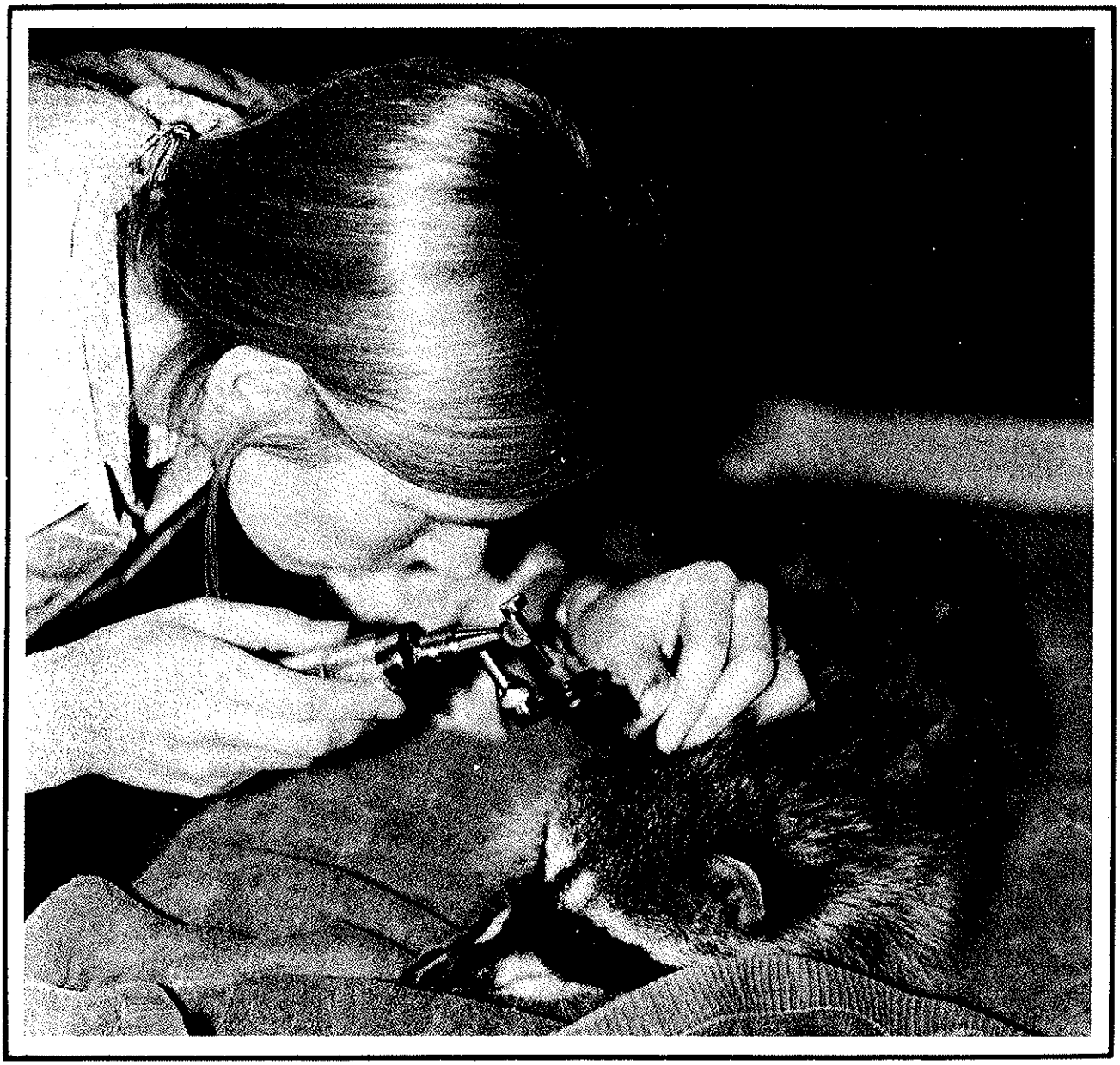
REHABILITATION WILDLIFE COUNCIL

WILDLIFE JOURNAL

Journal of the Wildlife Rehabilitation Council Spring, 1983



WRC Skills Seminar packets now available . . . page 15

WILDLIFE HOTLINE! A Little Help From Your Friends!

Wildlife emergencies usually happen at the most inconvenient times—leaving many rehabilitators feeling isolated and helpless. Are you a rehabilitator who can't reach your veterinarian? Are you a veterinarian who can't reach your rehabilitator? The WILDLIFE HOTLINE was designed to help people in such instances by offering advice, or referring you to an expert who can. Whether it's a "strange" animal you've never seen before. . . or a "problem" you've never dealt with. . . the WILDLIFE HOTLINE is open 24 hours a day—manned by experts who care. (And the WILDLIFE HOTLINE is not limited to emergencies. It is also available for questions regarding any kind of wildlife care. Non-emergency calls should be made during regular hours; Pacific Time.)

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The following is a guideline for articles to be submitted to the WRC Journal. All manuscripts submitted to the Journal are subject to review and revision by our editors.

1. Submissions should be typed and double-spaced, with 1 inch margins.
2. Full length articles run between 1500 and 2500 words.
3. Fillers and short articles run between 500 and 1500 words.
4. The writer's name and address and organization should be typed on the first page, and name and page number should appear on all consecutive pages.
5. It is the writer's obligation to obtain permission or reprint rights if submitted copy has been published elsewhere.
6. Provide a stamped, self-addressed envelope if you wish manuscript and/or photos returned.
7. We accept black and white glossy photos only, preferably 8 × 10.
8. We pay $25 for any feature article accepted; $5 for any fillers and "Handy Hints" under 500 words.

Articles should be mailed to: Editor, WRC Journal, P.O. Box 3007, Walnut Creek, California 94598.

REHABILITATION WILDLIFE COUNCIL

WILDLIFE JOURNAL

Vol. 6, No. 1 Spring, 1983

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Cover: An injured raccoon is given a physical by a trainee during WRC Skills Seminar earlier this year.

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Editorial. . .

A Question of Aid

To help, or not to help: that is the question.

The whole question of how far you should go when you are trying to save a life is a tough one.

It it's a human life, I don't think there's any question that the sky's the limit. No matter how bad the injury or loss of limb, as long as the mind can think and dream, as long as there is one sense left to feel, there is hope and therefore reason to help.

When you are dealing with the life of a pet the question becomes considerably more complicated on a number of levels. The needs of the owner vs. the needs of the pet; which takes precedence? *(I have seen pet birds with both wings amputated; once a dog without legs that was pulled around on a little cart.)* Can the owner pay to save the pet? Does he even want to?

Veterinarians must sometimes go home and cry at night.

The questions raised when helping an injured wild animal are at once the simplest, and also sometimes among the most difficult questions of all. Can I patch this animal up so it may go free again? If the injuries are such that it can never be released back into the wilds, should I still save it? Why? Why not? What will I do with it if it can't be released? What is an acceptable level of suffering and pain to achieve these goals? What is a reasonable amount of time in which to expect them to happen? *(I remember an eagle I treated that took a year for a cut tendon to grow together in its back toe. Without its grasping power it couldn't have been released.)*

Is what is acceptable and reasonable to the man, also acceptable and reasonable to the animal? Which is more important? Who has the greater need?

All the time keeping in mind that man can think and visualize future results, while the animal that is suffering now, knows only the now, and nothing of how life might be in the future.

These questions and many more were stirred up in my own mind by an event earlier this year that you may have read about. The mutilations of brown pelicans in Southern California, and attempts by concerned people to attach artificial beaks to replace the portions that were hacked off by some unknown maniac. *(Someone was catching the birds, cutting off their upper beaks with a hacksaw and releasing them.)*

I attended the WRC Raptor Conference in San Francisco in February and heard a paper delivered by the people who had worked with the damaged pelicans. They showed some interesting slides explaining what they'd done by way of attaching prosthetic beaks. Unfortunately nothing had worked. All fiberglass beaks had fallen off, and there were still a large number of beakless pelicans being kept alive by hand-feeding at various facilities.

My personal reaction to the talk was negative. I'd probably have euthanized the birds to put them out of their miseries. But then I'm also not standing in the shoes of those who are treating them. *(An old Indian saying reads: "It is not good to criticize a man until you have walked a mile in his moccasins.")*

A few months ago I was manning the WRC Hotline when a rehabber in Texas "Beeped" me to ask advice on treating a sandhill crane that lost both legs below the knees in a coyote trap. My advice was to euthanize the bird. Later, I read in the newspaper that attempts were being made to fit the bird with artificial plastic legs.

So how much is too much? I think the answers to that question change with every animal. What you may decide against trying today, you may want to do tomorrow as new techniques are developed, as new ideas come to mind, as new insights and understandings into the true nature of the beasts are brought forth by those who keep looking.

Years ago a lady wrote and condemned me to eternal damnation for trying to raise and release an orphaned mountain lion, and therefore exposing it to the risk of death from a hunter. She was enraged that I wouldn't place it in the "safety of a zoo."

The cat was eventually released, and radio-tracking showed it settling in nicely to it's new environment.

