitators in general find it hard to use the word "NO", even when prefaced with the words "I'm sorry." Not only does this problem relate to rehabilitation in general, but extends to wildlife education programs as well. It is difficult to set limits, but as our rehabilitation project grows and develops, we realize it is a must. Not only is this for our welfare, but for that of the animals we care for too. Just as we owe it to the animals we take responsibility for to be given the best care; referring it to another facility if we are over extended with space, time or species consideration, we owe it to the public and therefore wildlife to present the best education programs possible.

Where do you draw that line? If you find yourself scheduling presentations with volunteer educators that are marginal, caution lights should be going off in your head. Listen to your inner feelings. The public can just as easily be turned off of wildlife appreciation by bad presentations as they can be stimulated by quality ones.

Wildlife programs are popular. We sometimes feel pressured by teachers to come to their classroom, nature centers to do special appearances, or even Aunt Agnes to talk to her "Happy Homemakers Gardening Club". Requests outnumber time and educators available. If you fill a request with a person you are unsure of and they deliver a negative effort, you have lost ground educating about wildlife, not to mention possibly undermining the reputation of your organization. So much better to set limits. People may be disappointed initially, but better to have them disappointed that you weren't able to do a presentation, than be disappointed because you "did" send someone and the result was less than they had expected.

## Educational Aids: Using Live Animals or Not?

This is at once a simple and complicated issue. What you use in your presentation is a matter of comfort. If you apply this guideline honestly to both your animals and yourself, are secure in your decision and haven't been swayed by peer pressure or public curiosity, you have made the correct decision.

So much of what we do comes back to our basic DNA. If you are comfortable with small furry creatures and work basically with small mammals, don't feel you have to include a Mountain Lion in your presentation because one becomes available and the public seems excited with the idea. It would be outside your comfort level. It will show in your presentation. If you work with songbirds and have a deep affinity for them, don't take on a Cooper's Hawk as an educational animal just because a falconer is looking to place it and tells you it would enhance your programs. It would be unnatural for you and uncomfortable to the sensitive Cooper's Hawk, who would feel your apprehension, (see companion article "Let's Get Real, Using Living Animals In Programs", this issue). A living snake in the hands of someone who doesn't understand its particular sensory perception, behavior and special needs will be uncomfortable and can be expected to react in that manner (Weldy per. comm. 1994). Studies demonstrate elevated corticosterone (CS) levels in some reptile species during manual restraint sessions when compared to gentle handling techniques (Kreger, Mench 1993).

Most rehabilitators, unless part of a large organization will be caring for their own educa-

tional animals. Giving proper care for an animal requires an intense knowledge of that animal from housing and nutrition, thru normal and abnormal behavior tendencies (Granados, Papka, 1994), (Kreger, 1993). You must know what makes them comfortable or uncomfortable and respect their guidelines as absolute. Never compromise yourself or your animal. It doesn't matter if the creature is a bat, a raptor, a snake, or a bobcat. If you aren't totally comfortable and confident with it and likewise it with you, don't use it.

A lot of education can be done with non-living props. People can touch sections of fur or feathers. They can examine skulls and view for themselves the hollow bones of a bird. They can hear recordings of calls. Indeed, one of the most effective programs I have ever done was for a group of visually impaired children and their sighted parents. We were immersed in darkness, as I took them on a auditory and sensory trip over a year's time with owls. Early spring was introduced with the sound of wind blowing and a fan directed at the group. Soon mating calls were heard as we talked about snow melting and flowers emerging from the barren ground. Violet scent filled the air. Ping-pong balls were passed to serve as owl eggs. Quiet filled the room as we spoke in hushed tones about incubation and parental duties. Owlets hatched to proper nature sounds. Food begging sounds, soft at first, grew louder and more demanding as the chicks grew. Soft down feathers were passed through the group. We continued throughout the year using only our imagination, creative props, (including a very real feeling mouse) and sound. No living animals were used, and yet I still hear from parents and the now grown children about the experience.

## Too Much of A Good Thing?

Now that you have your goals and the message you want to leave, you have another decision. How much information do you present? When we first start doing a program our tendency is to include it all. We are excited with the topic, and assume the audience will be too. How could they not want to know every detail about this creature? From evolution to physiology, you are fascinated. Every intimate detail of its life electrifies you as on and on you go. You are shocked to discover the audience isn't as enthusiastic. They seem dazed, in fact, as they file out: A sure sign you included too much material. Your audience will be diverse; a cross section of America. Some are there because they want to be; others because their spouse has dragged them kicking and screaming. As an educator, your job is to reach every audience member. This is not always possible, but by keeping your program low key and entertaining, as well as instructional, you will keep the attention of everyone. Don't do the audience the disservice of saturating their brain with every fact known on the subject. What you give them should stimulate their curiosity, making them want to know more. Tease their interest to find out other tidbits on their own. This will allow them the freedom of relating the animal to themselves and their individual lifestyle. Information is better retained when learned in this manner.

## Questions?

You finished your presentation and you ask if anyone has questions. Hands go up all over the room. Congratulations! You have given a successful program (Hoff 1988). You have stimulated thought in your audience. The act of asking questions is frequently misunderstood by the presenter. Society teaches that to be questioned is to undergo scrutiny. Scrutiny is construed as bad; someone doesn't agree with you. The reality is that while people may not agree with your version of a problem, at least you had their attention and they were listening. Working with wildlife can be frustrating. Not because of the animals themselves, but instead the public you must reach. People tend to ignore problems or avoid accepting responsibility for wildlife issues. Getting people to discuss a problem is half the battle. Creating an awareness is success.

