REHABILITATION WILDLIFE COUNCIL

WILDLIFE JOURNAL

Journal of the Wildlife Rehabilitation Council Fall, 1983



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Vitamin E	4,800	IU
Vitamin K	23.6	mg
Vitamin C	1,800	mg
Niacin	3,000	mg
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REHABILITATION WILDLIFE COUNCIL

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*This article is available as a reprint.

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Editorial. . .

—The Good, they die young—

In wildlife rehabilitation we see death, a lot, we adjust to it, accept it as part of life, some of it natural, some not so natural. We get strong to it, we have to in order to do our jobs. But when it is your best friend and someone who has so much to offer, a pioneer in the field, it is not so easy to accept or come to grips with.

On August 7th, 1983, Dr. Sandra Emanuelson died, one of many victims of cancer. She was 43 years old, having graduated from veterinary school only seven years before. In those forty-three years she lived a full life, raised two children, and contributed much to the knowledge on wildlife care. When Sandy began working with wildlife over twenty years ago, little was known. She collected information and gained much experience before going on to professional school to become a doctor. Following her graduation, she worked hard to help make wildlife rehabilitation a profession.

Her emphasis was in three areas: exotic animal medicine, policy development to protect both wildlife and their caretakers, and upgrading of training for rehabilitators. She was a special WRC board member because of her sincere and intense interest in these areas. She understood the political realities of the California permit system and worked actively to bring about a system that is blind to personalities and would foster high quality professional care. We are still working on that. Her visions for an adjudication system for resolving complaints regarding the practice of medicine in wildlife centers, are slowly being pursued and accepted as a real need for people working in the field. Sandy was a pioneer in developing herd health policies so that animals could receive immediate help with veterinary consultation without being physically transported to the hospital. These were determined to be within the scope of present California law by the Board of Veterinary Examiners with the support of key veterinarians at the School of Veterinary Medicine, Davis, California. These policies have helped save many animal lives that previously would have been lost. She helped raise the quality of care in this way and in so many other ways.

One of the special qualities that Sandy had as a veterinarian was her firm belief that rehabilitators were trainable; not as junior doctors, but as paramedics or physicians' assistants. They were, in her eyes, a very important *thinking* part of the team. They did all the nursing work, and the observations that made her job as the diagnostician more focused; without them the team was incomplete. She worked with rehabilitators from three large California centers and also did consulting work for places like the Steinhart Aquarium, San Francisco, California. Even fish were important to her!

She helped design the WRC Skills Seminar series to upgrade and formalize training for wildlife center supervisors. She wanted to make them all more valuable to their veterinarians and the animals they served. Sandy believed strongly that medicine was a knowledge to be shared, as was all the experience that she had accrued. There just did not seem to be enough time to do it all. The sharing is so important and can be done in so many ways.

The *Journal* is another way to share knowledge. She volunteered to review articles submitted when we expanded the format and upgraded the journal. She helped with her ideas on where the publication should go in order to meet the needs of the field. As if that wasn't enough, she wrote articles for us. In spite of the fact that she was terrified of public speaking, she decided to give a paper on oral lesions in raptors at our annual conference. She wrote and we wrote until she could write no more. Her only regret was that she could not transfer the experience and knowledge that she had spent twenty years acquiring. She talked a lot about that because it really bothered her. But she did leave some trained rehabilitators behind and we are so grateful that her path crossed ours and we touched each other's hearts.

WRC and the Emanuelson family plan to set up a fund in her memory that will award funds to further the work in wildlife rehabilitation. Funds donated in her name will be ear-marked for this purpose. It is nice to know that out of such a terrible tragedy will come something good. Sandy had a way of making this happen when she was alive and even now, after her death, the pattern continues.

—Jan White

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Radio Telemetry Tracking of Captive-Reared Coyotes

by Carol H. Odell

Wildlife Rescue Team, Inc., Lincoln, Nebraska

INTRODUCTION

In the summer of 1982, four coyote *(Canis latrans)* pups were presented for rehabilitation. They were reared with "state of the art" techniques, i.e., very minimal human contact, in a large outdoor enclosure, with road-killed food items. They were released and followed using radio telemetry devices to determine their success rate in the wild. The results were compared with some zoo-reared coyotes who were not raised using these techniques with interesting results. Few post-release studies have been conducted on captive-reared coyotes, and little is known about the success of these animals when raised using current methods in rehabilitation.

In Nebraska, an agricultural state, the coyote has a dubious reputation. For a wildlife rehabilitation team to raise and return a litter of them to the wild was novel to say the least. Previous attempts had been made only by zoos. Facilities had to be constructed for the project and current methods reviewed with other rehabilitators from across the country.

Rehabilitators measure success in terms of animal survival up to the time of release; however, success for an animal, from an evolutionary perspective, is measured in terms of offsprings successfully placed in the next breeding generation. It was imperative that these animals also not become nuisances to Nebraskan stockmen.

The Forestry, Fisheries, & Wildlife Department of the University of Nebraska at Lincoln (UNL) agreed to cooperate with the Wildlife Rescue Team (WRT) in a radio telemetry tracking study of the 1982 WRT captive reared coyotes.

PURPOSE

The WRT/UNL radio telemetry tracking study of WRT captive reared coyotes had a two-fold purpose:

1. To see if the WRT methods of handrearing coyotes were actually effective in rearing coyotes that could successfully adapt to the wild, and
2. If they did adapt, to determine whether these animals would become a nuisance to Nebraska stockmen.

MATERIALS AND METHODS

On 15 May, 1982, three coyotes, two female and one male, approximately seven days old, were found in Red Cloud, Webster County, Nebraska, and turned over to WRT on 18 May. Their eyes opened the same day.

The coyotes' first foods consisted of Esbilac (bitch's milk replacer for puppies) and KMR (queens milk replacer for kittens) mixed, puppy kibble, and Ken-L Ration canned dog food. Before they were a month old, they were lapping formula from a bowl and eating road-killed foods.



Ear tagging of a radio collared coyote.

One volunteer was allowed to work with the coyotes to minimize human contact at this age. The coyotes were kept in a tall cardboard box to prevent their seeing out. They utilized a smaller box within the big box for a den. They were housed in a quiet room. There were no auditory or visual stimuli from radio or television, humans, or other wildlife patients. Domestic pets were not allowed access to the coyotes.

Despite the lack of outside stimulation, their socialization did not seem impaired. They were all playful, tugged at each other, the blankets and toys. A small female displayed some dominant traits early.

By two months of age, the pups were racing around the room in a circle while their box was being cleaned. Stool samples showed hookworm, roundworm, and coccidia at various stages in their growth and they were medicated accordingly by veterinary prescription.

The coyotes' vocalizations were increasing from growls and yips to howls. They were, at that time, located in a residential part of Lincoln, Nebraska, and so before the neighbors could hear them or trace the source of howling, a large pen was built measuring 3.6m wide $\times$15.2m long $\times$1.8m high (12′ $\times$50′ $\times$6′) on a 64 ha (160 acre) farm near Davey, Nebraska which is a farming community. Some wild born coyotes were known to inhabit the area.

Cyclone fencing was attached to posts and one-inch chicken wire covered the top. The pen was divided in half with a partition and a door that could be closed from the outside of the pen so that the coyotes could be closed off in either end of the pen. A trench was dug and extra wire sunk approximately 45.7 cm (18") to help deter the coyotes from digging out of the pen. The pen was located by a creek 0.8 km (0.5 mi) from the house. It could not be seen from the house.

The dens were made from three large plastic barrels placed on their sides. The ends were cut out, and the entrances covered by a piece of plywood at a slant which could be pulled forward to check the barrels. Straw was piled all around the barrels for added protection. The coyotes' first night in their new pen was rainy, but the den area was dry. and they immediately ran into it and hid. They were not seen for days.

One 1 July, another juvenile male coyote was added to the pen who had been treated for wounds sustained when he was injured by a farmer who was plowing a field in Cook, Nebraska. He ran and hid with the other three in the den area and appeared to be accepted immediately.