I guess the bottom line is: we do what we have to do.

I've left a lot of unanswered questions, haven't I?

That's the point. Don't *ever* stop asking them! —Gary Bogue

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Letters To The Editor. . .

Editor,

Flight To Freedom
The Soul Flies higher
Than ever winged creature can.
It soars most freely
When it leaves the earthly man.

Death is but the wings of flight
that lets the Soul ascend
into that vaster world
Where joy and freedom have no end.
—Raymond K. Lilley

Thank you for remembering Barbara (Sawyer) with your generous thoughts and contributions. With people like you, she will never be forgotten.

Ken Harding, D.V.M.,
Yosemite Veterinary Clinic,
Merced, California

Readers may want to refer to the editorial in the last issue of the Journal on the death of Dr. Barbara Sawyer. Ken is her husband. —ED.



Editor,

My name is Sharon. I do bird rehabilitation. I live in Canoga Park, California. I need some more information on shorebirds and also saltwater birds. About 5 days ago, somebody brought me an eared grebe. I only had the bird for two days. The bird started to go downhill. I tried everything in my power. I had called about 20 people and nobody knew that much about them. And I kept getting different stories. Well, the last call I made was to Marine Land. They told me to bring the bird to them. It took an hour-and-a-half. We had just gotten to the gate and the bird died. We had hoped to gain some information from them and they said they didn't have any time. If you have any information on shore and salt water birds, it would be greatly appreciated.

Sharon Ebert,
Canoga Park, California

We're sorry about the loss of the bird, but there is a great deal you can do to help keep this from happening in the future. First of all, write the number of WRC's Wildlife Hotline by your phone. Information regarding this important service is on the inside front cover of the Journal. People who "people" this Hotline are experienced in handling problems like yours, and also have access to a long list of other authorities who are willing to help. Next time, give us a call. . . we're here to help. You might also check the inside back cover of this same issue, where we advertise various written publications designed to assist rehabilitators. "Initial Care of Injured & Oiled Water Birds" will help you care for future eared grebes that may come limping your way. Good luck. —ED.

Editor,

As a member, I receive your Journals and have noticed something I think should be pointed out. Winter of 1980 had your first article on cataracts in young raccoons. Last issue I received your Journal with the *update* and it only spoke of Esbilac and cataracts formation. I looked back at my old Journal and wanted to point out that KMR (Bordens) is *much* closer to the mother raccoon's milk than Esbilac, especially the protein, which is actually higher than the mother's.

I realize KMR is very expensive but sight is priceless. I've raised all my raccoons on KMR. I think this is important enough to be included in your next Journal, especially with spring right around the corner.

The other thing I had on my mind was a question concerning raising cottontail rabbits. Many that I know have a recurring problem with raising cottontails. At about the age of 2 to 3 weeks, they frequently develop the runs which are normally a greenish color, lose their appetite and expire. I've had them to the vet and been given an antibiotic, but once it strikes it always seems to kill. I can't understand it. It seems if when I receive them at least a week or two old, they survive, but if I receive them a few days old, they all eventually develop this problem at about 2 or 3 weeks.

I feed them a watered-down version of Esbilac and at 1½ weeks, start leaving alfalfa, carrots, banana and so forth around. I sure hope you're able to help me out, with spring around the corner, I'm sure to run into this problem again.

Debbie Walker Gregory,
Virginia Beach, Va.

Your comments about using KMR for young raccoons is indeed important enough to include in this issue of the Journal. Use of this formula, PLUS getting the youngster onto a solid diet as early as possible, as stated in the cataract update last issue, is the key to insuring sharp eyesight in those masked marauders. Thanks for bringing this to our attention.

Many people also use KMR, undiluted, for raising young cottontails or brush rabbits. You might also consider salmonilla as a possible problem. Young animals—birds and mammals—are very susceptible to this bacteria. One or two-day-old cottontails are EXTREMELY tiny, so the problem you are encountering could be a combination of many things—ranging from over-feeding, to nutritional problems, to some sort of outside infection, to "who-knows-what." Readers with ideas on this subject are invited to respond. Hang in there. . . we'll find the answer! . ED.



Editor,

My husband and I are planning a move within the next year from New Mexico to Southwest Colorado. We, at present, own a small 20-acre farm/ranch in the Pagosa Springs area. For many years we have been interested in helping wildlife in the struggle to coexist with the growing pressures of

population. To this end, we have decided we would like to start a wildlife rescue station in or near Pagosa Springs or Durango (Colorado.)

Since we have no prior experience in dealing with whatever government regulations might exist, or how we might be supported in this effort, we are writing to you for any information you might have that would help us. We have quite a lot of experience in dealing with animals and have spent many months in the wilderness areas in both New Mexico and in Colorado, so perhaps we could draw from this knowledge.

We are open to any suggestions you might have; any literature you might send; or any other aid you might lend in this matter.

Barbara Chaney,
Corrales, New Mexico

WRC is presently in the process of putting together a special information packet for people who want to get into the wildlife rehabilitation field. It will include information on funding, orgainizing, working with veterinarians, dealing with regional regulations, care and treatment of animals, pros and cons, etc. In the meantime, we suggest you join WRC, and request a list of rehabilitators in the Pagosa Springs area. Working with on-going programs is the best way we know to "learn the ropes" of this madcap business. You should also order everything available relating to the field. One day maybe we'll also put out something relating to "Why People Shouldn't Go Into Wildlife Rehabilitation." It's hard, frustrating work...and requires more than just an "urge" to keep you going. Fanaticism comes to mind...

—ED.

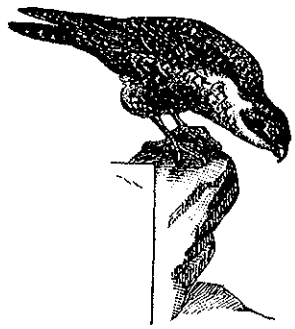
Regional News...

Peregrine Falcon Successfully Rehabilitated After Broken Wing Heals

An endangered Peregrine Falcon, which was injured in the fall of 1981 in coastal New Jersey, rehabilitated by Betsy Jones of Wild Birds Rehabilitation and Research Center and John Gumbs of the North Jersey Raptor Care Center, and released in May of 1982, was re-trapped in Portsmouth, Virginia on December 26 by federally licensed bird-bander Tom Nichols of Virginia Beach.

The 2-year-old bird was in excellent physical condition and was actively hunting when captured. It was re-released after weight, measurements, and othe pertinent data were taken.

Initially, the falcon had incurred a severely fractured wing. Using an innovative surgical technique which he developed, Mr. Gumbs and his veterinarian realigned the broken ulna by installing a space-age plastic-pin. Not only was the surgery successful, but the falcon has outlasted biologists' estimates that 90 percent of this species die during their first year.



Call For Papers

The subject of the 8th Annual Wildlife Conference, co-sponsored by the Wildlife Rehabilitation Council and the San Francisco Zoological Society, is "Current Issues in Rehabilitation."

Wildlife Rehabilitators and/or veterinarians interested in delivering papers at the conference to be held in San Francisco on February 4–5, 1984, should contact Nancy Venizelos, San Francisco Zoological Society, Sloat Blvd. at the Pacific Ocean, San Francisco, California 94132. She can also be reached at (415) 661-2023.

Subject matter of the conference is designed to cover the total spectrum of the wildlife rehabilitation field, and this promises to be the most exciting conference yet. People interested in attending the spring conference, or needing more information, should also contact Ms. Venizelos.

Raptor Placement

Rehabilitators who are trying to find homes for non-releasable raptors should contact Cathy Garner, c/o Fresno Wildlife Rescue, P.O. Box 9032, Fresno, California 93790. Cathy is Chairperson of WRC's Raptor Placement Committee.

People looking for non-releasable birds of prey (scientists with research projects, junior museums, zoos, etc.) should also get in touch with Cathy. Send her a list of the types of birds you are looking for, and the purpose or reason you want them. She will attempt to match you up with rehabililtators who have those species you need. You will then need to make your own shipping and permit arrangements.

People who are trying to place non-releasable raptors should include a list of birds they possess, reasons the birds are unable to be released, whether or not they are normal-appearing and suitable for display, etc.

Rehabilitation Notes: Killdeer *(Charadius vociferus)*

by Jan White, Director

Wildlife Rehabilitation Service, Fairfield, California

INTRODUCTION

The killdeer is probably the most widespread of all the shore birds in America and yet for a time was one of the more difficult birds to rehabilitate; especially when it came to rearing orphan or displaced young. Recent changes in the husbandry and diet of hatchlings have enabled the survival rate to soar above what was once thought possible.

The killdeer was once subjected to hunting pressure and by the turn of the century, they were reported rare in New England. With legislative protection, this species has come back to its present status. It is an economically important bird because its diet consists largely of insect pests.