Questions or their lack, can alert you to problems with your program. Perhaps you aren't as clear as you need to be on a specific subject. In this way the question has allowed you to improve your presentation by correcting the deficiency.



*Non-living props can enhance the educational experience.*

The lack of questions can point out problems as well. It could be your program is too long and the audience is exhausted. You may have broached a sensitive subject and alienated the crowd. Or maybe you just never quite reached them. Don't be critical of yourself if this should happen, simply be happy for the opportunity to improve your program and your public speaking ability.

Occasionally I have even begun programs with asking for questions. Admittedly this is unusual, but can be effective in some circumstances. It gives you information right up front as to what the audience wants to know, what issues they're interested in, and even the political climate.

Always handle questions or remarks graciously. Realize there will be times when you are challenged. Prepare yourself for those times mentally, as well as intellectually, by being aware of opposing viewpoints. Understand the public has a right to their views, just as you have yours. Always stay in control of yourself and the situation.

## Conclusion

Educational programs are a valuable tool to wildlife rehabilitators. By educating we are allowed to stimulate others. People who may never have understood wildlife may begin to take notice, appreciate and may even fight for its protection and preservation. It matters little whether you have a well structured program with high tech equipment, or if you are giving your first program to a grade school class using an abandoned hummingbird nest, some peas, and a picture book. What matters is that you give factual information, to impart knowledge and stimulate thought (Cornell, 1970), creating pride for wildlife and conservation in your audience (Lipske, 1994).

There is a saying that goes, "No man is a mountain." Nowhere is that more true than when working with wildlife. By ourselves, we can't expect to save the world or even a single species, but through the education of those around us, we can make a difference.

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*Allowing children to actively participate in conservation projects makes them feel part of the solution.*

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# Let's Get Real— Using Live Animals in Wildlife Education

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*ABSTRACT*

An examination of the use of live animals in wildlife education programs. Criteria are given for selection of suitable animals based on the releasability, ability to represent its species, physical appearance, human tolerance and temperament. A history of animal use concepts is given, as well as an analysis of arguments offering both sides of the living versus non-living issue.

**KEY WORDS:** Wildlife education, behavior, adaptability, selection process

## Introduction

Qushquluk is an impressive creature. Sixteen pounds of hollow bones and muscle, along with 7,000 feathers make up this Bald Eagle, an educational animal for the Raptor Education Group in Northern Wisconsin. While her physical presentation is spectacular, I have rarely met a Bald Eagle that isn't! Bald Eagles are in fact, notorious for affecting people, either rendering them nonverbal or making them overflow with descriptive adjectives! What makes her a good choice for a display animal? Let us examine her qualities and why each is important.

## Criteria

1. She is representative of her species. Her plumage is that of a normal adult Bald Eagle. This is important in an educational animal for obvious reasons. The public is learning as they view her. This is the reason we are allowed federal permits for education. A bird that is not representative of the species is not teaching the norm, but instead offering a view of the unusual or a variant. This may be acceptable if your program is large with many same species animals, but if you are permitted only one individual it is imperative you have an individual that is representative.

2. She is well adapted to captivity and comfortable with her viewing public. Part of our job as educators is to help people respect wildlife. We can't teach them this when we are exhibiting animals that are poorly adapted to captivity and exhibiting unnatural behaviors as a result. This does not teach respect for wildlife. You don't have to be a rocket scientist to recognize when an animal is nervous or uncomfortable. The public will know this. Tension in your animal will create tension in your viewer. It may also turn them off wildlife programs altogether. If they are, it is a valid complaint. No animal should be used in education when it is uncomfortable with its situation.

3. She is in good feather and physical shape. The injuries that caused her to come into captivity are healed. Her injury site is no longer painful, and it has been handled in an aesthetic manner. This is important for her welfare as well as for the public image of your program. An animal that has constant pain or frequent reoccurring injury problems, should not be considered a candidate for use in an education program. No creature should have to face the public with a serious injury. There are rare exceptions to this rule, usually when state or federal agents want to highlight a particular human related problem.

4. She is non-releasable. Wild creatures that are releasable should not be kept in captivity.

5. Bald Eagles are indigenous to Northern Wisconsin, the area where she is housed. In teaching about wildlife, most of us are involved with indigenous species. Natural habitat recognition as well as preservation has become an important part of wildlife education. This task is easier to teach and to learn when relating habitat to a recognized species from your region.

6. She is called Qusquluk, an Aleut Indian word for Bald Eagle. The name is a reflection of her past and the reason she is in captivity. The name and story itself is a source of teaching.

## Varied Ideas

Ideas on wildlife education are as varied as the rehabilitators involved in such programs. Some people feel that using live animals is the only way to teach the public about the animals we care for. Others feel their use in this manner is unkind and exploitive. Both views may be right given certain circumstances. Let's examine and evaluate the reasons people may feel as they do.

## Respect or Pity?

I have seen it many times. A frightened, sometimes sick animal is hauled out on the glove or leash of an inexperienced handler. The premise is to teach the public about wildlife. But what is it people are really seeing and learning? When they walk away from the program, are they thinking about the amazing natural abilities of the creature they have witnessed? Are they thinking about ways they can help this species survive in its natural habitat? Could they be considering ways by which they could be better stewards of their own property, to attract wildlife? Are they filled with respect and admiration for the creature and for its need to remain in the wild? Or, are they instead overwhelmed with a feeling of sadness or anger? Do they feel pity for the creature that was so frightened?

