Summer 1991 Vol. 14, No. 2

WILDLIFE JOURNAL

Journal of the International Wildlife Rehabilitation Council



Rehabilitating Foxes ..... Page 9

Guidelines for Authors for the *Wildlife Journal*

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

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

Submission Instructions

1. An original and two copies of the manuscript should be submitted to the Editor, IWRC, 4437 Central Place, Suite B-4, Suisun, California 94585, USA. The manuscript should include references, photo legends, and footnotes, and should be typewritten, double-spaced, if possible. The author's name, address, and phone number should be placed on at least the first page of the article so it can be readily identified and the author contacted.

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

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

4. A separate page should be submitted with a short synopsis of information on the background of the author. Included should be the name, address, rehabilitation organization, and phone number of the author. Where appropriate, please list any academic degrees, special training, or experience that is relevant to the article (i.e., physical therapy—RPT, etc.)

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

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

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

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

Pelican Harbor Seabird Station, Inc.

Informal Survey Nov 6-9, 2002

Please circle your answer after each question.

1. Do you believe that the minutes of the NWRA board meetings should be posted in a timely fashion on the NWRA website, so that members can see which topics were discussed at the board meeting, and what votes were taken? YES NO

2. Do you believe the information should contain a record of how each board member voted on each topic? YES NO

3. Do you think the candidates' positions on various issues should be furnished in addition to the biographical information that is customarily mailed out with the ballots ? YES NO

4. Should the ballots be returned to the board of directors (some of whom may be candidates themselves) for counting and for announcing the results, or should the ballots be returned to the IWRC auditors for counting and for announcing the results ? DIRECTORS AUDITORS

5. Should the announcement of how many YES votes and how many NO votes each candidate received be made along with the announcement of who was elected ? YES NO

6. Do you think that NWRA/IWRC Minimum Standards should be used by rehabilitators for voluntary self examination and improvement, and used for IWRC examination and accreditation by one's peers only when a rehabilitation facility requests accreditation? YES NO

7. Do you think that state and federal governments should be making NWRA/IWRC Minimum Standards For Wildlife Rehabilitation mandatory, incorporating the booklet by reference into their rules and regulations for permits and checklists for government inspection? YES NO

8. Do you believe that the cage sizes listed in NWRA/IWRC Minimum Standards are really minimums ? YES NO

What issues are important to you as a rehabilitator ?



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WILDLIFE JOURNAL

Summer 1991 Vol. 14, No. 2

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Printing by
The Sheridan Press
Hanover, PA

Typesetting by
Wildlife Publications
Suisun, CA

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Cover by Chris Mihulka.

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Editorial . . .

Are We Innocent Unless Proven Guilty?

Is a licensed wildlife rehabilitator serving as a volunteer on a national board such as IWRC or NWRA innocent until convicted of misconduct or should they be subject to dismissal based on allegations from other rehabilitators that their methods do not meet the accusers' standards? This may sound like a weird question, but it has been raised more than once on both national boards and I would like to speak my mind on this issue.

In 1979, I had a paid staff member launch an investigation by the California Department of Fish & Game into the practices of the Wildlife Rehabilitation Service, Inc., because she felt that I was responsible, as the director, for practices that, in her opinion, were a) illegal, b) unethical, c) immoral. The result of the investigation was actual criminal charges which were filed and a 24 month long ordeal in which all of the charges were dropped. In order to promote a reopening of relations with CDFG, I and my center agreed to plead guilty to any legal offense that had actually occurred if it could be identified. Our warden recalled our having a European ferret without a special permit and so we agreed to plead guilty and pay a $50 fine.

During the months following the filing of charges, there were those who advocated that I be removed from my position on the IWRC Board of Directors because I stood accused of cruelty to animals. The board felt that I was innocent until convicted and stood by me. They established a policy at that time that they would not remove an IWRC board member unless a conviction had occurred that had some bearing on the member's actions as a wildlife rehabilitator.

In 1987, another leading wildlife rehabilitator was accused by a staff person of not providing wildlife care to the standard of the accuser. Although no charges were ever filed by any agency, the rehabilitator successfully fought the case in civil court and restored the reputation of her organization. She was a board member of both IWRC and NWRA. NWRA removed her from their board. IWRC stayed with their earlier policy reiterating that if the board member were convicted of an offense that reflected on his/her ability to do wildlife rehabilitation, action would be considered.

Recently, again, we have had accusations surface on the same topic. I have to wonder: if the accusers have so much evidence, why do they come to our professional trade association? Why not the district attorney or state fish and game or USFWS?

Various arguments are advanced to the professional associations when these accusations are made. 1) The person should be removed lest the reputation of the national organization be impugned. 2) These cases should be handled like those of a policeman who has just shot a person (i.e., the officer is removed from active duty, and a panel decides whether the shooting is justifiable homicide). 3) The national organizations should limit their boards to members who display only the highest of care standards and cannot be impeached by such accusations.

What this leads us to is: what is the role of the board member? The board members provide the ideas and the leadership that have developed the organization. Additionally, these volunteers give selflessly of their time to do mundane tasks like keep accounting books, organize conferences, organize various programs that assist wildlife rehabilitation, keep board minutes, write or edit new

Continued on Page 20

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Creatine Kinase Elevation in Greater and Lesser Scaups (*Aythya marila, Aythya affinis*) During a Marine Fuel Spill

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Introduction

On February 23, 1990, a collision between a fishing vessel and a bulk loading ship resulted in the spillage of approximately forty metric tons of a diesel-Bunker C oil mixture in Burrard Inlet, Vancouver, British Columbia, Canada. Weather conditions at the time were sunny with calm winds and local temperatures were 5-10° C. Canadian Wildlife Service (CWS) surveys of the area indicated 6800 birds at risk, of which approximately 1000 were estimated to be oiled to some degree, mostly Greater and Lesser Scaups (*Aythya marila* and *Aythya affinis*, respectively) overwintering in the harbor area. Capture and cleaning of the most severely oiled birds, judged by trained capture teams to require treatment for hypothermia and oil toxicity syndrome, resulted in treatment of 277 birds, of which 88% survived to release (Smith, 1990). Survival was high due to early spill detection and response, favorable weather, wind, tide, and current, and early intensive capture and

Table 1

Bird Tag #	Species	Hematocrit %	Total Solids*	CK IU/L	UA mg/L	AST IU/L	ALT IU/L
1	LS	55	5.3	720	3.5	95	50
2	GS	48	5.5	1845	3.0	95	50
3	LS	41	5.0	2265	3.0	110	45
4	GE	28	3.4	1730	21.0	135	90
5	GS	49	4.9	1895	6.5	130	65
6	LS	48	5.0	2350	10.0	150	75
7	GS	54	5.2	2370	4.0	270	90
8	LS	52	5.2	4200	6.5	265	135
9	LS	50	5.2	588	4.2	126	30
10	GS	54	6.0	2275	4.0	520	90
11	LS	58	5.4	3765	5.5	275	120
12	GS	52	5.4	2470	4.5	370	60
13	GS	58	6.4	1035	5.5	205	70
14**	GE	11	1.7	11670	21.2	453	106
83**	LS	35	2.9	4000	127.4	1772	143
40**	GE	30	2.3	27180	21.8	215	81
Normal Values		37-55	3.5-7.0	50-200	3.5-30.0	100-350	2-25
Mean Values		45.2	4.67	4387.4	16.6	354.7	83.7
Standard Deviation		13.0	1.35	6597.2			
Standard Error		3.36	0.348	1703.4	8.1	106.0	8.3

**Refractmeter reading*
***Moribund, euthanized after sampling*
GS=Greater Scaup
GE=Common Goldeneye
LS=Lesser Scaup

treatment by trained personnel (Herunter, 1990).