The coyotes were not seen outside of the den area until 3 July. As soon as they heard the vehicle drive up to the pen, or the volunteer assigned to feed them walk up, they hid, leaving the appearance of a deserted pen. The only way the volunteer knew they were still in the pen was by the growls that were heard from the inside of the den area. They did not appear to use the den barrels, but hid in between them next to the earth.

By mid-July, the animals began to pace, which is characteristic of confined coyotes, and they continued to pace until their release. Any changes in the pen, such as cleaning the den area, seemed to disturb them for days, even though the disturbances were infrequent.

Road-killed deer provided by the Nebraska Game & Parks Commission and the Nebraska Road Department were cut up, frozen, and fed as needed. The carcass was put in the pen and the coyotes dragged it into the den area. Other carrion, puppy chow, Ken-L-Ration and some fruit were offered. They preferred natural foods such as mulberries or rabbits over purchased fruit or dog food. They drank little water. Although live food was difficult to obtain, the live mice that were offered from a sunken deep pan were gone in the morning with many coyote tracks noted around the pan area.

At the end of October, a two-year-old female coyote from Ager Memorial Zoo, Lincoln, was added to the pen. There were no apparent social problems and she seemed to be accepted immediately. The zoo coyote did not pace as much as the other coyotes; some even climbed the fence in their attempts to flee the feeder.

The coyotes' pelage was in beautiful condition, they were used to natural foods, were unapproachable by humans, and found fit for release in October, 1982, when they were five months old. However, UNL was experiencing delays in locating and refurbishing their telemetry collars used by researchers for a previous study.

The days dragged into weeks, and the day before the collaring was scheduled to take place, a female coyote was found dead in the pen. It was submitted to the Veterinary Diagnostic Laboratory at UNL for analysis. This caused another delay in order to ensure that the cause of death was not a communicable disease. No conclusive reason for the death was found. There was some trauma to the lungs which may have been self-inflicted due to the animals' repeated attempts to jump out of the pen.

On 10 November, the coyotes were captured with nets. Bandanas were looped over their muzzles and tied behind their ears to restrain them from biting. This method reduces the danger of damage to the nasal bones.

Color-coded radio transmitters (yellow, green, red & blue) were attached to a woven collar on each animal. Due to the death of a WRT coyote, a zoo-reared coyote was fitted with a collar. All of the animals were eartagged and their weights were recorded. Once collared the animals ran to the far side of the pen away from people and resumed pacing.

On 15 November, when the necropsy report on the dead coyote was received, the remaining animals were released. When the enclosure was opened the zoo coyote ran out. The trackers finally had to chase the pacing WRT coyotes out of the pen on 16 November! Some back-up food was left, but it is not known if it was eaten by released coyotes, resident coyotes, or local dogs.

Vehicle mounted antenna receiver system and hand held antenna were used to track the movements of the coyotes. They were traced every day for five days, then four additional days in November, two in December, three in January, and one in February of 1983.

Due to the lack of trained personnel, inclement weather, and lack of time, the coyotes were not tracked as often as WRT would have liked.

RESULTS AND DISCUSSION

Of the four coyotes that were collared and released, three were dead within a month. All three were reported by the persons who killed them. The yellow coyote was road-killed the first night .137 km from the release site. The green coyote was road-killed 21 days after release 12.8 km from the release site. The red coyote was trapped 24 days after release 1.6 km from the release site. The caracasses were not available for stomach content checks. The blue coyote is presumably still at large and was last located on 23 December 1982 1.6 km from the release site.

TABLE I
FATES OF WRT COYOTES

Sex	Color Code	Release Weight	Days Alive	Fate	Distance from Release Site
F	Yellow	8.8 kg (19½ lbs.)	1	Road-kill	NE .137 km (150 yds.)
F	Green (Zoo)	13 kg (28 lbs.)	21	Road-kill	NE 12.8 km (8 mi.)
M	Red	10 kg (22 lbs.)	24	Trapped	NE 1.6 km (1 mi.)
M	Blue	10.5 kg (24 lbs.)	STILL AT LARGE—LAST READING 23 DECEMBER 1982		

In another telemetry study on coyotes in 1979/1980, UNL co-operated with the Ager Memorial Zoo in Lincoln, Nebraska, and collared five captive-reared zoo coyotes. They had been maintained primarily on a commercial dog food diet. They were highly socialized to

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Veterinary Corner

Use of IV Fluids in Small Wild Birds

By Scott Sims,

Class of 1984, School of Veterinary Medicine, Davis, California

One of the more frustrating and common presenting problems seen in birds upon admission into wildlife centers is dehydration and/or shock. Many of the animals can be treated effectively with rest and oral or subcutaneous fluids, along with other medical protocol for shock, but we do see some that require more intensive and immediate help. These animals generally show the following signs:

1. Extreme weakness, tameness, ataxia (often unable to stand), some are unconscious.
2. Increased capillary refill time (i.e., more than one second).
3. Pale mucous membranes (vent color may also be examined if the mouth is pigmented).
4. Sunken eyes.

With rest and subcutaneous fluids, these birds frequently die. For this reason, attempts have been made to adapt techniques for the administration of fluids by IV drip. The delivery is far faster for the animal and the results have been encouraging. While it is a simple procedure, it does require considerable practice as the vein used can be small and collapsed due to the low peripheral blood pressure often found in severely dehydrated patients or those in shock. This method has been successfully used in birds as small as fledgling starlings and even there, size was not the limiting factor.

METHOD FOR INSERTION OF IV CATHETER

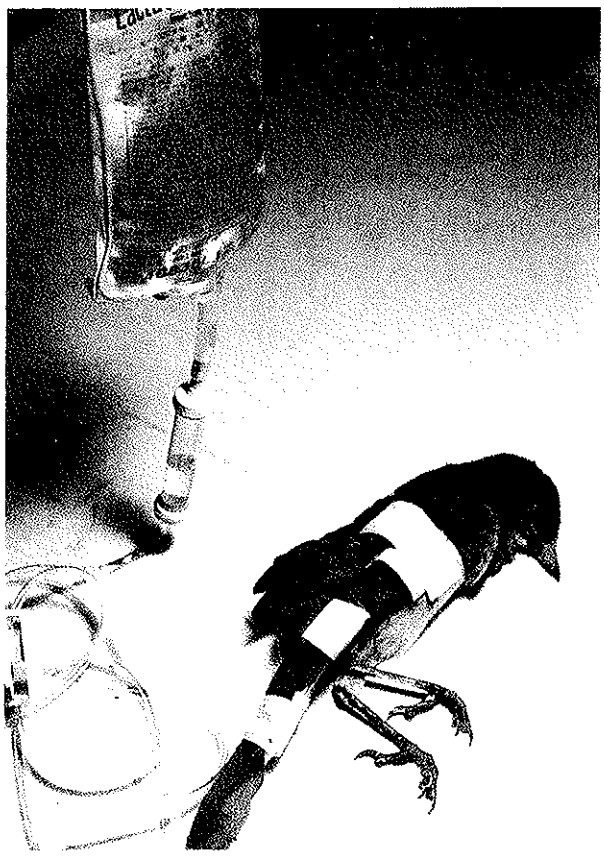
The vein used is the cutaneous ulnar v., most commonly called the wing vein. In order to visualize the area, the feathers on the medial, or underside, of the elbow must be plucked. The catheter is inserted in a proximal direction (toward the body), entering the vein just as it crosses the large tendon of origin of the distal head of the pronator longus et brevis muscle (this is the large white band extending from the underside of the elbow to the muscles of the forearm). See photograph.

If the catheter is inserted distal (away from the body) to this point, it will kink when the wing is folded. While it may be inserted proximally to the site described, it is considerably more difficult as the vein is located in a depression. Insertion may be aided with the help of an assistant to hold off the vein with a cotton swab proximal to the insertion site. This makes the vein stand up making it easier to locate.

The catheters currently used are 24 gauge teflon catheters (#2964 Deseret Medical Inc.). The catheter *must* be filled with heparinized saline before insertion or clotting will occur almost instantly. A stock solution can be made by adding .20 ml heparin (1000 USP units/ml) to 30 ml of bacteriostatic water. When inserted properly, some blood will usually back up into the catheter approximately ¼–⅜", however, attempts to draw up more usually fail as the vein just collapses.