## Macho Handlers or Educators

Wildlife education programs need to be just that; educational. A few unwise handlers can give the use of living animals a bad reputation. By all appearances these people may want to demonstrate great strength and agility alright, but it appears to be their own. They delight in showing their ability to "control" this "dangerous creature." Does the audience better understand wildlife? Have they learned respect for this animal or just fear? If they have developed fear, wildlife education has just taken a giant step backwards. While these handlers are not the norm, they do get lots of attention, frequently leaving a bad taste in the mouth of the audience and the wildlife agencies that are charged with the control of such activity. When this attitude develops it is difficult even for the most superior programs to remain untainted. Therefore, we must work to maintain quality in our programs. We must be sensitive to the animals we present, and let our audience know we have considered their needs. We must decide if a creature is comfortable enough with captivity to be used in front of an audience, or on restraint. We must be able to admit that not every animal is a candidate for use in programs (LaDoux, 1994). We must also understand that this is a fact of life and not due to our own failure.

## Selection is All Right

I have recently had the experience of setting up a new educational program. After my permits were approved, I began the quest for educational animals to use in my program. My programs include a series of slide programs, a static display of indigenous birds of prey in appropriate habitats for public viewing, and presentations using live birds. To my amazement, my request for educational quality birds was greeted with admonishment! I was informed that all birds were of equal quality and if I put in the time, any of these birds, even the badly injured or poorly adapted would be fine for program use. HUH? I was horrified! Was I the only person that understood animals were subject to individual variation in personality and adaptability (Griffin, 1984)(Goodall,1971)(Barber 1993)? Could it be that all people beginning educational programs are subject to this rebuke, that they dare not turn down any critter, no matter how poorly suited for audience display. If this is the case, it is no mystery why many audiences are presented frightened, pitiful or poorly adapted creatures.

## Anthropomorphic or Androcentric—A History

Where did these ideas begin that are so pervasive in our society, that animals and birds are objects with no thought or feelings? Interestingly we go back to around 400 B.C. and Greek philosophers. Plato and his student Aristotle were at least partially responsible (McKeon, 1941). Certainly these early philosophers were well beyond their time. Their theories were brilliant and are the foundation for much of science today, Still, realistically speaking, the Platonic input on science was somewhat less than precise. It was tidy philosophy, with principles being set, then proof gathered to substantiate the principle. Data that didn't fit in with accepted thought or couldn't be explained was ignored. The method worked so well for the Greeks, the early Christian theologians picked up and embraced those theories (Walter,1981). Man held dominion over the animal world. Animals were thought of in a superstitious manner, and generally with negative connotation. To avoid sensitive arguments animals were shelved as unfeeling, mechanical objects for man to utilize and abuse (Evans, 1987).

Throughout history, the occasional scientist made observations that conflicted with what

was by this time viewed as the Christian outlook. During the age of exploration, sailors redrew maps to reflect reality, they challenged the idea that the world was flat. They persisted, as we all know, and voila... the New World appeared! Columbus never did fall off the edge of the world and that theory died quietly. Charles Darwin recognized the changes that an organism went through. He observed and recorded his observations. His resulting theory was called evolution. Once again there was controversy. Many of his observations were impossible to fit into the existing theories, but they were at least observations and not conjecture. Science had begun, itself evolving from field observation to stiffly controlled laboratory science. During the last ten years, the new field of Ethology, the study of animal behavior and motivation, has emerged. Perhaps ethology itself is not so new, but instead a return to ancient times. Humans have from the beginning lived beside, depended upon and studied animals. It is only in relatively recent history that man has separated himself from the rest of the natural world (Elston,1991). Amazingly, scientists are beginning to prove what men have really always known but were afraid to espouse ...animals think, play, communicate, have emotions (Goodall,1971) and personality variation within the same species (Barber, 1993). And to think it only took us two thousand years to question the Platonic method, that came down via early theologians. I hope this theory will die quietly as others that have gone before. We are human, after all, and capable of error. Aristotle erred in some of his other ideas... For instance he said, "Man has only eight ribs, women have fewer teeth than men, and mice die if they drink in the summer" (Durrant 1966). Upon observing that birds disappeared in the winter, he theorized that they went under the oceans and then reemerged in the springtime (McKeon,1941).

## Times They Are A Changin'

Twenty years ago when I did educational programs, I faced a naive public. Consider that raptors have only been completely protected since the early 1970's. Is it any wonder that people were sometimes unaware of the protection aspect? As educators, we were concerned that presenting living animals to an audience would stimulate people to desire their own, and keep them as a pets.

The last few years have seen major changes in both schools and communities in the area of environmental education. Recycling has become commonplace. Policies for air quality management, toxic waste disposal, and wildlife protection are in place. The public is involved at every step, demanding accountability for infractions, whether local or global. The public is an informed and involved public.

There are exceptions. Some have remained impervious to the barrage of environmental awareness efforts. Fortunately, they are now in the minority. Most problems are regional. Some are die-hard, tradition-based legends, or cultural differences that don't reflect mainstream America. Even within problem areas there are changes. Several years ago people were unaware of the legal guidelines. Now, they may break the law, but they know they are acting illegally. Children growing up in these situations, frequently correct actions of adults in their life, and are less likely to continue the tradition.

Questions asked of me even ten years ago are very different when compared to those of today. Even young children now, talk easily about endangered species, know the meaning of habitat and the concept of preservation (Herman et.al., 1991). Years ago we had to approach teachers for permission to come to the classroom, now our schedules are filled with classroom opportunities.