DESCRIPTION

- Adult: Total length 9.5″ to 10.5″; a plover the size of a robin with a pale brown back and tawny rump. Weights in the wild: three from the w. U.S. averaged 88g. Weights coming into wildlife centers: ten from the w. U.S. averaged 80.4 with a range from 71.3 to 94.4g. The adult has two characteristic bands across the chest. The vocalization is a shrill *kill-dee,* usually repeated.
- Juvenile: Hatch weight is 8–9g. Precocial and downy. Most distinctive feature of juvenile is the long tail with hairlike projections. The forehead, chin, throat, and chest are white. They have a tinge of pinkish buff in the center of the forehead with a black eye stripe.
- Sexes look the same externally.
- Usually found singly but may be seen in flocks of up to 50 individuals.
- Flight pattern is erratic and wavering.
- Life span in the wild: data is sparse; records have shown several individuals that lived 6 + years.

BIRTH AND YOUNG

- Incubation period for eggs is 24–28 days.
- Clutch size is usually 4 but 3 & 5 do occur.
- Young leave nest as soon as they have dried.
- Killdeer fledge in 5 weeks; fully feathered.

NATURAL DIET

- Animal matter make up 98% of their diet. Natural food items include: beetles, grasshoppers, caterpillars, dragonflies, bugs, ants, spiders, snails, worms, and crayfish.

CAPTIVE CARE & FEEDING

Juvenile Caging:

- While being brooded an enclosure 12″W by 20–25″L by 12″H will do nicely. A baby incubator or home made incubator or brooder will work fine.
- They require fairly high ambient air temperatures during the first two weeks after hatching. Starting at 95–99°F the temperature can gradually decrease over ten days to 85° and then on down to normal room temperature by the third week. Enclosures should provide a variance of temperatures so that the birds can move to and from the heat as needed. Light sources should not be in place where the birds can come into contact with them.
- Water should be *very* shallow so the birds will not get overly wet or drown.
- Reduce visual stress & noise levels wherever possible by blocking the view without obliterating the light into the enclosure.
- Once the ambient air temperature is normal, the birds should be moved into larger caging (i.e., 2′ W × 3′ L × 2′ H). When feathred, birds should be put into a flight aviary in order to gain motor flight skills and build up stamina.

Adult Caging:

- Cage rest usually requires a solid sided cage (i.e., Port-a-pet, cardboard box, or veterinary type caging). They are too stressed in an open cage.
- For rehabilitation of wing injuries or leg injuries these birds require an area large enough to fly or otherwise exercise. Flight space requires a larger aviary (i.e., 8′ W × 15′ L × 8′ H). Access to water should be provided.

Juvenile Feeding:

- Live food is critical to initiating feeding behavior. The size of the food item in relation to the beak size of the bird have a bearing on whether a given attempt to eat live food will be successful. Begin with tubeflex worms and/or very small worms (i.e., baby mealworms, soft-bodied worms).
- The captive diet is primarily insects. Calcium carbonate should be added to the dry worms (to raise the Calcium-Phosporus ratio). Mealworms, depending on the substrate they are grown in, can be very low in calcium. This may result in clinical signs of metabolic bone disease. In this particular species, these signs usually begin with the bird "going down on its knees". The problem is compensated for by giving 75–100mg of Calcium carbonate orally each day in addition to the powdered worms.
- Food intake is voluminous. One growing bird may eat ½ ounce of tubeflex worms per day. By 6–7 days, each bird will consume 50 mealworms (if it is the sole ingredient of the diet) each day. This increases to 75–85 daily by the time the bird reaches day 23.
- Birds will consume small amounts of dry feeds (i.e., game chow, trout

chow, seeds).

- More than one bird is an important factor in initiating self-feeding. If two killdeer are not possible, try other precocial young (i.e., similarly sized pheasants, chicks, etc.). Do not mix killdeer of different sizes; the larger will trample the small ones. In one instance, one 25g killdeer was placed with three new hatchlings and in 10 minutes they were eating. The larger animal was then removed because it was trampling the little ones. Supervision and good judgement are the key factors in this process as with most aspects of wildlife rehabilitation.
- Newly arrived hatchlings that do not self-feed may be dehydrated depending on their histories. Once warm, hydration with a Ringers solution may be necessary before the bird will eat. Placing a drop at a time on the end of the beak is the safest way to get fluids into them. They will generally not eat until they are very warm and hydrated.

Adult Feeding:

- These birds will self-feed when offered live food. Live insects of various sorts including the tubeflex and mealworms are readily accepted. Other items that can be added include cut up smelt, crustaceans, and seed.
- Offer food continuously. Adults that are convalescing may consume 100 + mealworms daily. Make sure water is available at all times.

RELEASE

- Where food and water occurs; nearly any habitat is utilized by this species of bird.
- Diurnal; release during the day.
- Make sure the bird is waterproof.
- Weights should be above 60g if a fledgling (5 wks. old); above 75g if an adult.
- The bird should have basic flight skills; it will need them. Be aware migration in or out of the release area.

SPECIALIZED CARE

- Calcium-Phosphorous deficiencies do occur; monitor calcium intake.
- Vitamin D_3 should be provided with avian vitamins.
- Generally antibiotics that are well tolerated by birds are also well tolerated by killdeer.

REFERENCES

1. BENT, Arthur C. 1927. *Life Histories of North American Shore Birds.* New York: Dover Publications.
2. HARRISON, Colin. 1978. *A Field Guide to the Nests, Eggs, & Nestlings of North American Birds.* New York: Williams Collins Sons & Co. Ltd.
3. MARTIN, Alexander, Zim, Herbert, & Nelson, Arnold. 1951. *American Wildlife & Plants: A Guide to Wildlife Food Habits.* New York: Dover Publications.
4. STONER, Tracy I. & Usinger, Robert L. 1963. *Sierra Nevada Natural History. Berkeley: University of California Press.*
5. SUBBOTIN, Violet. 1980. "Care and Handling of Killdeer". *Wildlife Journal* 3 (2) pg. 1.
6. TERRES, John K. 1980. *The Audubon Society Encyclopedia of North American Birds.* New York: Alfred A. Knopf, Inc.
7. WHITE, Jan L. 1983. Unpublished data from case files of the Wildlife Rehabilitation Service, Inc. (Fairfield, California)



The Veterinarian's Corner . . .

Oral Lesions In Raptors: Their Diagnosis And Treatment

By Sandra Emanuelson, D.V.M.
Cottage Veterinary Hospital, Walnut Creek, California
Wildlife Rehabilitation Service, Fairfield, California

Oral lesions are one of the more commonly presented symptoms in avian practice, especially in raptors. The oral lesions may be a disease in themselves, localized to the oral cavity, or they may be the visible part of systemic disease.

Oral lesions vary in their appearance within species or between species. In addition, the lesions commonly mimic one another, causing one disease to look like another. To further complicate matters, more than one disease may be and usually is present. Viral lesions usually have overlying bacterial and/or fungal lesions. Opportunists are always available to settle in when and where they can.

Presented are common causes of lesions along with differential descriptions where possible. The scope of this article additionally includes information on sample taking for laboratory diagnostics and finally, a rational approach for treatment of affected birds.

A complete and thorough history as well as physical examination should be done prior to beginning the process of considering the various differential diagnoses. The physical examination is, of course, as stress free as possible, and its extent determined by the state of the bird.

BASIC DIFFERENTIAL DIAGNOSIS OF ORAL LESIONS IN RAPTORS

BACTERIAL

Primary: Direct contact with Pasturella, Salmonella. pathogenic Pseudomonas, Mycoplasma, or other organisms that can directly cause disease. Controversy rages over what is normal bacterial flora in the oral cavity of meat-eating birds.

Secondary: Infection caused by any organism that acts as an opportunist, often in association with viral or fungal lesions, or as a result of accidental trauma to the oral cavity. Primary or secondary lesions are in the tissue and overlie it slightly (intradermal).

FUNGAL/YEAST

Examples: Candida (Monilia) (most common)
Aspergillosis
These organisms are usually seen in immunosuppressed birds (especially those with viral pox). However, do not rule out the opportunists; they can be the primary offenders. Fungal lesions are in the tissue and overlie it slightly (intradermal).

PARASITIC

Examples: Trichomonias (T. gallinae)
Other Trichomonads or other protozoa (not now considered pathogenic)
Nematodes (Capillaria, Gapeworms, others)

T. gallinae have common plaque-like lesions that are easily removed and cause no bleeding. Capillaria and gapeworms are usually found in the crop, esophagus, and mouth.

VIRAL

Example: Avian pox
In raptors, lesions are usually seen on the feet and eyelids, but can be anywhere. In other species, the lesions are primarily around the mouth and face. The lesions are a part of the tissue and will tear the surrounding tissue when removed. Viral pox is very immunosuppressive and often leads to secondary bacterial and fungal lesions.

NUTRITIONAL

Example: Hypovitaminosis A
Lesions are pustule-like and range in size from 1 mm to 1 cm. They occur all throughout the pharynx, under the tongue, and around the choanal slit.

TRAUMA, BURNS, FOREIGN BODY

DIAGNOSTIC TECHNIQUES

The amount of basic diagnostic techniques depends on the laboratory facilities available.