Materials and Methods

Birds on foreshore were captured by hand and net by shore parties, and by herding and capture from inflatable boats on the water. Following capture, birds were wrapped in cloth covers, placed in closed cardboard boxes and transported to treatment centers. Immediately on arrival at a treatment center, one to four hours post-capture, randomly selected birds were bled via cutaneous ulnar vein, using a 25 gauge needle and a microhematocrit tube, then treated routinely for oil-spill related syndromes, stabilized and warmed in standard fashion (White, 1990). Of 155 birds captured on February 25, 16 were blood-sampled and analysis performed at a veterinary reference laboratory for hematocrit, total solids, creatine kinase (CK), uric acid (UA), aspartate aminotransferase (AST), and alanine aminotransferase (ALT). (See Table 1.)

For a complete explanation of blood tests and their significance, see references (Bollinger, 1989, and Franson, 1985). A brief summary of blood tests used and their significance follows. *Hematocrit.* The percentage of a birds blood volume composed of red blood cells. Indicates oxygen carrying ability, hydration status and whether an anemic state exists. *Total Solids (TS).* Serum proteins composed mostly of albumin and globulin. May be elevated in dehydration, shock or infection or depressed in parasitism, stress, starvation, or chronic disease. *Creatine kinase (CK).* An intracelluar enzyme which leaks into serum when heart, muscle, or nervous tissue is damaged. Increased serum values have been documented in myopathies, neuropathies, lead toxicity, chlamydiosis, bacterial septicemia, irritating injections and Vitamin E/Selenium deficiency. *Uric Acid (UA).* End product of protein and nitrogen metabolism in birds. Elevated values may indicate impaired renal function. *Aspartate aminotransferase (AST).* Enzyme found in heart, skeletal muscle, kidney, brain and liver. Soft tissue injuries cause mild increases; greater than four fold elevation above normal is associated with liver problems. *Alanine Aminotransferase (ALT).* Depending on bird species, ALT enzyme may be associated with damage to red blood cells, skeletal

Table 2: Pre-release Serum Chemistries of Oiled and Rehabilitated Marine Ducks at Day 9 Post-Capture

Bird Tag#	Species	Hematocrit %	Total Solids g/dl	CK IU/L
46	GS	43	6.2	125
29	LS	48	7.0	160
76	LS	48	6.5	235
56	LS	48	6.6	125
135	GS	38	6.0	125
140	LS	40	6.0	160
61	LS	46	5.4	290
43	GE	52	7.4	100
***	LS	48	5.8	1570
16	GS	46	6.4	275
48	GS	48	7.0	210
115	GS	42	7.0	245
62	GS	45	5.2	1060
17	GS	52	6.4	250
115	GS	42	6.4	180
76	GS	40	6.6	185
Mean		45.4	6.37	330.9
Standard Deviation		4.193	0.595	399.4
Standard Error		1.083	0.154	103.1

muscle, heart, liver or kidney, so it is not considered to be a highly specific indicator of pathology in a particular organ system.

Birds were group-housed by species and sex, kept in standard net-pen enclosures with haul-out and swimming areas (Holcomb, 1989) and fed trout chow/dry dog food mixture during rehabilitation, which was from five days to two weeks in duration. Of the 155 birds captured February 25, 16 birds judged suitable for release nine days later, March 5, 1990, were again bled and hematocrit, total solids and CK level determined. (See Table 2.)

Results

Table 1, shows recently captured oiled birds had hematocrit, total solids, UA and AST values in the normal range. Average CK values were elevated approximately twenty-fold, (mean=4397 IU/L) versus normal (50-200 IU/L) for Mallard Ducks (Bollinger et al., 1989). ALT levels averaged two to three times normal. Observing these birds over the first two to four days post-capture showed a number with muscle tremors, stiffness and reluctance to move. Statistical analysis comparing Day 1 and Day 9 values for hematocrit, total solids, and CK was performed using a two-tailed students t-test ($p \leq 0.05$). Significant decrease in CK and increase in total solids were noted at Day 9.

Nine days after emergency treatment and washing, birds with normal water-proofing and body weight, judged suitable for release, had hematocrit and total solids values in the normal range, and CK levels were only mildly elevated (mean 330.9 IU/L see Table 2).

Discussion

Bollinger et al, 1989, reviewed capture myopathy (CM) in waterfowl. Although the pathogenesis of this syndrome has not been fully elucidated, psychological stress, confinement and handling are known to cause an increase in anaerobic muscle metabolism in wildlife species (Boever, 1986). This increase in conversion of carbohydrate to lactate in muscle causes low pH leading to damage to muscle cell membranes and leakage of intracellular enzymes such as CK and AST into the bloodstream. Severe muscle damage, systemic acidosis and death may ensue acutely, and severe debilitating muscle damage may be a chronic outcome in survivors (Boever, 1986).

CK elevation in serum samples is regarded as being an indication of muscle damage in birds (Franson et al., 1985). Bollinger et al., 1989, recorded values from 875 to 6507 IU/L and abnormal flight in wild Mallard Ducks trapped by a variety of methods.

In this instance, capture of already compromised oiled birds led to the observation of elevated CK levels associated with signs of muscle stiffness and weakness, consistent with clinical capture myopathy. One Greater Scaup developed severe movement-restricting tie-down of the extensor muscles of the leg and wing approximately seven days after capture and was judged unsuitable for release. This bird is currently maintained in captivity because of movement restrictions which preclude normal walking and flight.

Most birds showed a rapid decrease in CK levels from a mean of 4397.4 IU/L to 330.9 IU/L over nine days of captivity, corresponding with clinical suitability for release, judged by normal water-proofing and behavior, adequate body weight, and sternal mass, and adequate values for TS and hematocrit.

Summary

Clinical signs of muscle injury in newly caught oiled birds due to capture myopathy correlated with elevated serum CK levels. Resolution of stiffness and movement restriction was accompanied by a decrease in CK levels. Muscle injury during capture has been correlated to stressful capture techniques and prolonged restraint in bags and under rocket nets (Bollinger, 1989).

Capture myopathy may have significant effects on oiled birds, prolonging convalescence and increasing losses during rehabilitation and post-release due to impaired flight and foraging and increased predation. Careful, low stress capture techniques are necessary during bird collection after oil spills. Gentle herding and confinement, rather than prolonged chases, minimizing physical restraint and handling and maintaining birds in dark, quiet areas away from disturbance, should help mitigate damaging effects of capture myopathy.