Audiences today are interested in wildlife for its own sake. People are increasingly aware that wildlife and other animals have rights of their own. Many are playing active roles, taking responsibility for the preservation of wild creatures in their natural surroundings. It is a rare occasion now when I am asked, "Where can I buy one of those?" Instead people query, "How can we make our property attractive habitat?" Or perhaps, "What can we do to discourage skunks and raccoons from the property (Hodge, 1991)?" Audiences today are more apt to want to be active participants (Berger,1986).

## Nintendo™ Generation

The last few years have seen a change of another kind in school age children: the young people I call our "nintendo generation". Their young lives are filled with computers, spectacular video games with complicated graphics and cable television that delivers anything a child could ever want to see, twenty-four hours a day, and many times in several languages as well. In short they are overstimulated. They are becoming bored with the pace of it all. A "been there, done that" attitude has developed. They have seen it all. From watching a pride of lions hunt wildebeest on the Serengeti, it is a simple flip of the remote control to look in on the male Emperor Penguin tending his egg in frigid Antarctica. One more punch of the button and they are off to South America to observe the home life of the magnificent Harpy Eagle. Each video more spectacular

*Continued on Page 18*

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# Use of Vital® in a Maintenance Diet For Hummingbirds

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## *ABSTRACT*

A completely soluble, artificial formula made with sucrose, vitamins, and Vital High Nitrogen® powder has served as a successful diet for captive adolescent and adult hummingbirds. Methods, ingredients and sources are described herein.

**KEY WORDS:** adult & adolescent diet, elemental diet, hummingbird, minimum energy cost, nectar, VITAL®

## Introduction

Nutritional requirements of hummingbirds have been the subject of study and speculation both before and since Bent (1940). Johnsgard (1983) refers to probable insectivorous ancestors of hummingbirds, and a reciprocal evolution between nectar producing plants and bird pollinators, giving rise to the modern New World nectarivorous birds and ornithophilous plants. Greenewalt (1960) describes Dr. Augusto Ruschi feeding fruit flies to Amethyst Woodstar *(C. amethystina)* to demonstrate that they supplement and balance their diet of nectar with insects. Examination of the crop contents of expired wild nestling birds, brought in dead on arrival, have yielded as many as 52 fruit fly-sized gnats and 20 green leaf hoppers (4-5mm x 1-2mm) in a single crop. No wonder nestling droppings are so bulky. In short, it is generally accepted that hummingbirds require a diet high in sugar with some protein, fat, mineral and vitamin content. Discussion seems to arise, however, regarding the preferred sugar and, particularly in captive birds, the amount of protein needed.

## Discussion and Methods

Many of the diets that have been suggested to Wildlife Rescue of New Mexico (WRI) over the years have presented problems of rapid spoilage, apparent gizzard impaction, and refusal by self-feeding birds. Consequently, we have devoted considerable attention to developing a completely soluble, artificial diet acceptable to birds and to the people who must buy, prepare and store it.

Next to water, the most abundant ingredient in any hummingbird diet is sugar. Martinez del Rio (1990) observed that hummingbird flowers produce a nectar rich in sucrose and demonstrated that three species of Mexican birds prefer sucrose to the monosaccharides glucose or fructose. Elliston (1991) found a similar preference in Black-chinned Hummingbirds (*A. alexandri*), and Karasov et al. (1986) found that the birds exhibit extremely high intestinal sucrose hydrolysis and glucose transport. We have settled on a concentration of 60 g of sucrose in 250 ml water which falls around the middle of the range of concentrations in naturally occurring nectars.

Brice studied the protein requirements of Costa's Hummingbirds (*Calypte costae*). She found little change in body mass of birds kept on diets containing 1.5% or 3.0% protein for 1 1/2 years

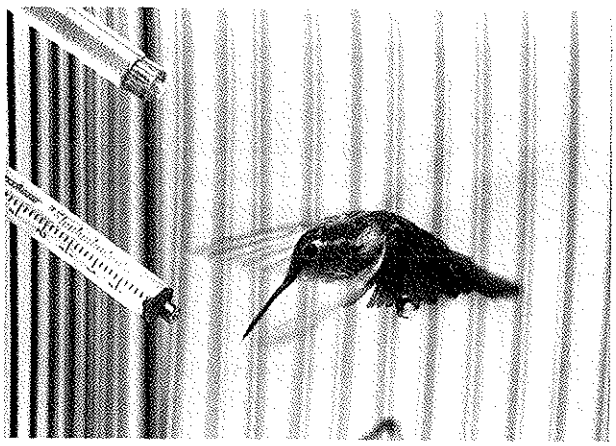


*Figure 1. Second year Broad-tailed Hummingbird, ten months after impact injury. Shown in permanent housing.*

(1989). Upon closer examination of the protein requirements of Costa's hummingbirds (1991) she reported that birds fed diets of 0.75% protein or less, however, showed significant weight loss. We decided to try to use the commercial preparation Vital High Nitrogen®[1] as the nutrient source, in addition to sucrose, in an inexpensive, soluble, completely artificial diet. Vital® is a human preparation used for providing nutrition to people who have conditions that interfere with the digestion of food. It is a nutritionally complete soluble diet made up of elemental materials that can be easily processed (caloric distribution:16.7% protein, 9.4% fat, 73.90% carbohydrates). Based on Brice's report we calculated our original formulation to contain 1.98% protein. The birds seemed to drink readily but their behavior was a little more lethargic than free flying birds were observed to be. Subsequently we have reduced the protein content to 1.35 %, which is the level in the recipe below.