After the catheter is in the vein, a small heparinized saline flush is beneficial. A PRN adaptor (#38-1255-1 Deseret Medical Inc.) may be used or a fluid set which delivers 60 drops per ml may be hooked up directly. The MaGaw Pediatric IV set and Abbott Microdrop Venous sets are geared to deliver this size drop.

The first step in the taping procedure is to flex the wing into a folded position away from the bird's body. The catheter is then taped to the flight feathers. The wing is then folded against the body into a normal resting position and taped. All taping is done using masking tape. Never use white medical tape, it damages feathers. Vetwrap is not quite sticky enough. The fluid line is taped to the base of the tail and when possible the flight feathers tips are included if they are long enough. On rare birds an elizabethan collar may be needed.



A Scrub Jay with IV catheter in place and drip running.

FLUID THERAPY

Since fluid therapy will be discussed in detail in the Winter, 1983 *Wildlife Journal,* the discussion here will be limited. Lactated Ringers has been used although 2½–5% **Dextrose** may be of some added benefit. Remember all injectible fluids and additives *must* be sterile. Ringers solutions last indefinitely unless the seal is broken. As soon as it is opened, it must be assumed to be contaminated and then is good for IV use only 12–24 hours. Follow the product label instruction and dating parameters.

Because normal values for packed cell volumes (PCV's) and plasma proteins are not easily available for the wide variety of wild avian species. Birds presented in the conditions described are generally assumed to be between 10–15% dehydrated. The fluid drip is set to replace ½ of their fluid deficit in the first 2–3 hours and the rest in the next 10–12 hours. (See sample calculations.)

Ideally, the fluids should be warmed to body temperature but because of the low flow rates, even warming the fluids by placing the tubing in a water bath near the bird is ineffective. It takes too long to pass through the tube between the water bath and the bird, cooling along the way to ambient temperature. Since most of these birds require additional heat sources anyway, draping the IV tubing on their heating pad is the best thing that has been found practical.

PRECAUTIONS

It is very important not to give IV fluids too quickly. This will cause fluid accumulation in the lungs further compromising the animal's chances for recovery. For this reason, and to insure that the catheter stays open (patent) animals must be monitored frequently or kept under constant supervision. If the animal is unable to move on its own, it should be turned from *side* to *side* every one to three hours.

SAMPLE CALCULATIONS

Given: 125 g. bird

Assume: Bird is in poor condition; approximately 15% dehydrated. (remember that 15% = .15)

Goal: To replace half of the fluid deficit in three hours and the other half in the next 10 hours.

Steps: $\frac{125\text{ g.}}{1-.15} = 147\text{g.}$ = what the bird should weigh when hydrated.

147 g. – 125 g. = 22 g. = 22 ml of fluid deficit.

$\frac{(½)(22\text{ ml})}{3\text{ hrs.}}$ = ml of fluid per hour for the first 3 hours = 3.5 ml/hour.

With a pediatric drip set that delivers 60 drops per ml, the following formula can be used to calculate the ml per hour which also equals the drops per minute.

$$\frac{3.5\text{ ml}}{1\text{ hr.}} \times \frac{1\text{ hr.}}{60\text{ min.}} \times \frac{60\text{ drops}}{1\text{ ml}} = \frac{3.5\text{ drops}}{1\text{ minute}} = \frac{1\text{ drop}}{15\text{ secs.}}$$

This rate is used for the first three hours. And then:

$$\frac{(½)(22\text{ml})}{10\text{ hours}} = \text{ml of fluid/hour for the next 10 hours} = \frac{1\text{ drop}}{\text{minute}}$$

Editors Note:

Acetated Ringers requires fewer steps to metabolize and may be indicated in some of these birds. Both Lactated and Acetated Ringers can be obtained with 2½ or 5% Dextrose which is of added benefit due to the caloric content of the sugar. Both the author and editor are interested in hearing of other people's methods and ideas on this subject. Both can be reached by writing to the Wildlife Journal.



The cutaneous ulnar V. is located where it crosses over the large tendon of origin of the distal head of the pronator longus et brevis muscle.



The catheter is inserted in a proximal direction.

Rehabilitation Notes: American Kestrel *(Falco sparverius)*

By Jan White, Editor

INTRODUCTION

The American Kestrel is the most common of the small falcons in North America. It is often called the Sparrow Hawk, a misnomer as it is neither a sparrow or a hawk. It does, however, eat sparrows along with bats, mice, lizards, small snakes, and assorted insects.

These birds are often presented to wildlife care organizations as victims of dove season (inadvertantly shot) or annual spring tree trimming. They are also subject to a wide variety of medical problems common to other birds of prey. Rehabilitators are faced with the task of helping to keep them the most common small falcon on the continent.

DESCRIPTION

- *Adult:* Total length 8.5" with a wing span of 21". This is the only falcon with a rust colored back. Males have slate blue wings while females are rust colored on both their backs and wings. Weights for males range from 99.0–113.5 g. (3½–4 oz.). Females are heavier averaging 127 g. (4½ oz.). The usual vocalization is a series of staccato notes *(kleekleeklee)*. This call is given when other birds or predators are near the nest or have entered their territory.
- *Juvenile:* Hatch weight is 13–14 g. An altricial bird, kestrels are born scantily clad with white down on their head, wings and body. At about three weeks they self-feed food when presented. They fledge between 27–34 days.
- Sexes can be determined with nestling birds once the plummage has come in. They look the same as their adult counterparts.
- The average life span in the wild is 1 year 3 months, based on banding returns, with the greatest mortality between August and November. A few individuals have survived 4–6 years in the wild with birds in captivity living up to 14 years.

BIRTH AND YOUNG

- Incubation period for eggs ranges from 27–33 days. They are usually laid 1–3 days apart in mid-March to mid-June depending on climate.
- Clutch size ranges from 3–7 with 4 or 5 being the usual number.
- Nestling phase is 30 days followed by 14-day fledgling period.

CAPTIVE CARE & FEEDING

Juvenile Caging:

- While nestlings, a portable pet carrier works well depending on the number of birds in a clutch. Once they begin to perch, they will need larger quarters that contain adequate perches to prevent tail feather damage.
- In the wild they are brooded day and night for the first 9 days and in the night for the days subsequent until feathered. In captivity, supplemental heat from a lamp or heating pad is supplied until the birds are homeothermic (about 2–3 weeks).
- As is the case with other raptors, these birds acquire their water from their food source and do not require additional water in their diet under normal conditions.
- Once feathered, this species can be moved into an aviary (8′×8′×6′H) and introduced to live prey. They can be grouped here without behavioral problems. Once hunting prey species (i.e., crickets, mice, grasshoppers, etc.), they can be released. This may take only one week. Birds should be in good physical "flying" condition and should be waterproof.
- Captive diet for growing falcons is often hatchery-culled chicks. If they constitute a substantial part of the diet they should be supplemented with a calcium source as they are slightly off in their Calcium-Phosphorus ratio. They may be rolled in bone meal or given 100–150 mg of Calcium per 40 g. chick fed. Mice, rats, and other like natural prey do not require calcium supplements. The birds eat about 30 g. of meat daily. All food sources should be whole animal. Muscle and organ meats require even higher levels of calcium supplementation.
- Avian vitamins can be added. Vitamin D_3 requires sunlight for the birds to manufacture. If not housed in natural lighting, they should receive a vitamin product containing it.

Adult Caging:

- Cage rest usually requires a solid-sided cage (i.e., portable pet carrier or cardboard box). If stainless steel veterinary cages are used, the front should be covered as they can slip through the bars. This may have disasterous results as they are both predator and prey depending on what else is housed in the same room.
- These birds require adequately sized (½" or larger) padded or roped perches and may establish a dominance order over the highest perches. Provide more perches than birds.
- Provide bathing and drinking water. They may use it for either purpose, although they do not generally drink water.
- Birds recovering from wing injuries require larger flight aviaries to test their angling abilities than is listed for juveniles. Increased length and height provide rehabilitators with a better environment to evaluate them and they have a chamber to practice in.