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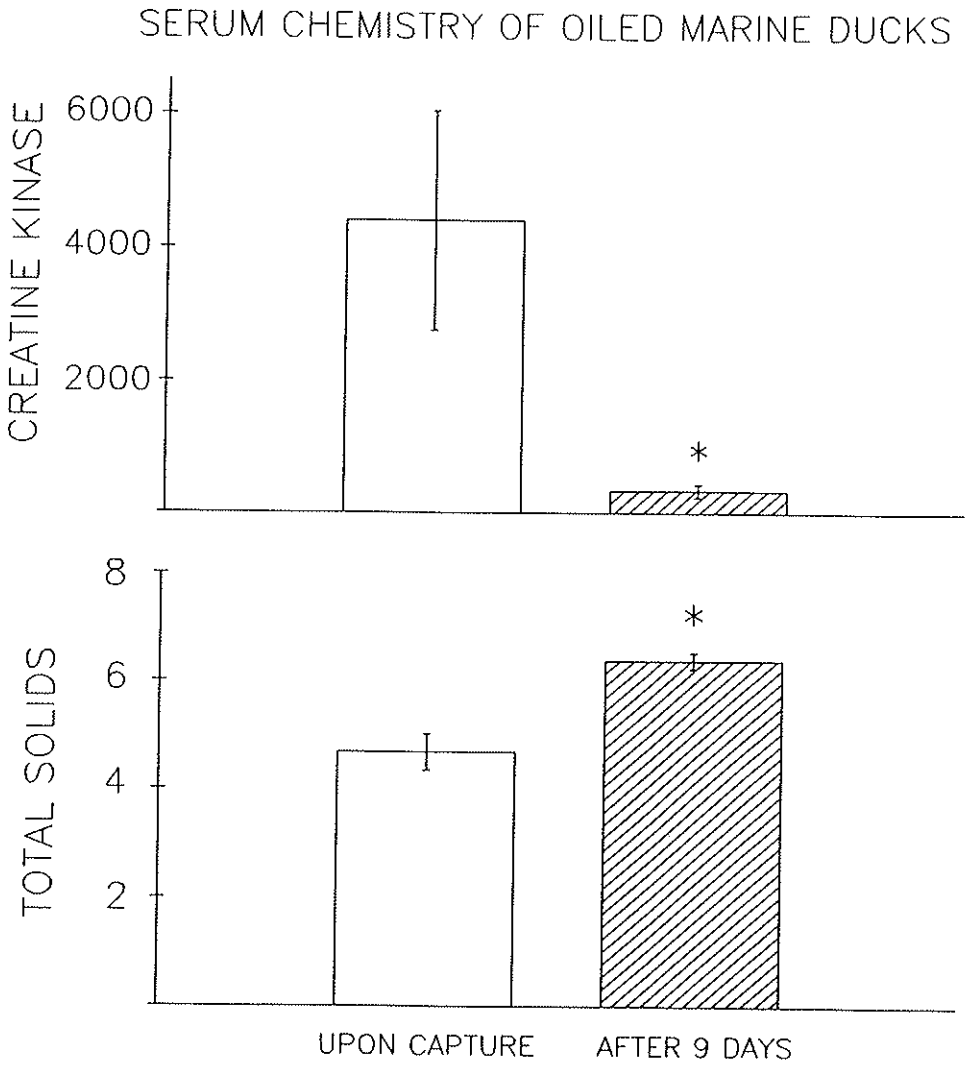
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Simple Things That Make A Difference

Catac Nipples & 0-Ring Reusable Syringes

Emmy Reese
8806 Four Seasons Ct.
Alexandria, VA 22309

Introduction

Catac Nipples are also called "bunny nipples" or "the little English nipples." They are small-sized artificial teats made by Catac House in Bedford, England, and were designed for foster feeding the smallest breeds of cats. They are easily adapted to a number of rehabilitation situations.

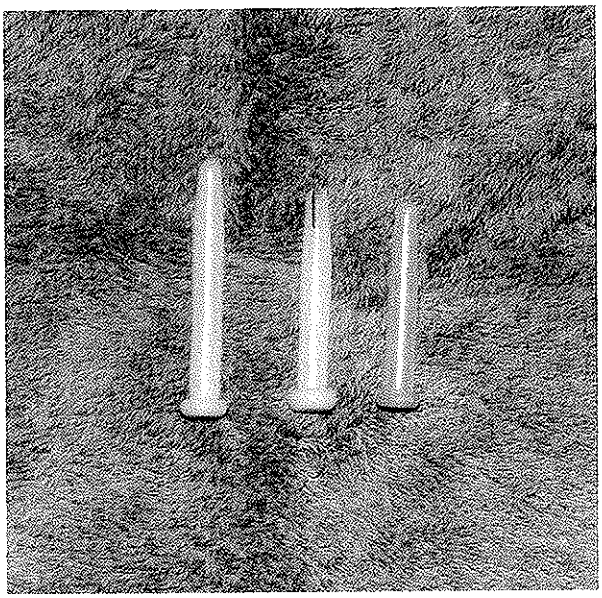
Catac Nipples and Their Uses

The author's use of these nipples has been limited to cottontails (her specialization), but others have used them successfully on a variety of species including mice, squirrels, opossums and small mourning doves. They provide a good alternative in cases of malocclusion or other mouth problems if the traditional nipples are not working. *(Editors Note: They should not be used on songbirds, as repeated use does tend to stretch them out and there have been several cases of them being swallowed by gaping birds.)*

Catac nipples differ from other nipples in that they are very small and slender (ranging from 1 1/4" to 1 1/2" in length), are more anatomically similar to mother's teats, and are made of a material that is soft and flexible. They fit perfectly on the tip of an oral dosing syringe, or luer lock syringe (a maneuver that can sometimes be done with one hand, if need be). And they stay put, unlike the larger nipples (designed for bottles) which must be forced on to the barrel of the syringe. Catac nipples come in packages of three, with slight variations in size and shape. Some are thinner and more pointed, and these are preferred by the smallest infants.

To prepare the nipple for mourning doves, cut the tip off. To prepare it for mammals, make a generous slit, with a sharp knife, scissors, or a single edge razor blade (available in paint and wallpaper shops). The freshly cut rubber tends to reseal under pressure when filled. To prevent this, retrace the first cut with a second one in the same place to ensure a good slit. If it "balloons" out with full strength formula, make the cut a little longer.

When used with a reusable "O-ring" syringe, the good fit and smooth action creates a vacuum. Any movement of the jaws or tongue of the infant animal will "squish" the fluid out of the soft nipple into the mouth. Because of the vacuum, any decrease in pressure will be felt by the thumb on the plunger of the syringe and the nipple



instantly refills. For most of the feeding, little or no pressure is needed on the plunger except the weight of the thumb or fingers, and any decrease in pressure is easily felt. When the nipple is first inserted into the mouth, press on the plunger only enough so that a drop of formula goes into the mouth, which will usually elicit a tasting response. If formula comes out the sides of the mouth, you may be using too much pressure; the formula may be too thick to swallow (for the newborn); or the formula is unpalatable (in the case of cottontails). Usually too much pressure is being applied - let them do the work.