The young growing nestling, of course, requires a greater proportion of nutrients other than sugar than the fledgling or adult. Shown in Table I is our successful use of the following diet in captive adult and adolescent hummingbirds prior to release. We have also kept an unreleasable adult male Black-chinned Hummingbird (*Archilocus alexandri*), used in education, in excellent feather condition on this diet for six years and a Broad-tailed Hummingbird (*Selasphorus platycercus*) for nearly one year (Table II, Fig. 1).

The advantage of Vital® is that it is a synthetic material, not containing the bacterial and enzymatic contaminants that diets incorporating live food necessarily include. Therefore, it will last a relatively long time in a feeding tube, even in hot summer weather. If any sign of deterioration, such as precipitation, separation, bubbling or dripping (gas formation) occurs, the material should, of course, be changed. Hummingbirds will starve to death before they eat something that tastes bad. In addition, one $10.00 package of dry mix provides about 600 hummingbird days of food.

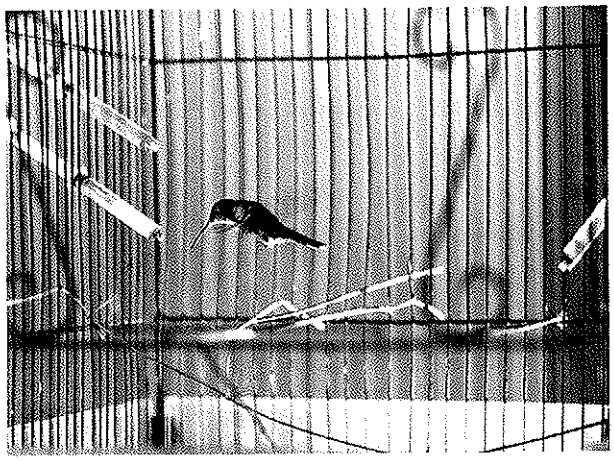


*Figure 2. Second-year Broad-tailed Hummingbird.*

Another advantage of Vital® is that the solution can be frozen and refrozen. We freeze the material in a small block, thaw briefly for loading syringes which can be frozen or refrigerated overnight, and refreeze the stock bottle. Syringes are thoroughly cleaned with a swab (to remove sediment) before each use.

The standard method of food presentation to our resident hummers, and the method used for fledglings, is one 3 cc syringe of "whole food" (Vital® mixed with "nectar"), several syringes of "nectar" with liquid vitamins, and one syringe of water as a third choice (Figure 1). The bird is then able to select the balance it chooses and, if the "whole food" should spoil, a reservoir of nectar is always available. This method also makes it easy to monitor the volume consumed. "Whole food" often seems preferred over nectar alone. One ml of "whole food" provides 0.97 Kcal, 90% of which are sucrose. Table II shows the average daily con-

## *Table I*

**Survival Rates of Orphaned and Injured Black-chinned Hummingbirds**
**Wildlife Rescue of New Mexico**
**1992-1993**

| | Injured | Immature | Total |
|---|---|---|---|
| Survived[1] | 18 | 26 | 44 |
| Total | 60 | 28 | 88 |
| % | 30 | 93 | 50 |

1. Lack of survival of injured birds is frequently as a result of euthanasia. The low survival rate of injured birds reflects the high frequency of necessary euthanasia.

## *Table II*

**Mean Daily Consumption of Food in Two Captive Hummingbirds Over a 30 Day Period**

| | Vital | Nectar | Total |
|---|---|---|---|
| Black-chinned (*Archilocus*) | 6.0cc | 1.0cc | 7 cc |
| Broad-tail (*Selasphorus*) | 5.3cc | 2.7cc | 8 cc |

sumption of the two offered foods measured over a 30 day period, in 10-14 hours of light at "normal" temperature and activity. In one month of measuring intake neither bird consumed as much as 1 ml of water. This information also suggests that maintenance requirements for a flighted, but not free-ranging, hummingbird are about 4 times its minimum energy cost (basic metabolic rate).

Syringes are hung in various ways, depending on the situation that brings a bird to us. They may be positioned such that healthy nestling/fledglings can reach the tip from nest or perch (Figure 3), they may be hung so a bird must fly in order to feed (Figure 1), or they may be hung in front of a perch (Figure 4), through the wall of a translucent gallon jug where an injured bird is being persuaded to sit still. Contamination of feathers is avoided by meticulous attention to the possibility that a drip might fall on a perching bird. A dripping syringe, of course, may indicate fermentation and should be corrected as soon as noticed.

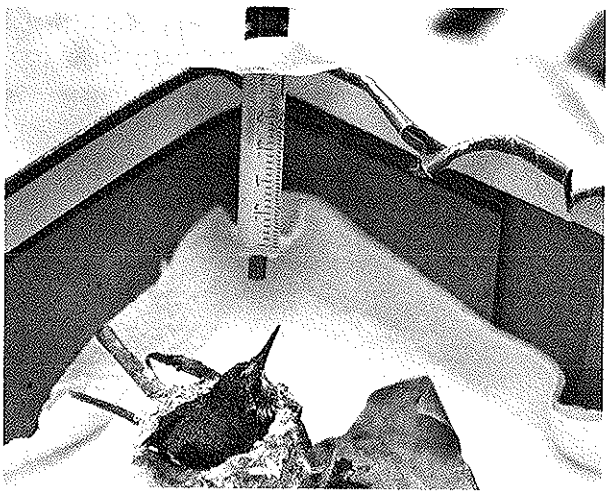


*Figure 3. Seventeen day old male Black-chinned Hummingbird nestling shown in self feeding temporary housing.*

The method of preparation follows:

**Nectar**
1/4 cup (C) granulated sugar.
Fill cup with warm distilled water and stir to dissolve. Yields a concentration of about 24% sugar.