MICROSCOPIC DIAGNOSTICS

Warmed wet mount: (Source: oral cavity lesions smear.) Used to locate trichomoniasis. One or two drops of warmed saline on a warmed slide with lesion material. Look immediately for the organisms at 10X and 40X. They are larger than white blood cells and swim in a characteristic (spiral in a circle path) motion. Focus up

and down to observe the slightly green appearing organism.

Gram Stain: (Source: oral cavity lesion smear.) Can be used to identify yeast which are gram positive found organisms. Candida is a budding yeast although other yeast organisms bud also. Bacteria can be detected this way also. Use 100X oil immersion.

New Methylene Blue: (Source: Blood smear.) Avian white cell estimates can be done to check for bacteremia or infection that has gone from one organ to more than one and is also in the blood stream. A finding of 0–5 White Blood Cells (WBC's) per high power field (40X) as an average of 15 fields is considered normal. When more than 5–6 are the average for 15 fields it can be considered elevated. Treatment for sick birds should be immediate and aggressive. This stain easily becomes contaminated with bacteria and must be filtered often or at least the results read with this in mind.

Wright Geimsa Stain: (Source: blood smear.) Can be used to do Avian white cell estimate or check for blood parasites.

BACTERIAL CULTURE AND SENSITIVITIES

The procedures can be done with fairly inexpensive equipment; however, their interpretation can be misleading. Flawless techniques are essential in order to prevent erroneous diagnosis and ineffective treatment. Centers which want to set up for this require specialized training and assistance.

Deciding which organisms are pathogenic and those that play no role in the disease is quite difficult since we do not know what is normal bacterial flora for raptors. As a rule, bacteria that are resistant to most antibiotics are more likely to be pathogenic.

FUNGAL CULTURES

Tissue can be placed on Sabaroud's media. However, interpretation of this is also difficult. Yeast will grow in a standard culture media for bacteria.

VIRAL CULTURES

Viral cultures are not available at all laboratories. The University of California at Davis does perform this service. Specimens require special handling prior to submission so the lab should be contacted in advance in order to get instructions.

PATHOLOGY

Pathology is one of the most important tools.

Biopsy: Small scabs from the feet, eyelids, or oral cavities will usually yield avian pox if present. Biopsies of suspected hypovitaminosis A lesions are usually easily obtained. Tissues should be placed in a 10% buffered formalin solution.

Post Mortem: Complete post mortem and tissue work on any individually important bird or a representative of a group can yield more information than originally hoped. At least 80% or better give us the cause of death even when no symptoms or lesions are seen. Additional information is also often an unexpected and welcome bonus. Birds should be posted immediately as possible following death. They should *not* be frozen. Pieces of all tissues should be placed in a 10% buffered formalin solution. Impression smears of the liver, spleen, air sac, or obvious lesions should be saved. A culturette should be utilized to take samples from the liver and spleen for culture and sensitivities.

Rather than evaluating whether or not a test should be done, take a sample and do so properly; the material can always be discarded later if not used.

APPROACH TO ORAL LESIONS

1. Take a sample of the lesion and place in a culturette.
2. Make several wet mount slides at different times to rule out trichomonias.
3. Make several smears of the lesion with a swab (in a roll-out motion) to save for future decision making.
4. Collect a lesion and place in formalin or viral holding media.
5. Biopsy if at all possible and place in a 10% buffered formalin solution.

RATIONALE FOR SAMPLE TAKING

Why take samples? The bacterial growth may be the only thing initially available on which to base treatment. This is especially true when the bird is not responding two to three days later. At this time sensitivities can be very meaningful in the choice of antibiotic used in treatment. When the pathology is completed, the results may yield something totally unexpected.

SPECIFIC TREATMENT

1. All birds should receive vitamin A (.10 cc/lb. twice one week apart) unless you are positive that they have been on a *more* than adequate diet.
2. Aggressive antibiotic therapy should be instituted even when viral diseases are expected for at least the first four to seven days. Gentocin is a good choice and available at a reasonable price. If the bird is very ill, Carbenicillin may be added. If cost is not critical and the bird is very ill, Amikacin is the aminoglycoside of choice (in lieu of Gentocin). Additionally, Cefotoxamine may be used in combination with Amikacin. For dosages see Drug Regimen.
3. B-Sol (B-Vitamins) at a rate of .5 cc/lb. daily with .1 cc Aquamephyton (K_1) daily. The latter is given to birds with prolonged bleeding times. Normal is 3–10 mins with 10–15 minutes being considered suspicious and more than 15 minutes prolonged or abnormal.
4. If ornithosis (psittacosis) is suspected then add (to whatever other drug regime instituted) Vibramycin 10 mg/lb. twice daily.
5. If mycoplasm is suspected, the drug of choice is Tylocin.

Drugs injected into the breast muscle are usually superior to those given orally. After the maximum four to seven days of aminoglycosides (i.e., gentocin, amikacin, tobramycin), birds can be switched onto oral drugs such as Keflex or Septra.

Many drugs including tetracycline are immunosuppressive, that is, they decrease the body's ability to respond to disease with its own defense thereby allowing the initial disease or other opportunistic diseases to emerge. The best example of a disease that manifests itself in an

immunosuppressed animal, from whatever cause, is aspergillosis.

SUPPORTIVE CARE

Some birds eat normally with oral lesions; however, their weight must be monitored daily. On a short term basis, birds that are self-feeding can be fed chicken legs. Debilitated birds should be started on water and glucose. It has been observed that raptors tend to regurgitate Lactated Ringers and Normal Saline. If they will hold these solutions down, they are the first choice. Another way of giving fluids subcutaneously is in the skin where the leg meets the body, rather than in the petagium. We have found it to cause less scarring. If force feeding is required, a bland diet, warmed, works well. On a short-term basis Nutrical (10–30cc/lb) and chicken baby food has proved to be a good formula. The calcium-phosporus ratio make the diet unacceptable on a long-term basis. Heat should be provided for debilitated birds. Levels of stress should be adequately controlled.

TOPICAL TREATMENT

Topical treatment can be instituted when indicated to reduce lesions. Betadyne, gently applied to oral lesions, will help reduce bacteria. If a viral origin is suspected, or if other treatment does not work, Ioxyuradine (Stoxil) can be applied to lesions.

SUMMARY

After examining, obtaining samples when possible, and if indicated, treating a raptor with oral lesions specifically and supportively, time will hopefully yield positive results. Occasionally, in fact all too often, we are left with mysteries despite extensive laboratory work. Often the lab work needs to be repeated because the agent did not show up for some particular reason on the first try. Some organisms are very difficult to grow in the laboratory (i.e., mycoplasma, ornithosis). The most rewarding laboratory work is pathology which gives us the answers to approximately 80% of our cases or better.

ANTIBIOTIC DRUGS

Gentomycin (Gentocin)
Source: Veterinarians or Pharmacy
Dose: 1mg/lb. (2mg/Kg) every 12 hours (BID) IM for 4–7 days + + +
Strength: 50mg/cc. There are three ways to make a dilution:

1. Take a 30cc bottle of bacteriostatic water and remove 6 cc's of water. Add 6 cc's of gentocin. This stock bottle now contains 10mg/cc or 1mg/.10cc. The manufacturer states that this is stable at room temperature.
2. Add .2 cc of 50mg/cc gentocin (check for the amount in the hub which is usually .05–.07cc) to .8cc of water. This yields 1mg/.10cc in the syringe. This can be used for multiple doses on the same bird.
3. The more precise method is to use a .50cc insulin syringe because the hub amount is negligible. Add .10cc of 50mg/cc gentocin to .40cc or water. This also yields 1 mg/.10cc.

Monitor uric acid in birds; BUN in mammals when this aminoglycoside is used over 5–7 days.

Amikacin (Amikin)
Source: Veterinarians or Pharmacy
Dose: 5 mg/lb (10mg/Kg) every 12 hours (BID) IM for 5–7 days + + +
Strength: 250mg/cc. To make a dilution:

1. Take .10cc of Amikacin and add .90cc of bacteriostatic water. This yields 25mg/cc or 2.5mg/.10cc.
2. Take a .5cc syringe and add .05cc of Amikacin and .45cc of bacteriostatic water. This also yields 25mg/cc or 2.5mg/.10cc.

Monitor uric acid in birds; BUN in mammals when this aminoglycoside is used over 5–7 days.

Tobramycin (Nebcin)
Source: Hospital Pharmacies
Dose: 5mg/lb every 12 hours (BID) IM
Strength: 40mg/cc
Monitor uric acid in birds; BUN in mammals when this aminoglycoside is used over 5–7 days.

+ + + Blood levels have been established for gentocin and some of the other aminoglycosides. They indicate much higher levels are needed in the bird at more frequent intervals to maintain blood levels of the drug. While this is true, clinically the lower dosages do the job, and since these drugs are very toxic to the kidneys, we do not recommend the higher dosages.

Carbenicillin (Geopen)
Source: Veterinarians or Hospital Pharmacy
Dose: 50–100mg/lb (100–200mg/Kg) every 12 hours (BID) IM for 4–7 days. Always reconstitute as dilute as possible as this drug is quite irritating to the tissues. It is safe at the higher dosages. It may be used with aminoglycosides.
Strength: 1 gram reconstitutable vials. They retain potency for only 3 days (72 hours) when reconstituted.