The Catac nipple is so small and slim that it can be slipped in if the lips are momentarily slightly parted. This is a tremendous advantage for feeding cottontails who do not have a tactile recognition of the artificial nipple. The ease of insertion minimizes frustration for both the handler and the animal, and therefore minimizes "handling," which is important in species that are easily stressed. If the animal is on oral medication, first medicate with a 1 cc syringe and then slide the nipple into the mouth while it is licking its lips (some call this "priming the pump"!). Occasionally a new baby will sit motionless with jaws clamped shut (and no idea of what is going on). As a result, the nipple bends back on itself. Simply move your hand down the syringe until you can grasp the nipple above the tip to insert it, then quickly replace your fingers in the normal position. The taste of the formula will generally stimulate a normal feeding response. (They look like they are sipping on a straw and trying to chew gum at the same time unless the true nursing response in triggered.) Cottontails dislike the feeling of human hands and are vulnerable to visual distractions. Wrapping them in a soft flannel baby blanket until they are "hooded" and only the nose and mouth are exposed is recommended. This same technique works for squirrels which come in with their eyes open. Using this method, the feeding will go much faster because this positioning of the animal promotes a sense of security.

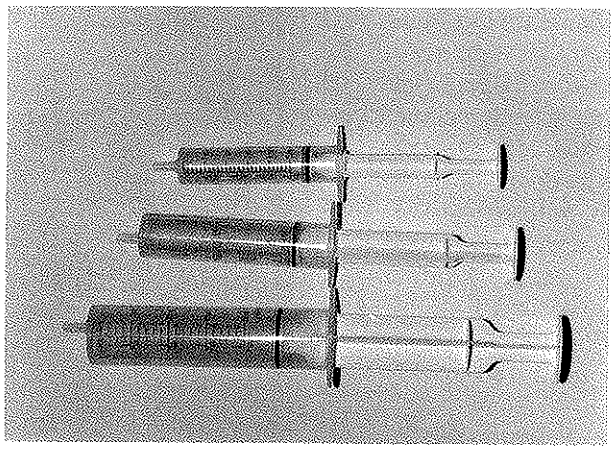
These nipples do wear out and do not store well. The rubber seems to deteriorate during storage, once it has been used. So plan ahead and stock up before spring hits each year!

Conclusion

Undoubtedly skill comes with experience and practice. What works well for one animal or rehabilitator may not for another. The author has never used anything else on cottontails since trying the first Catac nipple. Others agree that these nipples broaden your options and are an invaluable addition to the rehabilitator's basic equipment. The author would be very interested in learning about the uses of the larger sizes of these nipples as well as what other species they are currently used to feed.

Catac nipples may be ordered from Peak Pet Products, 400 Quaint Acres Drive, Silver Spring, MD 20904; (800) 542-9325. ($2.10 for a package of three nipples) or Dick Meyers, Orlando Humane Society, 1269 Windsong Rd., Orlando, FL 32809; (407) 851-2586. Reusable "O-ring" syringes may be ordered from Pampered Parrot Haven, Inc., P.O. Box 507, Dept. BT, Oyster Bay, NY 11771; (516) 922-1169.

Acknowledgements: *Special thanks to the following rehabilitators who were consulted as listed: Di Conger for pinkie squirrels, mourning doves, and cottontails; Maureen Kellogg for mourning doves; Jennifer Simmons for squirrels with malocclusion, rats, mice, and hamsters; Pam Bonner for doves; Janice Hughlett for opossums (over 20 grams); and Louise Shimmel for squirrels and songbirds(see warning).*



Rehabilitation Notes:

Red Fox *(Vulpes vulpes fulva)* and Gray Fox *(Urocyon cinereoargenteus)*

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Introduction

Foxes are small to medium-sized carnivores (Order Carnivora, Family Canidae) that are widely distributed across North America. The most commonly-occurring are the red fox, *Vulpes vulpes fulva*, and the gray fox, *Urocyon cinereoargenteus*. These two species and their many races occupy a large part of the United States, Canada and Mexico, and in some areas have overlapping ranges, although they occupy different habitats. Both red and gray foxes are frequent candidates for rehabilitation. Many are brought in as a result of trap injuries, as the red fox especially is prized for its fur. Other encounters with man and his machines - collisions with cars, dens dug up by plows or bulldozers in the wake of farming or development, or cubs being taken under the mistaken impression that they make good pets - account for most of the foxes seen by rehabilitators.

Description

Vulpes vulpes is both an American native and an introduced species. The red fox was originally found in Canada and New England, but was not known south of northern New York state. In the mid-17th century, plantation owners in Maryland imported red foxes and released them for hunting along the Eastern Shore. In the mid-18th century, foxes from England were introduced to Long Island and New Jersey (Ables, 1975). Perhaps the most significant factor in the spread of the red fox, however, was the clearing of the land for agriculture, opening up the solid forest stands into habitat that allowed the native red fox to expand its territory. The European red fox is a larger, stockier animal than the North American native, and this difference in body size, along with distinctive skull characteristics, indicate that the European foxes contributed nothing lasting to the native fox populations (Rue, 1969).

Vulpes vulpes fulva is the North American subspecies of the Holarctic red fox. The red fox is similar to a small collie in size, with a sharp nose, large triangular ears and a bushy tail, or brush, which is round in cross section. Its fur is long and full, usually a rich russet or red with white on the chin, breast and belly and black feet and legs. The tip of the tail is always white, from a proud flag down to a few white hairs. There are several color phases present in the red fox: a melanistic black, a silver and the "cross," a brownish yellow with a dark band across the shoulders and along the back. The bastard fox has dark bluish-gray rather than red fur, and a Samson fox lacks guard hairs, having just a short, woolly undercoat. All phases may occur in a single litter (Ables, 1975). The red fox, under its rich, thick fur, is built more along the lines of a whippet or greyhound. It measures an average of 38-41 cm (15-16 inches) at the shoulder, 115-117 cm (45-46 inches) in total length, with the tail being 33-41 cm (13-16 inches) long. Weights of adults range from 3.5-7 kg (8-15 pounds), with a wide regional variation (Davis, 1966).

Urocyon cinereoargenteus, the gray fox, lives up to its name. "Urocyon" is a combination of Greek words meaning "dog's tail," a reference to its coarse-haired, bristly tail. "Cinereoargenteus" describes its coat color, "ashy-silvered" (Rue, 1981). The gray fox may be confused with the red fox by those unfamiliar with foxes, because they have reddish ruffs and red markings on their legs, behind their ears and along their sides. The coat is much coarser, a grizzled salt-and-pepper, with a black streak running down the back and along the top of the tail,

ending in a black tail tip. The tail is triangular in cross section. Gray foxes are shorter in the leg and stockier in the body than the red fox, with a shorter muzzle. An adult gray fox will measure approximately 30 cm (12 inches) at the shoulder, 60 cm (24 inches) overall length, with 20-25 cm (8-10 inches) of that being tail. Weights range from 2.7-4.5 kg (6-10 pounds) on the average, but they may get as large as 7 kg (15 pounds) or more (Davis, 1966, 1978).