**Vital® Mix** (Whole Food)
3/4 C (6 oz. or 180 ml) nectar.
1 level tablespoon (4.0 g) Vital High Nitrogen®.
1/8 teaspoon (t) Superpreen™[2]
1/8 t Nekton Tonic-I®[3]
Shake or stir until all Vital® dissolves.

*Preparation of syringes*: For young birds (3-6weeks old) with short beaks (13-20mm+): with sharp knife cut half of the Luer tip off the syringe. Paint tip with red nail polish. Allow thorough drying prior to use.

*Delivery:* Place all within reach of bird.

A) Place 1 drop Avitron®[4] in 3 cc syringe, fill with "nectar".
B) Fill 3 cc syringe with freshly thawed Vital® mix.
C) Fill 3 cc syringe with plain water.

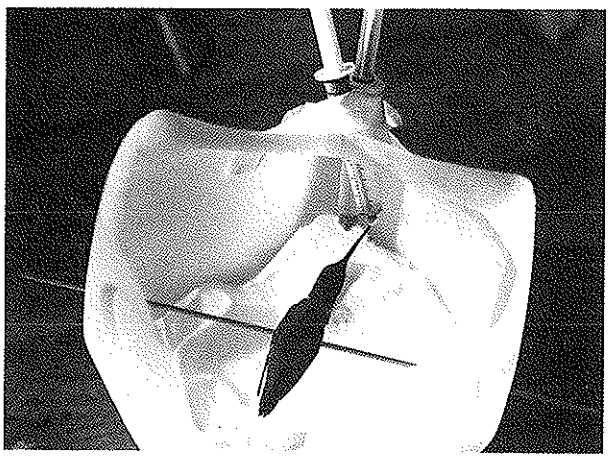


*Figure 4. Adult male Black-chinned Hummingbird with wing injury housed in "immobilizing" recovery unit. (Modified transluscent plastic one gallon jug, perch is bamboo skewer.)*

## Notes:

1. Vital High Nitrogen®: a relatively low fat, high nitrogen, nutritionally complete, partially hydrolyzed diet.
2. Superpreen™: a vitamin/mineral/amino acid blend in powder form.
3. Nekton Tonic-I®: a balanced dietary additive for insectivores.
4. Avitron®: a liquid vitamin supplement for pet birds.

## Products Mentioned in the Text:

***Avitron®***:
Lambert Kay Co. (Div. of Carter Wallace Inc.), 32 Lake St., Winsted CT 06098 Phone: (203)379-8559

***Nekton Tonic-I®*** :
Nekton USA, Inc., 14405 60th St. North Clearwater, FL 34620 Phone: (813) 530-3500

***Superpreen™*** :
RHB Laboratories, Inc., 1640 East Edinger Ave., Santa Ana, CA 92705 Phone: 1-800-421-8239/(714) 547-6462/ FAX (714) 547-8081

***Vital High Nitrogen®***:
Ross Laboratories (Division of Abbott Labs.), 625-T Cleveland Ave., Columbus Ohio, 43215 Phone:(614) 227-3333 [Abbott Laboratories, Abbott Park, IL 60064 Phone:(708)937-6100]

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***Acknowledgements***

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***Author Profiles***

***Elizabeth P. Elliston*** *was born in London, England and grew up in Massachusetts. She received a BA in Zoology from Mt. Holyoke College in S. Hadley MA while working in the laboratory developing a ppd skin test for leprosy she earned an MSc from The Department of International Health, Johns Hopkins School of Hygiene and Public Health (JHSHPH), in Baltimore, MD. She has worked in the field in India and Africa addressing questions of epidemiology, and worked with the animal behaviorists of JHSHPH Pathobiology Department. She began rehabilitating wildlife in the 1980's with the newly founded Wildlife Rescue of New Mexico. Presently, her other activities include serving on the Citizens Review Committee for the NM Habitat Stamp Program, Central Region, the Animal Studies Subcommittee for the Albuquerque VA Hospital, and acting as the IWRC State Representative for New Mexico.*

***Michele A. Gillett*** *received a BA from Arizona State University and an MA from the University of New Mexico. She has worked as an educator and librarian. She began rehabilitating wildlife in 1982, primarily working with hummingbirds and passerines. She has served on the BOD for Wildlife Rescue, Inc. of New Mexico in many capacities (Co-President, Vice-President, Secretary and Editor). She has developed self-instructional training materials and lectured on wildlife care.*

*Continued from Page 13*

than the last, seeing things that would have taken several lifetimes instead of a few afternoons. It doesn't sound like a problem, except for the fact that they are tuning out. It isn't real. They can't relate.

What they haven't had is an up close and personal introduction to a wild animal. There is no substitute for seeing the huge yellow eyes of a Snowy Owl peering out from a blanket of perfect white feathers, or children straining to "hear" sound coming from the wings of a Barred Owl in a quiet classroom, flapping to demonstrate the silent flight of an owl. There is no better explanation as to why wild creatures must remain wild than having young people present at a release of a rehabilitated animal. The appreciation and respect developed in a very few minutes of a live presentation is immeasurable. They get to use the one thing that has been taken from in this super world, actual experience. Experience is real, it creates emotion which in turn creates understanding and all important respect.

## Conclusion

Our world is changing quickly. It is our responsibility to keep up with the changes. There was a time not long ago when the use of living animals in programs sent a mixed signal to our audiences, because people thought animals and pets were synonymous. That time is past.