Cefotoxamine (Claforan)
Source: Hospital Pharmacy
Dose: 50mg/lb (100mg/Kg). May be used with aminoglycosides.
Strength: 1 gram vials. Put daily doses in syringes and freeze.

Antibiotic drugs listed below are fairly safe to use for longer treatment times (i.e., 1–4 weeks and often even to months) if no gastric upset occurs and treatment is necessary. Remember that some are immunosuppressive.

Cephalexin (Keflex)
Source: Veterinarians & Pharmacy
Dose: 20mg/lb (40mg/Kg) every 12 hours (BID). May be used with aminoglycosides.
Strength: 100mg/cc, 25mg/cc, or 50mg/cc.

Chloramphenicol Succinate
Source: Veterinarians
Dose: 50–100mg/lb (100mg–200mg/Kg) IM or oral every 12 hours
Strength: 1 gram reconstitutable vials diluted to 100mg/cc.
Note: This dosage may seem high; however, blood studies support this and even higher doses, even over long periods of time. This drug appears safe at higher dosages and does work better.

(Tribrissen, Septra, Bactrin)
Source: Veterinarians & Pharmacy
Dose: Oral products (Septra and Bactrin) 1cc per 4lb BID for 7 + days.
Tablet or Injectable: 1mg Trimethoprin per 1lb BID for 7 + days.

Ampicillin (Amphitab, Polyflex, Amcill)
Source: Veterinarians
Dose: 25–50mg/lb (50–100mg/Kg) every 12 hours by mouth or injection (when using the injectable form). Higher dosages are tolerated well over fairly long periods of time. May be used with aminoglycosides.
Strength: Tablets: 50, 100, 200 mg.
Capsules: 250, 500 mg.
Oral Suspension: 10cc bottles diluted to 100mg/cc strength.
Injectable: Can be diluted to whatever strength needed.

Sulfa Drugs (Sulmet 12.5%)
Source: Veterinarians
Dose: Up to 500mg/Kg/day for coccidia. Repeat SID for three days, rest one day, and then SID for an additional three days. Check fecal.

Tylosin (Tylan)
Source: Veterinarians
Dose: 100mg/lb BID by mouth for 7 or more days.
Injectable: 10–25mg/Kg. BID or TID.
Strength: 50mg/cc (Injectable)

Doxycycline (Vibramycin)
Source: Pharmacy
Dose: 10mg/lb BID for 1–6 weeks in treating ornithosis or for small mammals.
Strength: Calcium base stable solution is 10mg/cc. Reconstituted suspension is 5mg/cc.

FUNGICIDIAL DRUGS

Ketaconzole (Nizoral)
Source: Pharmacy
Dose: 50mg (¼ tablet) into 1 cc water. Give 1cc/Kg BID until negative for yeast.
Strength: 200mg tablets

Nystatin (Mycostatin
Source: Pharmacy
Dose: .1–1cc/300 grams of animal SID or BID until smear is negative for yeast.
Strength: 100,000 Units/cc.

Flucytosine (Ankabon)
Source: Pharmacy
Dose: 1.5mg/Kg TID for 3 days.
Strength: 50mg vial.
Note: Use in conjunction with Flucytosine.

Chlorhexidine (Nolvasan)
Source: Veterinarians
Dose: .10cc/100 grams of animal given orally; for resistant strains until negative for yeast.
Strength: 2% solution diluted at a rate of 1:10 with water.

PARASITICIDES

Levamisole (Ripercol-L)
Source: Veterinarians
Dose: 4–10mg/lb SID for two days; ten days apart.
Strength: 13.65% (Injectable)

Metronidazole (Flagyl)
Source: Pharmacy
Dose: 10–40mg/Kg SID for 5 days.
Strength: 125mg tablets.

Dimetridazole (Emtryl)
Source: Veterinarians/Feed Store
Dose: 50mg/Kg SID for 5 days.
Strength: 1 packet = 36.4g or 36,400mg. Take 1cc of Emtryl and add to 10cc of water. Shake well before each use. Use 2.25cc of mixture per pound of bird for five days. Flock treatment: ½ tsp. per gallon. Individual treatment is preferred.

ANTIDIARRHEAL & ANTIREGURGITATION MEDICATION

Kaopectate + Barium
Concentrations: Mix 2 parts Kaopectate to 1 part Barium
Dose: 1cc/lb every 4–12 hours or as needed.

Dyphenyhydroximine (Lomotil)
Source: Veterinarians/Pharmacy
Dose: Canidae: 1 tablet/20lbs. Felidae: ¼–½ tablet/10lbs.
Strength: 2.5mg tablets

ANTISPASMODIC

Atropine
Source: Veterinarians
Dose: 1cc/20lbs.

Paregoric
Source: Veterinarians
Dose: Canidae: 3–5cc/25lbs. Avian: 5 drops/oz drinking water. Do not use in felidae.

VITAMINS

AD_3 (Injacom)
Source: Veterinarians
Dose: .1cc/lb bird every 7 days for 2–3 treatments.

B Vitamins (B-Sol)
Source: Veterinarians
Dose: .5cc/lb of bird daily

Vitamin K_1 (Mephyton)
Source: Veterinarians
Dose: .1cc daily/lb bird
Strength: 10mg/cc

TOPICALS

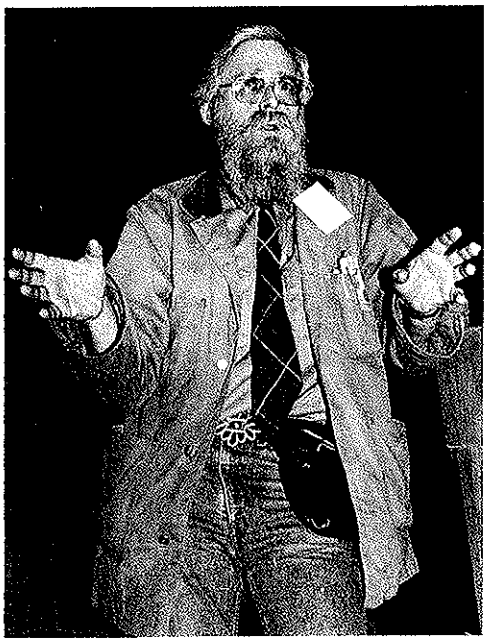
Povidine (Betadyne)
Source: Veterinarian/Feed Store
Dose: Apply to infected lesions; not too much orally.

Ioxyuradine (Stoxil)
Source: Veterinarians
Dose: Apply to lesions every 1–4 hours.
Strength: 1mg/cc (.1%)

LITERATURE CITED

1. BUSH, M. et. al., 1979. "Preliminary Pharmacokinetics Studies in Selected Antibiotics in Birds." *American Association of Zoo Veterinarians Annual Proceedings.* pp. 45–47. Denver, Colorado.
2. CLUBB, S. "The Use of Antibiotics in Birds." *The Procedeedings of the 1982 Annual Meeting of the Association of Avian Veterinarians.*
3. DAVIS, J., and Anderson, R. 1971. *Parasitic Diseases of Wild Animals.* The Iowa State University Press. Iowa.
4. DEIN, F. et. al. 1979. "Pharmacokinetics of Chloramphenicol in Chinese Spot Billed Ducks." *American Association of Zoo Veterinarians Annual Proceedings.*
5. FOWLER, M. (Editor-in-Chief) 1978. *Zoo & Wild Animal Medicine.* W. B. Saunders, Philadelphia.
6. GALVIN, C. *Avian Drugs & Dosages.* 1978. Wildlife Rehabilitation Council. Walnut Creek.
7. HOFSTEAD, M. S. *Diseases of Poultry.* 1978. The Ohio State University Press. Iowa.

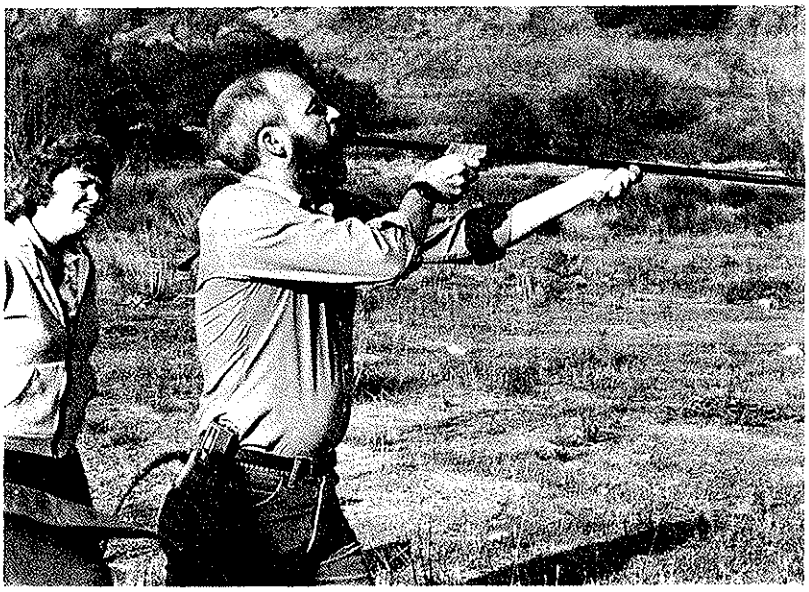
Speaking of Pictures . . .