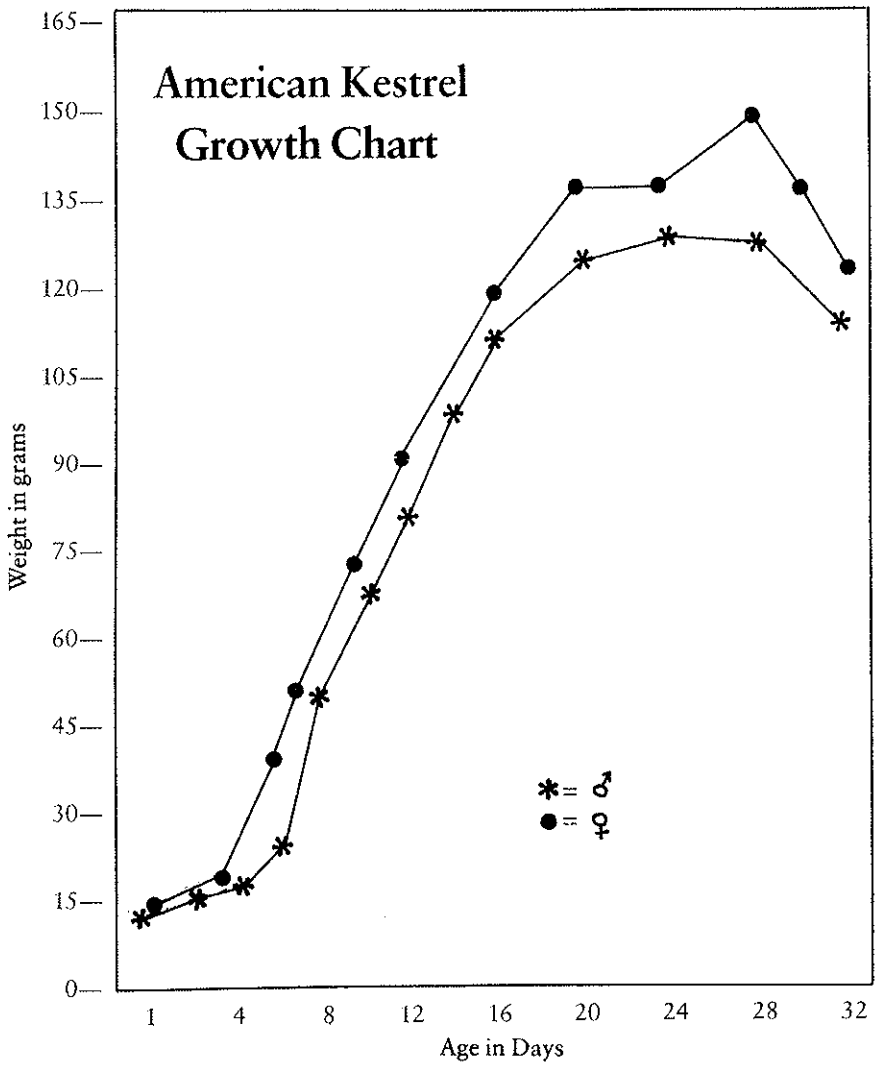
RELEASE

- Habitat considerations should be made allowing for release in areas with ample insect and rodent populations. They nest using hollows of trees or cacti and should be released in areas containing structures adequate for nesting.
- Diurnal; release during the day.
- Bird should be waterproof.

- Weights for males should be 105+ grams. Females should be 120+ grams.
- Birds should have basic flight skills and the ability to sustain extended flights.
- While it may not be absolutely necessary, birds should be given previous opportunities to hunt live food either for practice (in the case of juveniles) or to provide an opportunity for evaluation (in the case of a recovering adult).

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Managing Volunteers: One of the many roles of the Wildlife Program Director.

by Sally Lewis,

Wildlife Rehabilitation Council, Walnut Creek, California

Ask anyone what comes to mind when he hears the term "manager." He may think of the bank executive, the department store manager, or perhaps, Billy Martin. He could be referring to any type of manager—from the largest corporation to the local little league baseball team. A manager is defined as someone who works with and through others to accomplish organizational goals. The organization can be any group of people who organize themselves in order to accomplish something.

Since leaders of wildlife rehabilitation programs work with and through other people to accomplish the goals of their groups, they are, in fact, managers. They may be called directors, supervisors, or presidents, but they all have the same duties—to manage a wildlife rehabilitation program. It is up to the wildlife rehabilitation program leader to recognize this fact and assume the responsibility of becoming the best leader he possibly can.

Unfortunately, there exists a complete unawareness of some wildlife program leaders to either recognize or handle this task. It is important to understand that the term itself simply defines a function, and is therefore, neither good nor bad. It is how a person *performs* that function that is relevant. Of importance to those of us who direct wildlife programs is the ability to understand the impact we have on the lives of the volunteers who work with us and to take that responsibility seriously. It is wise to become the type of leader who can both encourage and enable volunteers to become doers and movers. The future of wildlife programs lies with those who "make things happen." It is a challenging, but very rewarding, task.

Good wildlife rehabilitation programs must be able to grow to meet new needs and challenges. If this statement is true, then it would also seem to apply to those who lead such wildlife groups. By learning as much as possible about the skills, functions, and various styles of management, we, as wildlife leaders, should be able to discover where our management skills are lacking or nonexistent. Once this is known, it is possible to strengthen ourselves and thereby strengthen our wildlife programs.

One of the first things to realize is that the leader has no single role, but rather, a complex of many different roles. His effectiveness as a leader depends on his flexibility to respond appropriately to varying situations and diverse people. For the wildlife program leader, it is essential to be truly sensitive to the situation and the people involved. Inflexibility can be the greatest weakness of some leaders. He must have a solid relationship with other volunteers in the program—as a teacher, helper, decision-maker, disciplinarian, guide, or consultant in the wildlife field. It is important that the wildlife program leader does not become rigid in any of these roles, but feels comfortable in all of them. The volunteers (even if they are the leader's best friends) must also feel comfortable with all of these roles. An overall friendly atmosphere should prevail, but it should not interfere with normal business procedures. In times of crisis, volunteers should respect the leader's experience, knowledge, and authority.

At times, if a wildlife program leader fails to achieve the results he wants, he may look for the causes everywhere but the right place. Although it is much easier to blame others in the group, it is frequently due to inappropriate managerial methods.

According to Peter Drucker (1954), there are five practices that most good leaders possess:

1. They know where their time goes. They control it, rather than vice versa. By analyzing where time is going, it can then be organized so that it can and will be productive. Good leaders try to:
   a. Identify "time wasters" and eliminate them entirely.
   b. Identify and eliminate things that are "busy" work. Such items can be delegated to volunteers.
2. They focus on outward contribution. Results, rather than the work itself, is what is important. In effect, it is far more advantageous not to dwell on the difficult details of a particular task, but to consider how important the net result will be. For instance, compiling a volunteer manual is time-consuming and tedious, but to have rules, regulations, and procedures written down for volunteers saves a lot of time and problems later. The wildlife leader lives and acts in two dimensions, for he/she "not only has to prepare for crossing distant bridges, he/she has to build them long before he/she gets there."
3. They build on strengths, not weaknesses. This includes not only their own strengths, but those of their superiors, colleagues, and subordinates. They are able to do this without being threatened. They also recognize that they have the opportunity and responsibility to help others grow.
4. They concentrate on the few major areas where superior performance will produce outstanding results. They do this by setting and sticking to priorities.

Some guidelines are:

a. Pick the future as opposed to the past.
b. Focus on opportunity, rather than problems.
c. Choose your own direction instead of hearing someone else's drummer.
d. Aim high and strive for something that makes a difference instead of limiting your goals to only the safe and easy things. Be an innovator.

5. They make effective, rational decisions. Along with their staff and volunteers, there are certain steps most effective leaders go through in decision-making:
   a. Define the problem.
   b. Analyze the problem.
   c. Develop alternative solutions.
   d. Decide on the best solutions.
   e. Convert the decision into effective action.