Both foxes have 42 teeth - 12 incisors, 4 canines, 16 premolars and 10 molars. The first molar on the upper jaw and fourth premolar on the lower are the carnassial or shearing teeth common to carnivores. Foxes do not chew their food, but swallow small prey whole or shear off small pieces of larger prey by turning their heads sideways and scissoring off chunks with the carnassials. The gray fox has larger toe pads but smaller feet than the red fox. Both have five toes on the front, four on the back feet. The fifth toe on the front does not touch the ground, being shrunken in size and located higher up on the inside of the fox's foot. Foxes walk on their toes, in a manner called digitigrade.

Habitat

The red fox is found across the United States everywhere except for the Pacific Coast region, the south-central Great Plains and southwestern desert. It is highly urbanized and thrives even in close contact with man and his animals. The red fox is fond of "living on the edge," both literally and figuratively. It prefers mixed farmlands and woodlots, the brushy fringe of forests along marshes and tilled fields. An abundant food supply, both wild and domestic, is thus assured, although the dangers of living so close to human beings are great. Dens are used only during breeding season and while rearing cubs. At other times, the fox may seek shelter from inclement weather but has no permanent home site. Dens are re-used from year to year and may have started out as a hole made by another burrowing creature (Ables, 1975).

Found in almost all of the contiguous 48 states, Alaska and the California coastal islands (these grays descibed as *Urocyon littoralis*), the gray fox inhabits the more secure and less-populated swamps, woodlands, chaparral or mesquite and cactus thickets of the deserts. Although not as urbanized as the red fox, it can be found in dense thickets inside city limits. The gray is the fox most likely to be found up a tree. An excellent tree-climber, it may make its den in a hollow tree 20 feet above the ground, in an abandoned hawk's nest, or in a traditional earth burrow. More retiring by nature than the red fox, the gray fox usually will hide rather than run when pursued or threatened. Gray foxes are caught in traps more frequently than red foxes, lacking the suspicious nature that close contact with man can engender, but survivors of intensive trapping do develop an acute wariness (Rue, 1981).

Natural Diet

Cursed as a nuisance and predator of domestic fowl, the fox is more often than not beneficial to man in its hunting activities. Small rodents, rabbits and other cropland pests form much of its diet, as well as nesting birds or those weakened by disease or disability. The red fox will also scavenge carrion in lean times, adds fruits and berries to its diet in season, and sometimes will kill but not eat such creatures as moles, shrews and weasels (Harris 1986, Macdonald, 1987, Errington, 1935). Insects, turtles and eggs of birds and reptiles round out a varied diet. The red fox caches food for future consumption, usually burying it in snowbanks, piles of leaves or by pulling grass over the stash. Occasionally food will be dropped along a trail in the open.

Eggs of all kinds are a favorite food of the gray fox, whose diet consists mainly of meat, fruit and vegetables. A gray fox will consume an entire clutch of quail eggs, shells and all, or leave a few for later if it has dined well recently. It does not cache food habitually. The bulk of its diet is meat, which would soon disintegrate if cached. Also, since it lives in mostly warm climates, it has had no need to develop the thrifty habits of the red fox. Grasses, nuts of all kinds, and fruits such as peach, plum, persimmon, apples, grapes and juniper berries round out the gray fox's natural diet (Davis, 1966, 1978; Trapp and Hallberg, 1985).

Both foxes are subject to predation primarily by man, but coyotes, wolves, bobcats and occasionally large raptors will take foxes, especially young or careless ones. The red fox is hunted for sport and trapped for fur. The gray fox's pelt is less attractive and is used to trim cheaper coats or for similar decoration. Both foxes are considered nuisances and predators of domestic and game fowl, such as grouse, but their take of these is usually small if compared to the number of cropland pests they take.

Breeding, Gestation and Development of Young

The red fox female, or vixen, is sexually mature at ten months of age and will breed in January or February. Her actual estrus period is a short three days, but her courtship by the male, or dog, fox may take place over many days. Monogamous at least during breeding season, red foxes in some parts of the world mate for



INTERNATIONAL WILDLIFE REHABILITATION COUNCIL

Wildlife Care Catalog

Spring 1992

Dear IWRC member:

Let me introduce our spring catalog for wildlife care! As usual, IWRC leads the way in producing up-to-date species information. You will notice that we have added several new items for sale. We have included the long awaited proceedings from the 1990 "Effects of Oil on Wildlife" Symposium which took us a solid year to edit and publish. We have added a new "how to" paper on the medical care of oiled birds which comes from the experiences I had working in eighteen oil spills over the last decade. Three new sets of Rehabilitation Notes have been added in this edition. Not resting on our laurels, IWRC staff are currently compiling the proceedings from the 1991 IWRC Conference and hope to have them available later this spring.

With this edition, IWRC presents some new product items for our members. We have developed a very sturdy and attractive IWRC tote bag and two IWRC T-shirts for our members. Also offered are a set of wildlife cards and envelopes which we think you will find very appealing.

In ordering literature in 1992, you will find that we have upgraded the bindings on the papers to allow for a more permanent use by the purchaser. We are making efforts to get our literature onto recycled paper as we make new press runs.

We are always interested in your ideas and comments regarding the types of information we are developing or items that we offer for sale. Feel free to drop us a line if there is something that you would like to see included.



Thanks for your support!

Jan White, DVM
Executive Director, IWRC

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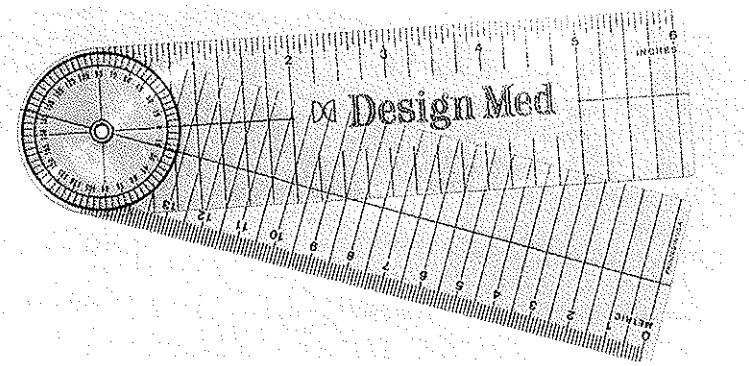
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life. However, the chances of both foxes living to breed together more than one season are very low. Fox mortality in the first year may run as high as 80%, and fewer than 14% live to breed for as many as four years (Macdonald, 1980).