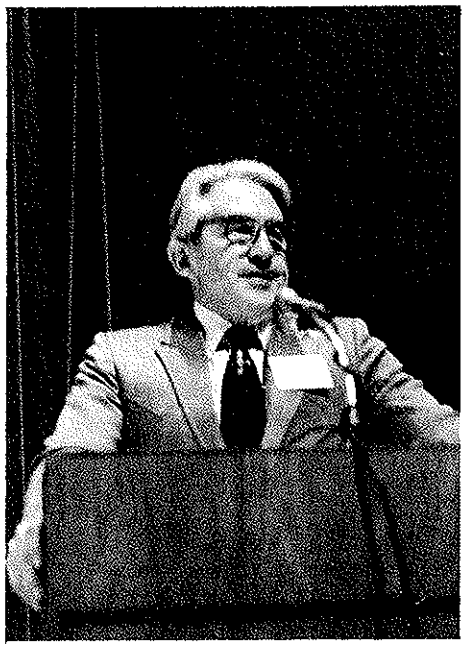
Dr. James Harris, Montclair (Calif.) Veterinary Clinic, gave an interesting, humorous, and thoroughly enjoyable talk on the Initial Examination of Raptors For Rehabilitation at the WRC Raptor Conference in San Francisco last February.



WRC Board Member, Sandra Fender, assists while the rest of the class observes how to draw blood samples from an unruly opossum during the WRC Skills Seminar on Physical Examination and Initial Care.



Journal Editor, Gary Bogue, demonstrates his form while "shooting" tranquilizer darts from a blow-gun during his lecture at the WRC Skills Seminar on Restraint of Wild Animals. Cheryl Williams, Director of the Lake Tahoe, California, Wildlife Care Association, seems slightly amazed at the amount of "hot air" Gary was able to produce during his efforts.



The Effects of Stress on Captive Raptors was explored in detail by Dr. Murray Fowler, School of Veterinary Medicine, U.C. Davis, California, during the WRC Raptor Conference.

Returning Fawns To Their Mothers

By Michael Emerine, Assistant Clinic Director and Jay Holcomb, Clinic Director

Marin Wildlife Center, San Rafael, California

Every spring and summer, wildlife rehabilitation centers receive numerous reports of "orphaned" fawns. In most cases, these fawns are not truly abandoned, but simply awaiting the doe's return. In an attempt to "save" the fawns, well-meaning citizens wildlife centers for care.

Marin County, California, has a large black-tailed deer population. Good wildlife habitat mixed with suburban housing has created unique deer problems.

For many years, the Marin Wildlife Center averaged 40 to 50 abandoned fawn reports each year. Of those, 15 to 20 fawns were actually brought to the center. In the spring of 1982, anticipating our annual influx of fawns, we decided to make a serious effort to return the animals to their mothers.

To accomplish our goal, we placed our staff and volunteers on a 24-hour "fawn alert." The Marin County Humane Society and park rangers from throughout the county cooperated by channeling all fawn reports to us. The two most common occurences we encountered were: 1. telephone calls reporting discoveries of orphaned fawns, and 2. concerned citizens bringing fawns to our center, unannounced.

Each time we received a call regarding an orphaned fawn, we investigated by trying to ascertain the history of the situation. Certain information was important in order to help us determine the best course of action. Our first concern was how the fawn was discovered. Often people simply came across the fawn asleep in their yards. They would call us in a panic, sure that the baby was abandoned. At that point we explained the relationship between doe and fawn. We found that most people did not realize that does leave their fawns alone for hours while foraging for food.

After our callers accepted this fact, we asked if there were dogs or children in the area which might bother the fawn. If the finder had an open yard from which the doe and fawn could come and go freely, we advised that the fawn be left alone so its mother could return for it. In some cases, people watched from their windows and actually saw the doe return. In other cases, the fawn was gone by morning, indicating the doe had retrieved it during the night.

If the finder was not responsive to our suggestions, or seemed confused or reluctant, we went to the house. By pointing out where the doe was entering the yard and sharing a little of our knowledge of deer behavior, we were usually able to reassure the homeowner.

Where the possibility existed of dog attacks, or children bothering the fawn, we always went to the location to evaluate the situation. In most cases we simply informed the immediate neighbors of the problem and asked that they please keep children and pets away from the area where the fawn was resting. In all cases the neighbors willingly cooperated and kept us updated until the doe returned.

There were times when a fawn had to be removed from an area in order to save its life. In one instance, a doe being chased by dogs paused in the middle of a local street long enough to give birth before running on. The dogs bypassed the fawn in their frantic pursuit of the doe. The fawn was rescued and raised by our volunteers. In any situation where the fawn was in obvious danger or it was known that the doe was dead, we took the animal and raised it.

Rapid evaluation of the situation was particularly important when a fawn had been removed from its original location. When concerned fawn-rescuers walked through our clinic doors with a fawn in their arms, we got that sinking feeling that only rehabilitators know. People afflicted with the "Bambi Syndrome" are often difficult to educate.

Again, we always asked the history of the situation so we could make a proper evaluation. If the fawn was injured, emaciated or ill, we took the animal and cared for it. If the baby had merely been asleep somewhere, we explained the doe-fawn relationship and why the fawn should be returned. The people who brought us the fawns were usually hikers or picnickers. Sometimes, if we were lucky, they remembered the exact spot where the fawn had been found. If they had had the fawn less than 8 hours and had not fed it, we assisted in returning the animal to where it had been found. Sometimes this meant hiking long distances, but it was a small price to pay for giving the fawn its freedom and



Sometimes you cannot replace the fawn exactly where the doe left it. This fawn was moved up a hill and into tall grass—away from a very busy highway.

returning it to its natural mother.

Most people insisted on trying to feed a fawn cow's milk before bringing it to us. Almost always, the fawn refused to nurse readily on the bottle. The people usually complained about this fact, but it was fortunate this happened, because it meant the animal would not have the intestinal problems that result from this improper diet. In those cases, we fed the fawn one to two ounces of a rehydrating solution before releasing it.

During 1982, we did not receive any fawns that had been given large amounts of cow's milk in the first 24-hours of captivity. We did receive animals that had diarrhea from improper feeding, but they had usually been in captivity more than 3 days. Their finders had no idea where they had been found, and had to be hand-raised.

We received two fawns that were lying on hiking paths. Returning them to the same spot during daylight hours would only cause a reoccurence of the problem, so we waited until late afternoon to replace them. Due to insufficient cover, we had to locate one fawn approximately 20 feet from the path where it had been found. An hour after we left the fawn, the doe came back and easily located it.

One man brought us a fawn he had had for approximately 6 hours. The unwillingness of the fawn to nurse from a bottle had frightened the man into bringing the animal to our clinic. The baby was one of a pair of week-old fawns that had reportedly slipped down a steep embankment behind an apartment complex. They had tried to climb cement and rock to get back to the top with the doe. One fawn managed to climb but the other could not. It instinctively dropped in its tracks when the man approached and he assumed it was injured.

Eight hours after the fawn had been picked up, we return to the site with animal and finder. At the top of the embankment, with a "what took you so long?" look on their faces were the dow and other fawn. We released the baby at the top and all three deer ran into the woods.

In a different situation, a 2-month old fawn ran into the side of a car and sustained minor lesions and bruises. The driver of the car brought the animal to us for treatment. The deer was held for 48-hours, eating much browse and violently resisting bottle feedings. We decided to locate its family no matter what it took.



If possible, you should return lost fawns to the exact spot where they are found.

After finding the accident site, we searched the adjacent streets. Neighbors showed us where the deer paths wound between houses. We drove to a dead-end street where deer were often seen and as we were preparing to release the fawn, a nearby resident told us the doe and another fawn had run up the hill as we arrived. We released the fawn and it quickly ran up the famililar trail and disappeared. The next morning one of the neighbors called to tell us the reunited family was in her yard and looked healthy.

We rescued fawns that had been frightened and dropped to lie in roadside gutters, fawns that had fallen into swimming pools, and fawns that had hidden in garages and been unintentionally locked in. Usually, we moved the animals to a secure nearby location and asked residents in the area to keep an eye on them. Almost always the doe returned.

We had several occurences where a fawn was bleating and running on one side of a fence, while the doe was on the other side, frantically trying to get past the barrier. We were always able to shove the fawn through a crack in the fence or open a gate, allowing the family to reunite.

It is impossible to write procedures for every fawn situation. Each case is different, some situations are dangerous, and all require careful evaluation and common sense. There are, however, some basic tips:

1. Organize staff and volunteers for a 24-hour fawn alert. It's worth it in the long run.

2. Investigate each individual situation thoroughly. Ask any questions necessary to help plan your course of action.

3. Take the time to explain to the public what you are doing and why. Involve them in your mission. Explain the doe/fawn relationship clearly so they will understand.