This formula can be applied to a typical problem in a wildlife rehabilitation program. The program's Board of Directors discovers that the organization no longer has nearly enough volunteers to meet the growing needs of the increasing influx of injured and orphaned wildlife, and many new volunteers are resigning.

In analyzing the above problem, it might be found that: (1) There has been inadequate recruitment efforts by the Recruitment/Membership Committee. (2) Team leaders are not supervising new volunteers appropriately. (3) There is little or no public relations about the wildlife group from the P.R. Committee. (4) Volunteers are complaining that their expectations have not been met. (5) The public image of the wildlife program is negative or is not being taken seriously.

At this point, the problem has been defined and analyzed. Developing alternatives needs to be directly related to what was discovered in the problem analysis. For example, if the major problem is that a volunteer's expectations have not been met, then find out why. The leader of the wildlife program should be present while a potential volunteer is being interviewed for a volunteer position. Review the questionnaires that volunteers fill out when they join the organization. Or, does the program even have these initial interviews or questionnaires for potential volunteers? If not, perhaps incorporating these two ideas can be a solution. Alternatives can be to implement one of the suggestions, all of them, or do nothing at all. The desired process would be to decide on the best one or more actions, set priorities for them, and then act on them.

The actual functions of a manager of a wildlife program are four-fold: (1) Planning, (2) Organizing, (3) Directing, (4) Controlling.

1. *Planning*. This is the most basic of the management functions and binds the other three functions. Planning is fundamentally choosing a course of action from alternate ways of doing something. It bridges the gap between where the organization is now and where it wants to go. In other words, it is determining what has to be done.

Wildlife rehabilitation programs usually begin as an offshoot from another organization. As a humane society, zoo, veterinary clinic, or another animal welfare group, the general public will bestow upon the organization the usual wildlife problems. To deal with the situation, a small group of people from within these organizations will make an attempt to start a wildlife program. These groups have been launched with a cause —to start a wildlife program—but have no plan on how to start a wildlife program. The group observes a need for such a program in its community, and decides to do something about it. However, sometimes the basic problems of community support and recruitment of volunteers have not been faced, and the group may flourish for one or two reasons before slowly fading. Only the annual deluge of baby birds falling out of trees keeps this kind of group going—only to be run by a few overworked volunteers. The rest of the volunteers have already become disillusioned and discouraged. Plans should be carefully developed *before* such a program is ever begun.

2. *Organizing*. This is how a manager groups and assigns activities that are needed to accomplish specific objectives and goals. It is simply determining how the job will be done. Two essential ingredients involved in organizing are delegation and coordination.

Often, the leader feels a strong need to be the "doer" of most of the significant things that are done in a wildlife program, and delegation is, perhaps, one of the most difficult management concepts for many wildlife program leaders to implement. Yet, it is absolutely *vital* that it be done, and done well. All too well-known is the feeling of being desperately overworked, understaffed, and underfunded.

Delegation is the actual process of assigning job activities and corresponding authority to specific volunteers. According to Newman and Warren (1977), there are three steps in the delegation process. The first is assigning certain duties to the volunteer. In all cases, the wildlife program leader must be sure that the volunteer has a clear understanding of what these duties entail. Walk through the duties with the person. Give him a *written* job description, and observe him as he completes the job. The second step involves granting appropriate authority to the volunteer. The volunteer must be given the right and the power within the wildlife organization to accomplish the duties assigned. The last step of the delegation process involves creating the obligation for the volunteer to perform the duties assigned. Not only must the volunteer be aware of the responsibility to complete the assigned tasks, but he must accept that responsibility.

Koontz and O'Donnell (1968), imply that managers must possess certain critical characteristics. These are: a willingness to seriously consider the ideas of others; the insight to allow volunteers the free rein necessary to perform their tasks; trust in the abilities of volunteers; and the ability to allow people to learn from their mistakes without suffering unreasonable penalties for making them.

The wildlife program leader *must* delegate. Most responsible volunteers, when given a project, do not appreciate someone looking over their shoulder or taking away part of the assignment before they have had a chance to finish it. Volunteers should be closely observed during the initial training period, but only to ensure that they are capable of handling the task. Then they should be allowed to complete the task. During this time, the volunteer should be encouraged to come to the leader for advice. Above all, the leader must learn to *supervise,* rather than *do.*

Many wildlife program leaders find it extremely dif-

ficult to really "let go." Once again, they want to be the doers. But, "letting go" is critical to successful delegation, and it only works if the previous suggestions have been followed. Delegation does not mean abandoning a volunteer and his project. It means enabling the volunteer to do the job he has been asked to do. Delegation does not eliminate work; it simply changes and organizes it. As a person is able to delegate appropriately, a multiplier effect occurs. The time spent doing one job can now be spent enabling several people to do numerous jobs. This frees the leader for duties only he can or will do.

Coordination enables the volunteers to know what the Board of Directors is doing and vice versa. This is vital to ensuring that each segment of the program is congruent with the whole, and that every opportunity for cooperation between people and between committees is encouraged and developed to the fullest. It is astounding how much wasted effort is caused by *lack of coordination* within an organization. This is a responsibility that wildlife program leaders, as managers, must recognize and fulfill effectively.

3. *Directing.* This involves getting people to accomplish the tasks assigned to them. Basically, it is getting the work done without doing it yourself. All of the original planning would be in vain unless the plans are implemented. Such implementation involves motivating, communicating, and leading volunteers.

Motivating is understanding the "whys" of behavior as they relate to each person who works for the organization. Knowing what motivates one's volunteers is difficult to determine, but it is something that the successful wildlife leader must do.

Communicating includes communicating with, and listening to, volunteers, staff, the Board of Directors, state and federal wildlife agencies, and the community. Oftentimes the job is not done well because one is inaccurate or incomplete in the giving and receiving of information and assignment.

Leading is doing just that, leading—or giving guidance. It does not mean pushing, pulling, or coercing valuable volunteers.

4. *Controlling.* This is the process of evaluation that is essential if the leader is to determine whether or not events have conformed to plans. Such evaluation ensures that plans are being carried out, enabling objectives to be accomplished. If they are not, then there is a need to determine why and what can be done about it (alter plans, change staff, change procedures, etc.).

Evaluation is frequently overlooked by many wildlife programs because the people get too involved with what they are doing. However, if quality programs are to be attained, it is essential. Evaluation can consist of sending questionnaires to volunteers, Board of Directors, and staff, asking specific questions about the quality, value, strengths, and weaknesses of the program. Or, it can consist of periodic personal or telephone interviews with a random sampling of each of the abovementioned groups. Evaluation is both seeing and hearing how things are and being sensitively attuned to potential problems *before* they occur.

By following these logical sequences of sound management practice, it is apparent that the probability of having a well-organized and productive wildlife rehabilitation program is greatly increased. It is how one can avoid such problems as recruiting volunteers before needs and jobs have been defined; placing volunteers inappropriately, due to failure to interview; or repeating past mistakes by never evaluating programs.

So, why should wildlife rehabilitation groups be concerned about management? Because they care about wildlife. And if rehabilitators are organized among themselves, the progressive knowledge in wildlife care and medicine will increase and be disseminated. In a well-managed wildlife program with an obvious display of excellent wildlife care, volunteers will be proud of the organization they work for. They will enjoy the organized and progressive environment and will want to continue to be a dynamic, integral part in the emerging field of wildlife rehabilitation.



Regional News . . .

The Wildlife Rehabilitation Council presented to the California Department of Fish and Game a list of minimum housing guidelines for birds of prey being kept for rehabilitation. The guidelines were broken into three categories. *INITIAL CARE,* birds that must have restricted movement because of injury, illness, frequent medication, etc., *RECOVERING,* birds that need cage rest, and *PRIMARY EXERCISE AVIARY,* housing used when birds are not taken out for exercise.

Information on housing materials was also included. After reviewing the recommendation, the Department of Fish and Game accepted the guidelines and has plans to include them with any new rehabilitation permits they issue which include the care of raptors.