After a gestation period of 53 days, an average litter of 4-5 cubs is born in the secluded, bare earth-floored den. The cubs are blind and deaf at birth, weigh an average of 100 g (3 ounces) and are approximately 10 cm (3.5-4 inches) long. They are covered with short black fur and look very un-foxlike, with blunt noses and round, tightly-sealed ears. They are unable to control their body temperature, so the vixen stays with the cubs for the first two weeks, leaving the den only to eliminate. The dog fox brings food to the vixen, and after two weeks, both parents may forage and bring food back to the cubs, to be torn up or regurgitated for their consumption.

Eyes open at 11-14 days and are initially a milky blue. The cubs still see very poorly, but they are beginning to move around in the den and cause the vixen some concern to keep them rounded up. By four weeks of age, they are beginning to roam outside the den. By this age, their fur is a rich chocolate brown, and they are beginning to moult their juvenile pelage in favor of the red/orange coat of the adult. Moult is complete by 5-6 weeks of age, and the cubs are covered with short, reddish-orange fur. They weigh an average of 600-700 g (1.5-1.75 pounds) and are eating solid food. They are completely weaned at 8-10 weeks of age. The typical "foxy" face is evident around 8 weeks of age, with the snout and ears becoming long and pointed. The cubs look like miniature adults.

The red fox cub is ready for full independence by 6 months, having been hunting with the parents since it was just over two months old, developing its hunting skills in intensive play sessions with its siblings and practicing on mice, bugs and earthworms. Its coat is the full bushy adult pelage, and it has attained adult weight of 3.5 kg or more.

APPENDIX 1
Feeding Guidelines for Fox Cubs

(1 part Esbilac powder to 2 parts water = .96 Kcals/gm)

Weight (gm)	cc/feeding	3xBMR kcal	# feedings per day	4xBMR kcal	# feedings per day
100	5.0	37.2	8	49.6	10
150	7.5	50.7	7	77.6	9
200	10.0	62.7	7	83.6	9
250	12.5	74.7	6	98.6	8
300	15.0	84.9	6	113.2	8
350	17.5	95.4	6	127.2	8
400	20.0	105.6	6	140.8	7
450	22.5	115.2	5	153.6	7
500	25.0	124.8	5	166.4	7
550	27.5	134.1	5	178.8	7
600	30.0	143.1	5	190.8	7
650	32.5	151.8	5	202.4	6
700	35.0	160.5	5	214.0	6
750	37.5	169.2	5	225.6	6
800	40.0	177.6	5	236.8	6
850	42.5	185.7	5	247.6	6
900	45.0	194.1	5	258.8	6
950	47.5	201.9	4	269.2	6
1000	50.0	210.0	4	280.0	6

Calculations on amounts to feed are based on 5% of body weight (50 cc/kg) as a maximum amount that can be fed comfortably in a single feeding. It is better to feed slightly less per feeding to prevent bloating, diarrhea or other symptoms associated with overfeeding.

The Basal Metabolic Requirement (BMR) or Minimum Energy Coefficient (MEC) represents the number of kilocalories/24 hour period necessary to sustain vital functions. Infants especially should be fed at a rate of 3-4 times the BMR. Adjust the amount as needed for active or injured juveniles and adults.

The BMR is calculated at 70 x (body weight in kilograms)$^{.76}$ for placental mammals. Weigh the animal every 1-2 days if it is a growing infant, once a week for juvenile or adult if the animal's temperament permits.

Cubs disperse in late autumn, September-October, with the males going farthest afield from the home territory the first year. By the second year, the males have dispersed more than twice as far as the female cubs, some of whom may stay very close to the original den and even assist in rearing another season's cubs with their mother. (Macdonald, 1979).

Gray foxes' breeding season runs from late December to early March, peaking in late January and early February. The vixen has a single short estrus period. They are also monogamous and do mate for life. Gestation in the gray fox is 53 days, and the cubs are born between the last of March and early May. An average litter is four cubs, occasionally five or six. The gray vixen only has six nipples to the red fox's eight (Trapp and Hallberg, 1985).

Born deaf, blind, dark-skinned and almost hairless, gray fox cubs weigh 100 g or a little less. The vixen stays with them for the first four days, nursing the cubs frequently and keeping them warm. A short, dark fur with the characteristic russet patches behind the ears is evident by about the fourth day. By the time their eyes open at 10-12 days, they are covered with dense dark fur with reddish highlights on the legs, ears and belly. They become increasingly active by three weeks of age, and at five weeks the cubs are venturing out into the world on longer forays from the den. They are weaned by eight weeks, eating solid food brought by both parents, and begin hunting with the parents when they are three months old.

They are perfect miniature adults in appearance and behavior by the time they are four months old, but they stay with the family group, being trained by the parents, for two to five months. Dispersal occurs with the onset of hormonal stimulations,

APPENDIX 2
Comparison of Vixen's Milk and Substitute Milk Formulas

	% Solids	% Protein	% Fat	% Carbohydrates
Red fox*	18.1	35.0	32.0	25.0
Esbilac powder	97	42.2	25.0	26.1
KMR/Multi-Milk (3:1) powder	97.0	39.75	32.5	19.6

*Information not available on milk content for gray fox vixen. The assumption, whether or not it is correct, is made that the two milks are similar enough in content to use the same substitute formula on both species.

Esbilac powder is mixed 1 part powder to 2 parts water by volume. KMR/Multi-Milk (3:1) is a mixture of 75% KMR powder and 25% Multi-Milk powder by volume. This is then reconstituted with 2 parts of water by volume. This formula has not been used by the author on foxes rehabilitated in the past. An evaluation of this formula will be made using future groups of foxes presented for care. The mixtures described above break down as follows when reconstituted with water.

COMPONENT	MIX	% SOLIDS	% FAT	% PROT	% CARB	KCAL/GM
Esbilac	1.00	97.00	43.00	34.00	15.80	5.85
Water	2.00	0.00	0.00	0.00	0.00	0.00
Formula		15.94	7.07	5.59	2.60	0.96
KMR	0.75	97.00	26.00	43.00	26.10	5.12
MultiMilk	0.25	97.00	55.00	30.00	0.00	6.15
Water	2.00	0.00	0.00	0.00	0.00	0.00
Formula		16.56	5.54	6.85	3.56	0.91

Calculations for Kilocalories of available energy are based on weight, using one standard tablespoon as the basic measure. (One tablespoon of water weighs 15 gm. One tablespoon of Esbilac powder weighs 5.9 gm. One tablespoon of Multi-Milk powder weighs 5.5 gm. One tablespoon of KMR powder weighs 6.5 gm.) Energy available is expressed in Kcals/gram. The Kcals in one gram of reconstituted mixture may not equal the amount of Kcals in one cc or ml exactly. The rehabilitator must take this into account when figuring the amount (volume) of formula to feed.

which cause the young foxes to go seek mates and establish territories of their own.

Captive Management

Note to the reader: There is the assumption here that individuals working with foxes have had some experience with smaller mammals and medium-sized carnivores. As a result, they should be well-versed in procedures for initial intake, examination and stabilization. If this is not the case, Dr. Jane E. Meier, in Zoo and Wild Animal Medicine (Fowler, 1986), has written an excellent chapter on Neonatology and Hand-Rearing of Carnivores. The reader is advised to become familiar with this work as an adjunct to working with carnivores.