4. Be very cautious of all does. They will stop at nothing to protect their fawns from predators, which is exactly what they think you are.

5. You *can* handle fawns and return them to their mothers. Your scent on the fawn will not be a problem.

6. Follow up each case by checking back with the neighbors or going back yourself to see if the doe has returned for her fawn.

During the spring and summer of 1982, the Marin Wildlife Center responded to 30 reports of orphaned fawns. After investigation and/or rescue, 22 fawns were returned to their mothers. We hand-raised only 8 fawns. Many other fawn-sightings were reported to us by telephone and we advised the callers to observe from a distance and keep us informed.

Returning young animals to their parents is not a new idea. Songbirds, raptors, waterfowl, and a variety of young mammals have been successfully returned. Rehabilitators everywhere should try to educate the public and enlist their assistance in their own "Project Return." Send your success stories to the Journal so we will all learn.

Replacement of Young Great Horned Owls

By Daniel R. Ludwig, Ph.D., Wildlife Biologist,

Willowbrook Wildlife Haven

Forest Preserve District of DuPage County, Illinois

It is generally agreed that whenever possible, nestlings should be placed back into their nest, and that young birds and mammals should not be reared in isolation from conspecifics.

However, the winds of early spring usually result in a rash of grounded Great Horned Owls in northeastern Illinois, as well as throughout North America. What can be done with the single grounded bird which has not yet reached the branching stage? This paper describes a procedure utilized by the Willowbrook Wildlife Haven in 1982 to replace young Great Horned Owls.

These young owls found themselves on the ground for a variety of reasons including damage or destruction of nests by spring winds and/or rain. Some had outgrown their small nests but were still too unsteady to perch, and others had fallen from nests weakened and broken apart from increasing weight and activity of the young plus the continued landing force exerted by adults.

To avoid captive-rearing these owls which were two weeks of age and older, and to reduce the chance of the birds being grounded again, the author banded each and returned them to their nest tree within wooded nesting platforms.

This method has a number of advantages over rearing the young owls. These are: 1. Young Great Horned Owls do not have to be reared, and human-habituation problems are circumvented. 2. A considerable amount of time, energy and cage space can be re-directed within a rearing and rehabilitation operation. 3. The birds become familiar with a home area and experience a full range of behavioral interactions. Since the birds emigrate from the parental area, release sites need not be selected. Young Great Horned Owls were observed in the paternal area until late September, 1982, although Bent (1938) speculates they are independent of the adults by June. 4. Once a nest platform is in place, young owls of similar size can be transplanted should the need arise. 5. Should the owls continue to use the platform in subsequent years, the need for a repeat rescue is diminished.



The nest platforms were constructed of 14″ × 14″ sheets of ½″ or ¾″ plywood with a 4″-high lip nailed around the perimeter. A series of ½″ diameter holes were drilled through the platform bottom to allow water drainage. The lip allowed the birds to lie against the platform bottom in order to get out of the wind and to brace themselves against the wind by leaning against the lip and nest mates.

The birds are easily placed in these platforms. First, a climber ascends the nest tree carrying a coiled rope. Once the climber has tied himself in place, he throws the rope away from the tree and down to an assistant on the ground. The assistant then moves away from the tree trunk, using the rope to create the hypotenuse of a right triangle, with the ground and tree trunk as the two sides.

The tools and the platform can be put in a sack or backpack, tied to the rope and ferried up the tree by the climber. Once the platform is secured in place, the owls are placed in a sack by the assistant, tied to the rope, and carefully pulled up by the climber.

It is probably not necessary to replace the nest platform in the exact spot as the original nest, but it is advisable to place it on the same side of the tree and in direct line of view below the actual nest site. The platform is nailed to the surrounding branches and/or trunk near the original nest site.

Two of the replaced birds were found on the ground about 40 feet below a small remnant of their nest, and apparently were being attended by the adults. The young were replaced in their nest tree about 15 feet below the original nest site. Both owlettes fledged despite being moved, and despite a considerable amount of human activity along a trail 60 feet from the nest tree.

Three other birds were put in a platform nest placed over the remaining half of their nest. All owls branched and subsequently fledged.

A single bird was placed in a platform, and later a relocated bird was added to the same platform. Both young fledged.

LITERATURE CITED

1. BENT, A.C. 1938. Life histories of North American birds of prey. *Smithsonian Institution U.S. National Museum.* Bulletin 170–482.

Skills Seminar Packets Now Available for WRC Members

The Wildlife Rehabilitation Council has developed a series of advanced skills seminars designed to further the training of wildlife center directors, team leaders, and supervisors. Due to the interest shown by rehabilitators both near and far, these packets are now available. The cost is $5.00 per packet and may be ordered from the WRC Literature Department.

Session I—Cleaning Oiled Birds, by Alice Berkner, International Bird Rescue and Research Center, Berkeley, California.
This packet contains the latest methods for the successful cleaning of oiled birds.

Session II—Restraint of Wild Animals, by Dave Jessup, DVM, William Clark, and Brian Hunter of the California Department of Fish and Game.
These materials cover basic consideration and responsibilities for restraint procedures, pharmacology, medical concerns, equipment, and safety considerations for all concerned.

Session III—Laboratory Procedures and Dianostics by Tami Biatek, AHT, Cottage Veterinary Hospital, Walnut Creek, California.
Procedures covered include the various aspects of hematology (i.e., collection in both avian and mammalian species), laboratory tests (BUN, PCV, TPP, WBC counts, differential, avian estimates, clot times, and preparation for lab work to be sent out), urology, parasitology (floatation, wet mount, direct smear) and special testing done for heart worm. Also included is basic information on bacteriology and culture and sensitivity testing.

Session IV—Physical Examination and Initial Care, by Sandra Emanuelson, DVM, (WRC Board Veterinarian) Cottage Veterinary Hospital, Walnut Creek, California and Jan White, Wildlife Rehabilitation Service Fairfield, California.
Topics covered include: intake procedures, initial exam, basic shock cycle and treatment, fluid therapy, emergency protocol, emaciation, and the protocol and treatment for selected poisons. Also covered are protocols specific to initial care of wild birds, mammals and reptiles.

Session V—Feeding and Nutrition of Animals in Rehabilitation Centers, by Murray E. Fowler, DVM, University of California, Davis.
Various aspects of feeding and nutrition in wildlife care are covered including: information on the requirements for energy, protein, Calcium/Phosphorus/Vitamin D, and hydration. Additionally, a section on thermoregulation, zoonoses, and metabolic bone disease have been included.



Dr. Sandy Emanuelson checks for oral lesions in a young Red-tailed Hawk during the hands-on part of her Skills Seminar on Physical Examination and Initial Care. Bob Leach, Sacramento, California, Wildlife Care Association, assists by restraining the bird.



Bill Clark, California Department of Fish and Game, demonstrates differences between a CO-2 tranquilizer pistol and a blow-gun during his lecture on Restraint of Wild Animals.

Session VI—Physical Therapy in Raptors, by Nancy Horowitz, RPT, Davis Raptor Center, Davis, California.
A registered physical therapist, Nancy Horowitz, brings to our field her knowledge of the principles, application, and cautions in the use of physical therapy on wild animals. Also included is the handout developed by the University of California, Davis, Raptor Center staff on the new method of harness flying for exercising and rehabilitation raptors.

Session VII—Basic Necropsy Procedures, by Pat Gullett, DVM, California Department of Fish and Game.
This packet provides rehabilitators with a procedure for both avian and mammal necropsy, complete with diagrams. Reptile drawings are included for reference along with a necropsy form for rehabilitators.

Use of Modified Live-Virus Canine Distemper Vaccines in Gray Foxes

By Jan White, Director

Wildlife Rehabilitation Service, Fairfield, California

Numerous reports of vaccine induced canine distemper in gray foxes *(Urocyon cinereoargenteus)* have kept many rehabilitators from vaccinating this species in spite of several references claiming safety to foxes generally. The original studies of the use of canine distemper vaccine in foxes was done in red foxes *(Vulpes fulva)*, while reactions in the gray fox were unknown.

In a study conducted by Ralph Halbrooks, DVM, et. al., reported on in the December 1, 1981 issue of the *Journal of the American Veterinary Medical Association (JAVMA)*, several canine distemper vaccines were used in gray foxes. Prevaccination titers were taken and found to be negative. One group of five gray foxes received a chicken tissue culture origin vaccine (Fromm D [TM], Onderstepoort strain). Four developed significant titers (>1:100) against canine distemper virus. One failed to develop a significant titer and died 19 days after innoculation.

A second group of three foxes were given a canine cell line origin vaccine (Tissuvax [TM], Washington Crossing strain) and both developed clinical signs and died. The authors felt this vaccine was highly virulent due to the rapidity of onset of signs.

It is believed that the varying responses to different modified live cannine vaccines is related to vaccine virus attenuation for virus host interactions—a similar situation to the high and low egg passage rabies vaccines in cats and dogs. The Onderstepoort strain of canine distemper vaccine undergoes minimal budding compared with other strains which may slow down the rate of virus replication. The theory is that the slower replicating virus allows the gray time to respond and neutralize the virus.