MINIMUM HOUSING GUIDELINES FOR RAPTORS IN CALIFORNIA

SPECIES	INITIAL CARE	RECOVERING	PRIMARY EXERCISE AVIARY
Falconiformes			
Turkey Vulture	36″×36″×36″	72″×72″×48″	20′×10′×15′
Northern Goshawk	22″×16″×21″	24″×24″×24″	〃 〃 〃
Cooper's Hawk	18″×14″×18″	24″×18″×24″	15′× 8′× 8′
Sharp-shinned Hawk	〃 〃 〃	〃 〃 〃	〃 〃 〃
Northern Harrier	〃 〃 〃	〃 〃 〃	〃 〃 〃
Rough-legged Hawk	22″×16″×21″	24″×24″×24″	20′×10′×15′
Ferruginous Hawk	〃 〃 〃	〃 〃 〃	〃 〃 〃
Red-tailed Hawk	〃 〃 〃	〃 〃 〃	〃 〃 〃
Red-shouldered Hawk	〃 〃 〃	〃 〃 〃	〃 〃 〃
Swainson's Hawk	〃 〃 〃	〃 〃 〃	〃 〃 〃
Harris' Hawk	〃 〃 〃	〃 〃 〃	〃 〃 〃
Golden Eagle	36″×36″×36″	72″×72″×48″	40′×20′×20′
Bald Eagle	〃 〃 〃	〃 〃 〃	〃 〃 〃
Osprey	〃 〃 〃	〃 〃 〃	〃 〃 〃
Prairie Falcon	22″×16″×21″	24″×24″×24″	20′×10′×15′
Peregrine Falcon	〃 〃 〃	〃 〃 〃	〃 〃 〃
Merlin	18″×14″×18″	24″×18″×24″	15′× 8′× 8′
American Kestrel	17″× 7″×10″	17″×17″×17″	8′× 8′× 6′
Black-shouldered Kite	18″×14″×18″	24″×18″×24″	15′× 8′× 8′
Strigiformes			
Common Barn-Owl	18″×14″×18″	24″×18″×24″	15′× 8′× 8′
Great Horned Owl	22″×16″×21″	24″×24″×24″	20′×10′×15′
Long-eared Owl	18″×14″×18″	24″×18″×24″	15′× 8′× 8′
Short-eared Owl	〃 〃 〃	〃 〃 〃	〃 〃 〃
Spotted Owl	22″×16″×21″	24″×24″×24″	〃 〃 〃
Great Gray Owl	36″×36″×36″	72″×72″×48″	20′×10′×15′
Burrowing Owl	17″× 7″×10″	17″×17″×17″	8′× 8′× 6′
Northern Saw-whet Owl	〃 〃 〃	〃 〃 〃	〃 〃 〃
Flammulated Owl	〃 〃 〃	〃 〃 〃	〃 〃 〃
Northern Pygmy Owl	〃 〃 〃	〃 〃 〃	〃 〃 〃
Elf Owl	〃 〃 〃	〃 〃 〃	〃 〃 〃
Western Screech-Owl	〃 〃 〃	〃 〃 〃	〃 〃 〃

Listed in order: Length × Width × Height

SUGGESTED RAPTOR HOUSING MATERIALS

BUILDING: Solid walls can be constructed of wood, fiberglas, or its equivalent. If wire is used in the caging it will be covered so the bird cannot come in contact with it (i.e., vertical wood lath, fiberglas screening netting, etc.).

FLOORING: For housing other than aviaries, newspaper or wood shavings are acceptable to cover the bottom of cages or boxes.

Pea gravel over sand in an aviary provides good drainage and should be changed bi-annually or as needed.

AVIARIES: Pea gravel over sand provides good drainage and should be changed bi-annually or as needed. *Natural Flooring* is acceptable, but it must be turned and disinfected from time to time.

Wood chips, usually available from tree trimming companies is inexpensive and must be replaced as it becomes soiled.

Concrete is easy to clean but is hard on the bird's feet and stays damp when washed down. It is best used as a base and then covered with several inches of gravel or wood chips.

PERCHES: Wood doweling or plastic piping covered by ¼″ astro-turf, hemp rope, or indoor/outdoor carpeting. Platforms, covered with ¼″ astroturf or indoor/outdoor carpeting. Natural limbs, bow, block and ring perches.

continued from page 4

humans. Two males were eartagged, fitted with radio collars, and released in late November 1979. Three females were eartagged, two were fitted with collars, and all three released in March of 1980.

The zoo coyotes were released in unfamiliar territory at or near the Twin Lakes Wildlife Management area, a 494.5 ha site (1,222 areas including water) which was closed to hunting and trapping. All the coyotes climbed out of the holding pen within 24 hours; several were out within the first five minutes. None ran off, instead they sauntered into the brush. They did not exhibit any wariness of the trackers. Little backup food was left. All coyotes with radio collars were tracked with a vehicle mounted antenna receiver system. Locations were plotted on maps as described by Case, 1981.

The two fall released zoo males showed fidelity to the release site. They occasionally ventured north and east from the Twin Lakes. They both were trapped (392 days after release of 6 km NE of the release site and 407 days after release 1.7 km N of the release site).

Of the three 1980 spring released zoo females, only one showed fidelity to the release site. One was road-killed 10 days after release 1.0 km S of the release site. Another was road-killed 47 days after release 80.0 km NE of the release site. The third female was shot 244 days after release 125.0 km NE of the release site near West Point, Cuming County, Nebraska, allegedly harassing sheep several weeks prior to being shot (Case, 1981).

TABLE II
FATES OF ZOO COYOTES

Release Date	Days Alive	Fate	Distance from Release Site
26 November 1979			
Male	392	Trapped	6.0 km NE
Male	407	Trapped	1.7 km N
10 March 1980			
Female	10	Road-kill	1.0 km S
Female	47	Road-kill	80.0 km NE
Female	244	Shot	125.0 km NE

*Data Modified from (Case et al., 1981)

DISCUSSION

The fall release of the zoo coyotes were predicted by the Wildlife Department of the University of Nebraska to have low success. Wild born young as well as adults would be establishing or would have established their ranges by that time. The naive fall released zoo animals were expected to be easy prey for hunters and trappers. The 1980 spring released zoo animals were predicted to be at a disadvantage because mating would have already occurred and the mated pairs would have established territories. This would leave the naive zoo animals struggling to establish a home area. However, since the spring weather would be milder than in late fall and winter, and because there would be less hunting and trapping pressure, the spring released animals were predicted to have a higher success rate than those released the previous fall.

The 1982 WRT fall released coyotes were anticipated by UNL to have higher success rate than both 1979 and 1980 zoo coyotes because the WRT coyotes exhibited a low degree of socialization to humans, showed fear of vehicles, had eaten natural foods, and were released in familiar territory with back-up food. The zoo coyotes exhibited a high degree of socialization to people, showed no fear of vehicles, had not eaten natural foods, and were released in unfamiliar territory with little back-up food.

None of the UNL predictions came to pass. The two 1979 fall released zoo coyotes lived for over one year while two of the spring released coyotes were dead in a month and a half. The WRT coyotes, which were predicted to have a higher success rate due to the rehabilitation methods used in their rearing, did not fare so well. One was dead before release, two were dead within a month after release, and one cannot be located (but is presumably still at large).

It is generally assumed in wildlife rehabilitation that captive-reared animals socialized to humans have a lower chance of successfully adapting to the wild. It appears from these two studies that the degree of socialization to humans may not be the primary factor affecting the survival of captive-reared coyotes.

One wonders if rehabilitators need to be concerned about "training" naive coyotes to be wary of vehicles. Although the volume of traffic varied between release sites, two zoo coyotes which were not wary of vehicles and two WRT coyotes which were wary of vehicles were killed along roads. Since highways are a source of carrion for the opportunistic coyote, the animals may have been killed while either crossing or foraging along the road. Wild-reared coyotes are presumed to also be vulnerable to vehicles.

Do rehabilitators need to give captive-reared coyotes the opportunity to eat natural foods or kill live prey? In another captive study, captive-reared coyotes killed sheep at first sight without benefit of being taught to do so by their parents (Timm &Connolly, 1977). It appears the ability to kill is an innate trait in coyotes. It therefore



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may not be necessary to introduce live prey prior to release. However, our responsibility as rehabilitators is to provide the animal with the best chance of survival as opposed to the minimum experiences under which success in adaptation to the wild has been known to occur.