Captive Diet

Infant foxes have been raised successfully on Esbilac (Pet-Ag) formula, mixed two parts water to one part Esbilac powder, a part being any equal measure by volume (tablespoon, cup, etc.) Feed up to 5% of body weight per feeding (see feeding chart, Appendix 1). Wolf breeders and some domestic dog breeders have experienced difficulties with Esbilac formulas, evidenced as cataracts and temporary or permanent blindness around four to six weeks of age. In these instances, they have switched to KMR (Pet-Ag) (Edison, 1991). Pet-Ag Research Division suggests a mixture of Multi-Milk (Pet-Ag) and KMR (Pet-Ag) as more closely approximating vixen's milk (Hoffman, Pet-Ag, 1991). (See Appendix 2 for formulas and milk comparison.) This formulation has not been tried yet by the author. A pediatric multi-vitamin supplement may be used with the formula.

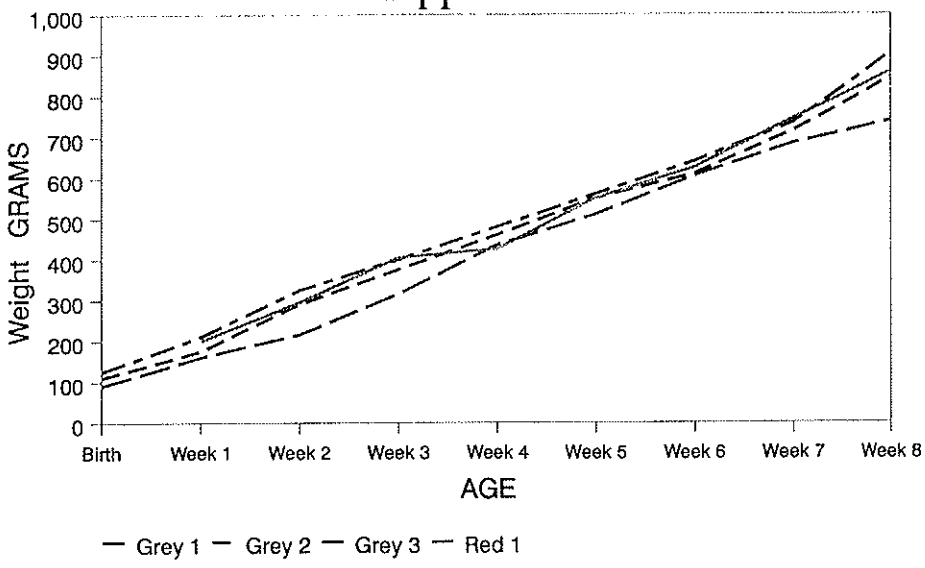
Cubs require stimulation to urinate and defecate until their eyes open and they are seen to be eliminating on their own.

Cubs should be fed 6-8 times per day (every 2-2 1/2 hours over a 16-hour day) until their eyes open. Feedings can be gradually reduced each week, stretching the interval to every 4 hours (4 times per day) by the time they are four weeks old. Late-night feedings should not be necessary after the first week. Weaning can begin and solid foods can be offered at 4-5 weeks.

Wean to high quality puppy-formula kibble (Nature's Recipe Puppy, Performance and Lactating Diet or Hill's Science Diet Canine Growth Formula) and meat-based canned dog food (Hill's Science Diet or comparable) mixed with milk-replacer formula, gradually decreasing the formula until the cubs are eating solid food. Supplement with grapes, slices of apple and other fresh fruit, earthworms, sliced sweet potato and wild nuts and berries. Cubs may also be offered ground turkey, ground chuck beef and cooked chicken cut off the bone. If the fox cubs are fed a diet heavy on meat or organs, a vitamin-mineral supplement to provide additional calcium should be used. A balanced calcium/phosphorus/Vitamin D_3 ratio is vital to prevent metabolic bone disease. Cubs should be fully weaned by the time they are two to 2 1/2 months of age. Introduce killed mice, rats and chicks into the diet at this time. Training on live prey should begin by two and one-half months of age, and the young foxes should be proficient at hunting and killing their own food by four months of age. Mice, rats and rabbits should be the staples of live prey.

Despite the fact that it is natural for carnivores to kill and eat other species, some rehabilitators are reluctant to undertake live prey training with these animals. There is no real substitute for live prey to develop proper hunting skills, but Tim Thomas, of the Royal Society for Prevention of Cruelty to Animals, Horsham, England, has suggested alternatives which have worked for the RSPCA rehabilitation program. Instead of using live prey, killed mice, rats or rabbits, even road kills, are attached to a string and pulled about the cage

Appendix 3



Growth Chart of Four Foxes

with a fishing pole from outside the enclosure. This is labor intensive, but it can be used to simulate the hunting experience. Mr. Thomas contends that follow-up studies on released foxes have shown them to be successfully hunting and killing their own food within three days of release.

Housing

Cubs should be housed in groups, either natural litters or mixtures made up of singletons of a similar size and development. Until their eyes open, they should be kept in a small cage or pet carrier with external heat provided, either by a heating pad set on low under one portion of the cage or in a temperature- and humidity-controlled environment (85 deg. F, 60-70% humidity) such as a hospital box. Once the eyes open and the fur is well-developed, discontinue the external heat and move the cubs into a larger cage (4'L x 4'W x 2'H minimum), flush bottom lined with newspaper, with a nest box, ravel-free bedding, a shallow dish of water and a deep (4" - 6") pan of dirt for digging. The entire top of the cage should be hinged to open, either in one piece or in sections, to make gaining access to the cubs for feeding easier. Foxes do not usually use a litter box, but they will select an area of the cage for elimination. Putting a shallow box of dirt or clay litter in this area might encourage them to neater habits, but there is no guarantee.

Once they are weaned, they should be moved to outdoor caging with a secure top and dig-proof floor. Either the bottom of the cage should be lined with welded wire mesh or chain link covered with sand or clean fill dirt 6-12 inches deep, or the sides of the cage should extend at least a foot underground to deter digging out. A minimum enclosure of 12'L x 6'W x 6'H for a litter of foxes is recommended. The enclosure should include a secure nest box or den, branches, rocks, bushes, grass or as much natural cover as can be arranged, and food and water dishes that can be secured to the side of the cage and removed for cleaning and filling with a minimum of human contact and exposure. For live-prey training, it is recommended that the sides of the enclosure be lined with smooth wood, metal or plastic to a height of two feet, to prevent live prey from climbing out. Leaves, straw, branches, logs and rocks should be added for the prey to seek cover and provide a greater challenge to the foxes.

Do not house red and gray foxes together. Grays are the more aggressive of the two, and will not tolerate red foxes in their territories. Adult foxes of either species presented for care should be housed separately.