The authors concluded that while the modified live canine distemper vaccines of canine cell origin can kill gray foxes, the chicken tissue origin vaccine appears to be safe for use in normal *adult* gray foxes.

(EDITORS NOTE: Rehabilitators should be reminded that even chicken tissue origin vaccine caused the death in one of 5 study animals. We at the WRC Journal would like to hear from anyone who has, in the past, used chicken tissue origin vaccine on juvenile or adult gray foxes for immunization against canine distemper. We are interested in looking at figures in a larger sample size.)

(Don't tear—XEROX!)

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Book Review

Rue, Leonard Lee, III—COMPLETE GUIDE TO GAME ANIMALS, Book Division, Times Mirror Magazines, Inc., 1981, 638 pp., 138 black & white photographs, $15.95.

Beginning with the opposum, Leonard Lee Rue, III, takes the reader through 44 individual mammals, devoting a chapter to each. After a brief explanation of the applicable order, each species is introduced and then discussed in terms of description, distribution, travel, habits, senses, communication, locomotion, breeding, birth and young, life span, sign, enemies, human relations, etc. Bold subheadings promote easy reference. In this field guide, Mr. Rue creates a readable text that blends technical knowledge and research with personal observations gained from years of living among the species. Each chapter is complemented by descriptive black and white photographs of the species and up-to-date range maps. A selected bibliography, by order is included.

Excerpt: "The coyote often travels with the badger, and when the latter discovers the burrow of a ground squirrel and starts to dig it out, the coyote takes a stand at another exit. If the squirrel panics and tries to escape from the badger, it is often killed by the coyote. The badger doesn't benefit from the arrangement, for the coyote doesn't share its catch, but when two coyotes work together both animals eat the prey."

About the author: Mr. Rue is a naturalist who has devoted his life to writing, lecturing, and photographing wildlife. In addition to writing 18 books, he is the most published wildlife photographer in North America, appearing in as many as 50 magazines in a given month.

Comment: Arrangements have been made for WRC members to purchase any of the following books by Mr. Rue directly from him: COMPLETE GUIDE TO GAME ANIMALS ($15.95); COTTONTAIL RABBIT ($9.95); THE DEER OF NORTH AMERICA ($14.95); THE FURBEARING ANIMALS OF NORTH AMERICA ($19.95); NEW JERSEY OUT-OF-DOORS ($9.95); PICTORIAL GUIDE TO MAMMALS OF NORTH AMERICA (paper, $7.95); THE WORLD OF THE BEAVER ($9.95); THE WORLD OF THE RED FOX ($9.95); THE WORLD OF THE RUFFED GROUSE ($9.95); THE WORLD OF THE WHITE-TAILED DEER ($10.95).

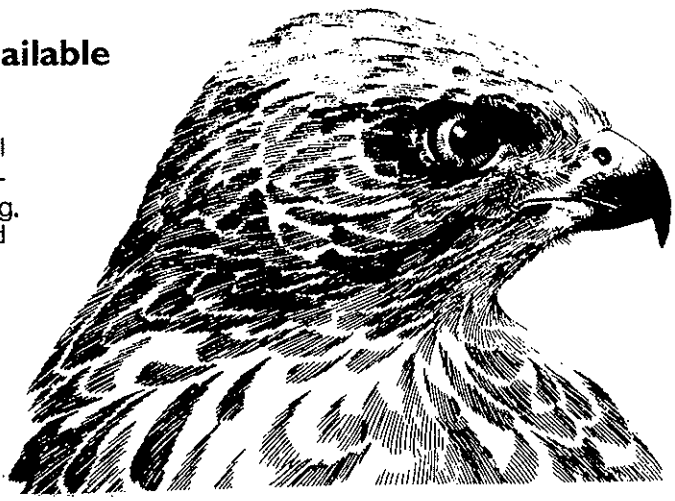
Some of these books are out-of-print and difficult to obtain. If you would like to have the book autographed, print the name of the person you would like to have it autographed to. Please add $1.50 postage and handling for each book ordered. New Jersey residents should add 5% state sales tax. Make checks payable to Leonard Lee Rue, III, c/o Leonard Rue Enterprises, R.D. 3, Box 31, Blairstown, New Jersey 07825. On the front of the envelope, write "Book Order—WRC."

—*Debbie Marcum*

1983 WRC Conference Proceedings Available

The proceedings for the Dr. Barbara Sawyer Memorial Wildlife Conference held February 4–6, 1983, will be available in July 1983. Pre-publication price is $25.00. After Aug. the price will be $30.00. Some of the topics addressed at the conference included:

- Effects of Stress on Captive Raptors, Murray Fowler, D.V.M.
- Raptor Orthopedics, James Roush, D.V.M.
- Oral Lesions in Raptors, Sandra Emanuelson, D.V.M.
- Initial Examination of Raptors in Rehabilitation, James Harris, D.V.M.
- Conditioning Raptors for Release, Terry Schulz



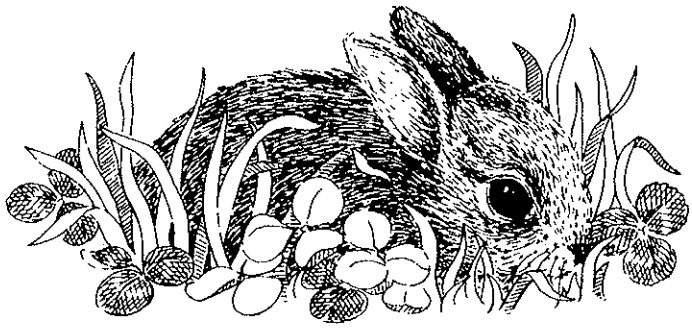
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NEED SOME HELP?



A NEW METHOD FOR EXERCISING AND REHABILITATING RAPTORS, Terry Schulz, Julie Klingman, and Russell Tucker ($1.50)

This paper introduces a new method of exercising raptors with a minimum amount of human contact. This method is ideal for the rehab organization that does not have room for a large flight aviary. Complete instructions to build a fixed flight line and harness are included.

AVIAN DRUGS AND DOSAGES, Charles Galvin, DVM ($5.00)

A 32-page booklet that is an A to Z guide for drugs used on avian species. This booklet lists approximately 200 drugs that are used in birds and their recommended dosages.

IMMOBILIZATION OF SIMPLE AND COMPOUND FRACTURES IN SONGBIRDS AND RAPTORS Victoria Welsh ($2.50)

This booklet covers many aspects of dealing with fractures in birds. Areas covered include cleaning and disinfecting wound, fractures of specific bones and their treatment and post-treatment rehabilitation.

INITIAL CARE OF INJURED AND OILED WATER BIRDS, Kathy Hobson ($2.50)

Starting with the safety of your volunteers this paper goes on to cover such subjects as recording keeping, examination of the bird, treatment of sick or oiled birds, housing, salt water tolerance and much more. Recipes for the different groups of water birds are also included.

GOLD FINCHES, Carol Meaney ($2.00)

Goldfinches is a complete guide for raising young and caring for adult goldfinches. The paper starts with a natural history of the bird and goes into housing, diets, feeding techniques, behavior, special problems, release and more.

SWALLOWS, VARIOUS SPECIES, Carol Meaney ($2.50)

This paper follows the same format as "Goldfinches". Special housing needs, pesticides, and the special problems that can happen when caring for Swallows.

OPOSSUM REHABILITATION, Edited by Jan White ($2.50) SOLD OUT

This booklet covers all aspects of caring for opossums. Subjects covered are diet, zoonoses, raising infants, tube feeding, and much more.

RACCOON REHABILITATION, Edited by Jan White & Debbie Marcum ($3.50)

A 20 page booklet on the care, handling and release of raccoons. It includes details on infant and adult diet, medical problems, vaccinations, caging, growth charts to name a few.

IMMOBILIZATION OF SIMPLE AND COMPOUND FRACTURES IN MAMMALS Victoria Welsh ($2.50)

This booklet covers many areas of dealing with fractures in mammals. Rescue, transport, initial care, treatments for specific breaks, proper confinement, healing time and rehabilitation. This information is complimented by illustrations of splinting, and wrapping methods of fractures.

HAND-REARING NON-DOMESTIC MAMMALS, Debbie Marcum ($1.50)

An informative paper in six parts covering subjects such as initial care, medical problems and their treatment, feeding and nutrition, housing, behavior and release. This paper includes a medical and dietary products list and a biological data sheet.

RAPTOR CARE AND REHABILITATION, Gary Bogue and Dave Garcelon ($16.00)

A 140 page book on the complete care of raptors for rehabilitation. Sections include initial care, housing, medical problems, training and rehabilitation. Each section goes into great detail and addresses common and not so common problems that are encountered with these birds. Illustrations include perches, flying equipment, splints and wing and body wrap to name a few.

Send all orders to: WRC LITERATURE ORDER DEPT., P.O. Box 3007, Walnut Creek, CA. USA 94598. (Postal costs may be slightly higher outside the United States.