The release site may have been the key to survival for the captive-reared coyotes. The area in which the zoo coyotes were released was larger and more desolate. It was criss-crossed by fewer roads than the area in which the WRT coyotes were released.

Records of the adaptable coyote living for extended periods of time in urban environments (Mahan & Andelt, 1979) notwithstanding, it appears from these post-release telemetry studies that a very important factor in the survival of captive-reared coyotes is the choice of release site—the more diverse and remote the site, the higher the animal's chances of survival.

CONCLUSIONS

Currently, there are few absolutes in wildlife rehabilitation. Although the zoo coyotes appeared highly socialized towards humans, the WRT coyotes displayed little such socialization and only one of ten study animals allegedly became a nuisance to Nebraskan stockmen. Nine of the ten animals studied did not survive long enough to breed in the wild. It remains to be seen what will happen to the coyote that may still be at large.

This study attempted to draw general conclusions concerning the techniques used to captively raise coyotes. However, due to the number of uncontrolled variables (i.e., release rate, prey species cycles, resident coyote pressure, and hunting and trapping pressures), comparison with other studies is difficult. More post-release studies are needed on captive-reared coyotes in order to collect data that will help rehabilitators decide which methods are most effective in producing animals capable of successfully adapting to the wild. These studies should be designed to control more variables so that better comparisons can be made.

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WRC Winter Quarterly Meeting

The WRC Winter Quarterly Meeting will be held on January 14, 1984, at Lenninger Community Center, Kelly Park, Senter Road and Keys, San Jose, California. This meeting will be hosted by the Santa Clara Humane Society Wildlife Group. The guest speaker will be Dr. Richard Mewaldt, Professor Emeritus, San Jose State College. He will speak on "Bird Banding and How It Relates to Wildlife Rehabilitation."

The business meeting will begin at 10:00 a.m. with the general meeting following at noon. Directions are as follows: From Highway 101, take the Storey Road (Keys) exit, West. Turn left at Senter Road, left at the park entrance, and right to Lenninger Center. From Highway 280, take the 10th Street exit and go South to Keys. Turn left to Senter Road, right at the park entrance and right to Lenninger Center.

Following the meeting there will be a pot luck luncheon. We are asking everyone to bring a dish that will feed five people. Please contact the Santa Clara Wildlife Group at (408) 269-2474 and let them know what you are bringing by January 6, 1984.

Conference Announcement

8TH ANNUAL WILDLIFE CONFERENCE

CURRENT ISSUES IN REHABILITATION

Sponsored by
Wildlife Rehabilitation Council,
San Francisco Zoological Society,
California Academy of Sciences

The conference will be held on February 3, 4, and 5, 1984 at the Academy of Sciences, San Francisco, CA. Topics which will be covered are animal husbandry, nutrition, veterinary techniques, workshops on reptile care, hummingbirds, fundraising, administration of wildlife centers, and more.

For information on hotels and transportation, write Nancy Venizelos, San Francisco Zoological Society, Sloat Blvd. at the Pacific Ocean, San Francisco, CA 94132 or call (415) 661-2023. *All WRC members will receive registration notices.*

Letters To The Editor . . .

Dear Editor:

The letter from Debbie Walker Gregory in the Spring issue raised the problem of the intestinal syndrome in young cottontails. I have seen this disease of weanling cottontails very often over the years, and may have a partial solution for it.

This condition is nearly identical in clinical and pathological signs to the "mucoid enteritis" syndrome of the domestic rabbit. It is now pretty well established that mucoid enteritis is a sequel to coccidiosis. The coccidia cannot be found once the diarrhea starts; you have to look for them earlier, when they are doing the damage to the lining of the gut that leads to diarrhea.

Assuming the coccidia are implicated in the cottontail disease, about four years ago I began recommending that sulfaquinoxaline (0.5% solution) or sulfamethazine (40 cc of 12.5% solution per pint) be used as the only water supplied for formula mixing or drinking. The treatment is given from the day of acquisition to the day of release. It sharply reduced the incidence of the disease, although it did not completely eliminate it. I do not, at this time, have data from a proper controlled experiment, but hope my clinical observations will be of help.

Sincerely,
John L. Lenz, M.A. D.V.M.
Manager/Curator
Wildlife Haven
Willowbrook Forest Preserve

EDITORS NOTE:

Coccidia is a one-celled protozoan parasite that can cause problems for a wide variety of animals (including birds). It can be identified often with the use of fecal examinations. It sounds like in cottontails a regular fecal screening program upon intake may help identify a common problem. Even if you don't do the test at your center, it is inexpensive to have your veterinarian or their staff do it.

Dear Editor:

In response to the article on the banding of rehabilitated birds (Fall, 1982 *Wildlife Journal*), I must comment from a veterinarian's point of view. I see many injuries due to banding; both bands placed adequately and those placed inadequately. Any injury to the foot distal to a band is setting the stage for that foot to swell, with the band acting as a tourniquet and the subsequent loss of the limb. The bird can so often catch the band in the branches or on other items in his environment. In addition, the band can and has in some cases affected the behavioral interactions between birds of the same and different species (i.e., allow the bird to be more visable to the predator).

With the very small numbers of birds with bands recovered, it appears to me that the bands are a far greater detriment to them than a help to us in gathering information on rehabilitated released birds. Rehabilitators have been banding birds for over a decade and receiving feedback. Once we have a feel for the success of rehabilitation, must we all continue to band indefinitely? Does each group need to band? The birds that are released are at best at a disadvantage when compared to their wild counterparts, and it would seem that the slightest edge could be the difference between survival and death. We put a lot of time and effort into individual birds and I think that we should give them every opportunity to make it upon recovery and release.

Sincerely,
Sandra Emanuelson, D.V.M.
Cottage Veterinary Hospital
Walnut, Creek, California
Associate Editor, WRC Journal

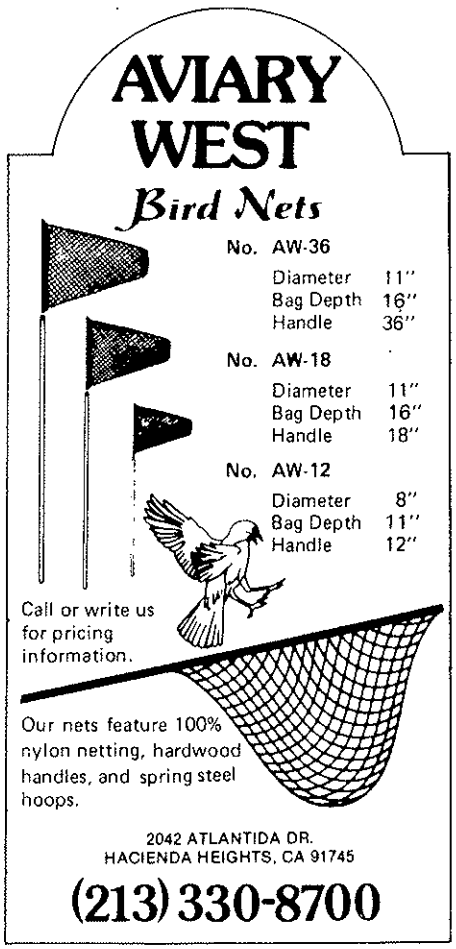
Dear Editor:

The article by Jan White in your Spring 1983 issue pointed out a very real problem for those rehabilitators with grey foxes.

I am reasonably sure that I induced distemper in grey foxes under my care in 1978–79 by vaccinating them with modified live virus (MLV) vaccines. The alternative, not to vaccinate, is only slightly less disturbing considering that street distemper virus is likely to be found anywhere wild or domestic canids, procyanids, and mustelids are housed, especially veterinary hospitals. Another option considered, but rejected was inactivation with heat or formalin of MLV vaccine. As Jan pointed out, the use of chicken embryo vaccine seems the most palatable solution currently.