The use of living animals or non-living props for programs remains a matter of individual educators capability and desire. Never do anything that is outside your physical or emotional comfort zone (Gibson, 1994). Wildlife programs must be quality programs, done with educational intent. Criteria must be followed, (supported by common sense) with federal and state protection laws discussed. The differences between wild native or non-native animals and domestic bred creatures must be emphasized. We must realize that the better the public understands animals the more they will understand the need to keep them wild and preserve them.

People fear what they don't understand. Fear and misunderstanding leads to destruction. Quality educational programs, whether they utilize living animals or non-living props can replace that fear with respect and pride (Lipske, 1994). It is that combination of pride and respect that is the key to wildlife protection and preservation.

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# Letters to the Editor

Dear Jan:

Regarding your Editorial in the *IWRC Journal* (Vol. 17, No. 1) regarding research, I want to share one thing with you. Florida biologists think very similar to you. For 20 years I begged to rehabilitate the Florida Black Bear, but ran into a stone wall. Finally in 1985, I was allowed to rehabilitate 3 cubs which were collared with radio telemetry. In 1987, I rehabilitated 3 more (one from Florida and 2 from Georgia). In 1989, I rehabilitated 5 cubs 2 of which were received before their eyes opened. We released them 9 months later — all in Florida in the Apalachicola National Forest. This year was the last bear hunt for our state. Two of my 1989 cubs were killed in the hunt and these two, I might add, were very hard to kill. One weighed in at 385 lbs. and the other at 297 lbs. The biologists were amazed—they not only survived, but thrived. They were tagged and tattooed so there was no doubt about who they were. This year we have had 8 cubs (2 from Florida and 4 from Arkansas) and 2 older bears that had been injured. They are all released—so far, so good.

The success stories need to be known, also, to tip the scales in our favor.

Sincerely,

Betsy L. Knight, President
Big Bend Wildlife Sanctuary, Inc.
Blountstown, FL

Dear Editor:

Approximately two years ago I accidently became involved in the nurturing of orphaned baby squirrels and have some experiences to relate that may be of interest to others involved in the rehabilitation of squirrels, as well as other animals.

A young female Eastern Gray Squirrel was my first project - presented to me by my feed store in the spring. At that time I had no idea that something like the IWRC existed, knew nothing about squirrels and had no idea where to go for help or information. Despite my lack of knowledge, the baby prospered on Esbilac™ and soon outgrew the confines of the cat carrier I kept her in. My husband and I purchased a very attractive wood and wire cage for her at a local pet store and installed her in her home. Within a few days she died of pneumonia. I was devastated and could not fathom what I had done wrong to kill my tiny charge, but knew that her death must surely be a direct result of my ignorance and mishandling.

Somehow during the summer I became acquainted with a local woman who rehabilitated wildlife and, come fall, found myself eventually charged with the care of six squirrels. I transferred them from the cat carrier to the cage purchased in the spring as they increased in size until my cage runneth over. I purchased a similar but much larger wood and wire cage to house my growing brood. Within a few days after introduction of the four largest babies to the cage, one died. I chalked it up to the law of averages - not every baby will survive. I won't go into detail regarding signs, but over the next days another and another died. We had the second body necropsied and found the baby had died of hemorrhagic pneumonia. I immediately gave the two smaller infants who were still healthy, to someone else in case we had a "bug" in the environment. The last of the four larger babies was very sick but hanging in there. We transferred him back to the smaller cage to make his care easier and put him on antibiotics. He slowly responded to treatment and began to improve. When he improved and began to act normally, I put him back in the big cage so he could increase his exercise. He relapsed immediately and died the next day.

My veterinarian put me in touch with IWRC and through you I spoke to several people across the country who are experienced with Gray Squirrels. Through them I learned of a "mystery pneumonia" that apparently claims many victims among squirrels. While still at a loss, I began to feel a little less guilty.

I subscribe to the *Cornell Animal Health Newsletter* and several months after this incident read with interest about a syndrome in caged birds which described signs and rapid death very similar to the manner in which the squirrels had died. The problem was attributed to the ingestion of the galvanized finish of the wire cage. I immediately began to suspect a similar cause of death among my squirrels.

Last fall I acquired two orphaned squirrels. I prepared the cages I had used the previous year by painting the galvanized hardware cloth and painted the wire with the same non-toxic paint. We successfully raised two strapping squirrels without so much as a sniffle. I'm convinced that the galvanized coating of my cage was lethal to my squirrels. I have much more anecdotal evidence to corroborate this than I would care to bore you with. I have no idea whether the creatures ingest the coating by biting the wire or whether it is inhaled as it oxidizes. From my previous year's experience, the "aging" of the cage seems to render it less lethal, though I would consider no unpainted cage safe. If anyone has

additional experience they would like to relate to me, or would like more details regarding the signs my squirrels exhibited, I would be happy to hear from them. If my sad experience helps save the lives of some other tiny little orphans out there, I will feel I have achieved something very worthwhile.

Sincerely,

Connie Micheletti-
Salem, Oregon

## 1993 IWRC Proceedings Update

The IWRC Proceedings went to press at the end of July and will be mailed directly from the printers to over 1000 members who paid for it as a part of their membership (July 1,1993 to June 30, 1994). Look for yours late in August. This year we instituted a review procedure for each paper submitted and it took a bit longer than anticipated. However, we think you will appreciate the effort! *Special thanks to our editor, Bill Marshall who volunteered over 100 hours of editing time as well as handling all the author/reviewer coordination!*

## Jobline Information:

***Wanted:*** An experienced mid-western, southern or eastern Wildlife Rehabilitator with teaching abilities to work weekends as basic skill seminar instructor for IWRC. ***Job requirements:*** 3 years of full-time experience or equivalent in general wildlife rehabilitation and excellent speaking abilities. Interested persons should send a resume with a letter of interest to: Jan White, DVM, IWRC, 4437 Central Place, Suite B-4, Suisun, California 94585.