Dr. Bill Lance of Western Wildlife Laboratories, Inc., 217 Bradley Drive, Fort Collins, CO 80524, (303) 484-6267, is currently attempting to license and market inactivated (killed) virus distemper vaccine for use on zoo and wild animals. When this is available, it should be an even better solution to the fox distemper problem.

Sincerely,
Dave Jessup, D.V.M.
Staff Wildlife Biologist
California Dept. of Fish & Game



Readers

When ordering products from our advertisers, please let them know you saw their ad in the *Wildlife Journal*.

News From The NWRA

The Honors, Awards and Grants Committee of the National Wildlife Rehabilitation Association would like to announce the initiation of a small grants program. We expect $1,000.00 to be available beginning July 1, 1984, which could be used to support a single $1,000.00 project or several projects that add up to $1,000.00, depending on the qualifications of applicants.

QUALIFICATIONS:

1. Funds will be available for a project in the field of wildlife rehabilitation *only,* not in a related field.
2. Applicants must demonstrate financial need, i.e., there are no other funding sources that can be easily tapped.
3. Applicants must submit a typewritten proposal which includes name(s) and resume of personnel involved, objective of the project or purpose for which the money is to be spent, a brief statement of literature review to establish the significance of the project, a brief description of how the work will be carried out, and an itemized budget. An annual report on progress will be required.

SELECTION:

1. Grants will be available on a competitive basis to assist: starting a program, a research project, developing a brochure, purchasing special equipment, etc.
2. The Honors, Awards, and Grants Committee will receive and review applications and make recommendations subject to the approval of the board of trustees.
3. Members of NWRA will be given preference.

The committee has also established three awards as follows:

LIFETIME ACHIEVEMENT AWARD—This award would go to an individual whose primary identification is that of a wildlife rehabilitator who has contributed to the field in a major way for many years. The awardee will receive a plaque, $100.00 and free conference registration. The award will be presented at the NWRA conference.

SIGNIFICANT ACHIEVEMENT AWARD—This would be to a person who has contributed something of significant merit to the field of wildlife rehabilitation within the last two years. Contribution can be a research finding, publication, organization of a program, etc., as long as the major theme is that of wildlife rehabilitation. The awardee would receive the same benefits as for the Lifetime Achievement Award.

KEYNOTE AWARD—This award would pay travel and lodging expenses for one keynote speaker for each annual conference. The speaker would be selected by the host committee for the annual NWRA conference.

Suggestions of individuals who might be appropriate awardees would be appreciated. Send names and sufficient personal data to allow evaluation to:

Dr. G. E. Duke
Department of Veterinary Biology
College of Veterinary Medicine
295 Animal Science/Veterinary Medicine Bldg.
1988 Fitch Avenue
St. Paul, Minnesota 55108

API Awards Grant To WRC For Journal

The Animal Protection Institute of Sacramento California has recently announced that they have awarded a $3,000 cash grant to help defray costs of the new improved format of the *Wildlife Journal.* API, a national animal welfare organization, has demonstrated an on-going concern for wildlife in many ways through the years. We were very pleased to see that they backed their concerns with firms to assist in our cause.

The grant was necessary due to the increased costs of the expanded and improved Wildlife Journal format. While the membership rates have been increased to help pay for the publication, the revenues will take a year to fully take effect and the increased costs began with the Fall 1982 issue. For this reason the Fall 1982 issue was delayed in the shift to the typeset format and there was no Winter 1982 publication. Even with the increased membership rates the revenues will only cover 50% of the publication costs with the remainder coming from this grant and advertising revenues.

Belton Mouras, founder and President of API, was very enthusiastic in his support of the project realizing the importance of constant upgrading of available training information for wildlife rehabilitators. You may recall, it was API that was called upon to relocate 750 beavers in Idaho when a beaver rancher went broke. That was quite a project for his staff who had to find suitable release areas for the animals and work with appropriate officials regarding the releases.

We are very appreciative of API's support and wish to publicly thank them and the many API members who provide the financial base of support so that these kinds of projects can receive the help they need on a timely basis.



Book Review

WILD MAMMALS OF NORTH AMERICA—Joseph A. Chapman and George A. Feldhamer, Editors. John Hopkins University Press, Baltimore, 1982, 1147 pp., $50.00.

Wild Mammals of North America represents an attempt by its editors to bring together knowledge of the biology and ecology of economically imporant North American mammals. The book is the result of the work of 87 recognized authorities on particular species or groups of mammals, and an attempt to provide an up-to-date and comprehensive synthesis of a large body of knowledge previously scattered in books, periodicals, and scientific journals.

Information pertaining to species' life history, ecology, and management is presented in well-written chapters. Over 200 terms are defined in the text's glossary to aid readers who need to acquaint themselves with some of the biological terminology.

The general format of each chapter contains nomenclature, distribution, description, physiology, reproduction (development of young), ecology, food habits, habitat, economic status, current research and management needs, and an extensive citation of the biological literature. Chapter lengths vary, due to differences in the current knowledge of various mammalian species.

Fifty-seven species or groups of closely related species are included in this book, which is arranged systematically, according to order, family, and genus. The text discusses at least 17 groups of mammals (approximately 440 pages) that are likely to be treated or reared by wildlife rehabilitator. These mammals include opossums, moles, bats, cottontails and jackrabbits, marmots, ground and tree squirrels, beavers, muskrats, voles, coyotes, foxes, raccoons, weasels, badgers, skunks, and deer.

Twenty-one other chapters (approximately 470 pages) should provide reliable and useful information for a rehabilitation or nature center's educational programs, or for answering the public's questions about North American mammals which are popular in zoological parks, frequently featured in nature films, or occasionally become the focus of environmental controversies. The species discussed are: manatees, elk, moose, caribou, pronghorns, bison, mountain goats and sheep, musk oxen, bottle-nose dolphins, baleen whales, wolves, sea otters, mountain lions, bobcats, seals, wild horses, and black, grizzly, and polar bears. Additional chapters review the biology of the armadillo, snowshoe hare, mountain beaver, pocket gopher, porcupine, arctic fox, fisher, marten, mink, wolverine, river otter, and the introduced nutria, norway rat, feral hog, and sika deer.

A careful reading of appropriate chapters dealing with species of interest will provide a rehabilitator with a more thorough understanding of a species' life in the wild, and answer many questions regarding a mammal's food habits, behavior, and the selection of appropriate times, circumstances, and habitats for release. The strength of this book lies in the fact that a large amount of literature is reviewed and presented in a concise and readable format. The literature cited at the end of each chapter will provide a rehabilitator with easy access to sources of additional literature of special interest.

The cost of the book and its coverage of a large number of mammal species seldom, if ever, handled by rehabilitators may make it less obtainable or appear to be unnecessary. However, the information contained in this volume will improve any rehabilitator's overall understanding of the biology of mammals. Obtain a copy long enough to glean necessary information, and make arrangements to have a copy no more than a phone call away. This book will prove a fine addition to any size rehabilitation center.

—*Daniel R. Ludwig, Ph.D.,*
Willowbrook Forest Preserve,
Glen Ellyn, IL 60138

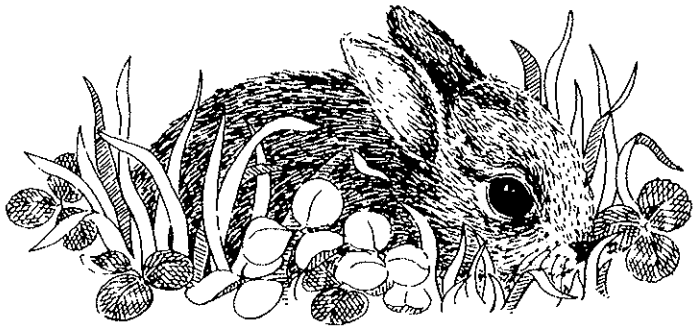
WILDLIFE HOTLINE! A Little Help From Your Friends!

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.)

CALL **415-933-3131.** An answering service will respond. Leave a message for #1856 (Be sure to include your name, area code and phone number.) The WILDLIFE HOTLINE will return your call COLLECT and help with your problem.

Another service of the Wildlife Rehabilitation Council.

Informational Literature



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) SOLD OUT

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 Garceion ($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.