## IWRC 1994-95 Membership Directory

We are working presently on a new membership directory. We plan to finish it late this summer and hope to have it in your hands early this fall! Please note that if you buy an individual membership, your listing will be under your name, not the organization to which you are affiliated. *People wishing listings for their organization must be organizational members.*

### *New York State Wildlife Rehabilitation Council Announces the 1994 Annual Wildlife Rehabilitation Conference September 30-October 3, 1994*

The 14th Annual NYS Wildlife Rehabilitation Conference will be held September 30-October 3, 1994 at the Villaggio Resort near Catskill, NY. The theme is *"Answering the Call of the Wild"* and will highlight beginning and advanced wildlife rehabilitation topics. This event features a pleasant mix of hands-on workshops, dynamic speakers and stimulating discussions. This year, the Council will be expanding our original program to offer a series of veterinary level topics on Saturday afternoon.

Featured Speakers include: Mark Pokras, DVM, Tufts University, Kathy Hannlon, DVM, New York Stae Department of Health, John Huntley, DVM, New York State Agriculture and Markets, George Kollias, Cornell University College of Veterinary Medicine, Tatty Hodge, DVM, WREN Inc. ECO Larry Jognson, Region 5 Law Enforcement, Chris Nadareski, New York State Department of Natural Resources, Diane Nickerson, Mercer County, NJ Greg Sepik, Moose Horn National Wildlife Refuge, Marc Payne, Raptor Trust, Michael Seymore, Catskill Reptile Institute.

Topics include: facility design, cage construction, ocular disorders in wildlife birds, medical math, treatment of shock, Duck Viral Enteritis, natural history of crows, Wood Cock natural history, Mink case study, rehabilitation inventions, impacts of of wildlife diseases on domestic animals, songbird habitat destruction, Peregrine Falcon restoration in New York City, maintenance of Herps, assessment of fractures, management if diseased mammals and much more!

The event runs from Friday noon until Sunday noon and is open to all interested individuals. Preregistration is required. For more information on the program or registration contact the New York State Wildlife Rehabilitation Council at: P.O. Box 298, Ballston Spa, NY 12020-0298.

**Have an unusual animal or problem?**
**Call IWRC for Assistance.**



*Get a helping hand from your colleagues!*

Wildlife rehabilitation can be challenging or frustrating depending upon how quickly you find answers to those first-time problems. When you are faced with a new situation or looking for a new solution to a recurring problem, avoid that feeling of hopelessness or isolation and give us a call. The Wildlife Hotline is designed to help *wildlife rehabilitators* by connecting you to an expert who can give you the answers you need. IWRC office personnel staff the hotline and make referrals to any number of specialists in our diverse field. So if you are stumped or just want a second opinion from someone who's been there—give us a call and we will try to help. Calls should be placed during business hours (PST) for the fastest response, however, the answering machine will take messages at any hour of the day.

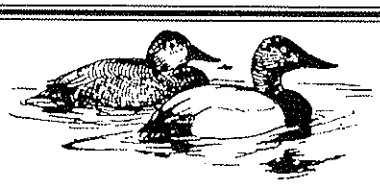
***To use the hotline: call (707) 864-1762; leave a message detailing your question, problem or what specific information you need. The Wildlife Hotline will return your call COLLECT with the help you need.***

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# Announcing!!



## *"A Second Chance"*

**The 17th Annual Conference of the International Wildlife Rehabilitation Council**
**November 3-6, 1994, The Town and Country Hotel**
**San Diego, California**

**Pre-Conference Events**

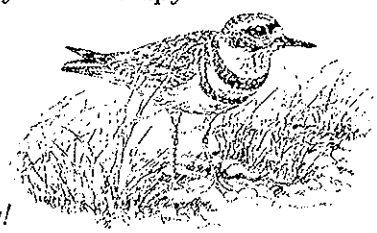
*Basic Wildlife Rehabilitation 1AB*
*Advanced Skills Seminars: Fluid Therapy, Wound Management, and Physical Therapy*

**Field Trips**

*Trips to Sea World, the San Diego Zoo, and Fund for Animals Facility*

**Conference Fun**

*Ice-Breaker Reception, Thursday*
*Banquet and Awards, Saturday*
*Raffle and Silent Auction, Saturday*
*Plus many of San Diego's most popular attractions a short distance away!*



Join us for a great conference in beautiful **San Diego, California**! We have over 45 speakers scheduled, with a wide range of topics, including paper presentations, workshops, and roundtables. We have two keynote presenters this year, **Dr. Milton Friend** of the National Wildlife Health Center, whose topic will be "Diseases of Wildlife: Changing Patterns and Emerging Trends", and **Dr. Don Hunsaker II** of San Diego State University, whose topic is "Urbanization and Its Impact on Wildlife". During our Saturday night banquet, we have an exciting presentation by **Karin Hoad** of the International Dolphin Project on the "Dolphin Reintroduction Program"!

Make plans to join us! This is one conference you won't want to miss! Registration information will be mailed to our members the end of July, with more complete details. Call the IWRC office for additional information, at 707-864-1761.