Diseases

Rabies can occur in all warm-blooded animals, and foxes are considered to be at high risk for carrying and transmitting rabies. In some sections of their range, this is the population-limiting factor that reduces excess numbers of foxes and keeps population numbers stable. The actual occurrence of rabies among wild canids in the United States is currently low. Foxes in Texas have a relatively low incidence of rabies (less than 2% of animals tested). There has been a very localized epizootic of rabies in two or three Texas counties along the Mexican border since 1986. The feral domestic dog population is cited as the reservoir in this case, with dog-strain rabies "slopping over" into the fox and coyote populations. A vigorous campaign by local veterinarians to inoculate domestic dogs against rabies is bringing the problem under control (Whadford, 1989).

Any fox exhibiting unusual behavior, from lack of fear of human beings to aggressive behavior, disorientation, unusual diurnal activity or other strange activity, should be suspected of harboring rabies. Take all necessary precautions before handling the animal: wear latex exam gloves, a disposable mask and eye protection; also wear stout protective clothing such as leather welding or mammal gloves and a heavy long-sleeved shirt. It may be safer to euthanize the animal and have it tested for rabies rather than risk injury and possible exposure. Foxes may be inoculated against rabies with a killed-virus vaccine prior to release. Currently, in the United States, there is not an approved vaccine for use in wildlife, but many vets who work with wildlife will administer vaccine to animals prior to release. The manufacturers of the vaccines do not guarantee their effectiveness when used in this fashion. In Europe, vaccine-impregnated baits have been used successfully to control outbreaks of fox rabies and reduce the incidence of rabies in fox populations without causing wild fluctuations in the populations (Anderson, 1986; Macdonald and Bacon, 1982; Macdonald, Bunce and Bacon, 1981).

Canine distemper occurs commonly among all canid species, and foxes are no exception. In Texas, distemper is more often the population-limiting factor. Characterized in its early stages by greenish nasal discharge, squinting and photosensitivity, excessive salivation and respiratory difficulty, it may appear to respond to antibiotics. After a two to three week dormant period, however, it will reappear as a neurological disease characterized by partial or total paralysis or paresis, ataxia, "chewing gum fits," convulsions and eventually coma and death. Gray foxes seem to have a higher susceptibility to canine distemper than red foxes (Meier, 1986).

A further complication in Texas fox populations is the presence of fire ants. Often, young foxes are brought in that have suffered attacks by fire ants, which are attracted to moist areas such as the eyes, mouth and nasal mucosa. The bites and the allergic reaction they trigger may disguise the presence of distemper symptoms in the early respiratory stages. Again, there is an apparent response to antibiotics. The symptoms disappear only to return in the neurological phase. The disease is fatal in foxes. Foxes with fire ant bites should be suspected of suffering from other problems, especially distemper, and strictly isolated upon intake. A low white blood cell count may give a clue to the presence of distemper or other viral disease (Staley, 1990). If there is sufficient reason to suspect distemper as the pathological condition present, it is more humane to euthanize the foxes immediately rather than prolong their lives unnecessarily and risk exposure of other susceptible rehabilitation animals.

Red foxes can be inoculated against distemper using modified-live virus (MVL) canine distemper vaccine. *Use of MLV vaccines in gray foxes is contraindicated.* Gray foxes are more likely to develop clinical distemper if a modified-live vaccine is used, and the efficacy of killed-virus vaccines in wildlife species is not well-documented (White, 1983).

Sarcoptic mange is a serious problem in red foxes, and may account for many fox deaths. (Pryor, 1956). Gray foxes seem to be highly resistant to the *Sarcoptes* mite, the causative agent of the mange, and recover very quickly even from induced infestations. Ivermectin is very effective in treating sarcoptic mange. (Blagburn, et al., 1986). Consult a veterinarian for dosage and course of treatment.

Foxes normally carry a full load of internal parasites as well, especially tapeworms and roundworms (DeBloc, 1988).

One particular tapeworm, *Echinococcus multilocularis,* is of zoonotic importance to rehabilitators treating foxes, especially in the Northwest and Midwestern states. This tapeworm is capable of causing alveolar hydatid disease of the liver and occasionally the lungs (Ekert and Ammann). Segments (proglottids) containing eggs are shed in the feces of foxes onto the ground, where they may come into contact with fruits, vegetables and different plants. The eggs may be ingested by rodents (a primary prey of foxes) or even human beings. A larva may hatch in the intestine of the intermediate host and migrate through the bloodstream to the liver or lungs. Development of the embryo into the hydatid form, a multiple-cyst structure, leads to invasion of the liver or lung tissue, giving the appearance of a malignant tumor. Surgery and treatment of the infected individual with a scolicidal drug such as mebendazole are the usual treatments for alveolar hydatid disease. That caused by *Echinococcus multilocularis*, however, is more invasive and less likely to be corrected surgically. It eventually destroys the liver and kills the patient (Theis, 1986). Employ strict hygiene measures when handling foxes or fox carcasses, as the fur may contain tapeworm eggs, which can become airborne and be inhaled. Wash hands thoroughly after handling the animal and treat it as a potentially infected individual until it has been examined and treated.

Foxes are also susceptible to heartworm (*dirofilaria*) infestation (Simmons, et al., 1980). Have a fecal check and heartworm test done upon intake, treat for parasites as indicated by your vet and treat prophylactically during the rehabilitation period.

Release

Gray foxes can be released anytime after five months of age and reds after six months, if they have demonstrated skill at hunting and killing prey, have a healthy fear of human beings and possess necessary survival skills. Release them into the appropriate habitat for the species, in areas where other foxes are known to be. The most important requirement within any habitat to a fox is another fox (Lloyd, 1980).

Foxes should be released back into the area from which they came, if possible. Transmission of diseases by foxes is a consideration when selecting a release site. Translocating captive-reared or rehabilitated foxes might be a cause for the introduction of diseases into a population that was not previously infected. In many states, especially in the North and Northeastern United States, translocation of foxes or any carnivore is specifically prohibited due to rabies epizootic potential.

Foxes that demonstrate a degree of socialization with human beings may require more care upon release, in the form of backup feeding and release into a protected area until their natural instincts take over. Some, especially ones raised without siblings or other foxes, may bond too closely to human beings and cannot be released. Ones such as these may be kept under rehabilitation permits or scientific research permits in some states to serve as surrogates and foster-parents for future groups. Red fox vixens are especially good foster-parents, but adults of either species have been used for this purpose. Whenever possible, do not raise a single fox cub. Wild canids tend to be social, at least within their family groups, and need companionship to develop properly. Foxes do not make good pets under any circum-

stances, as they tend to be destructive of property (shoes, draperies, furniture, other pets), have a strong, musky odor and may develop neurotic tendencies in some cases.

Occasionally, former "pet" foxes may come into a rehabilitator's hands. If they are still young, under a year of age, and have not been altered to suit human expectations (neutered, descented or otherwise changed from a natural state), it may be possible to re-train and rehabilitate them for release. These will always be borderline cases, however, and their chances of survival may not even be as high as a naturally-reared wild fox. If they cannot be placed in a surrogacy program or if they are not suitable animals for exhibition in a zoo or nature center, they may have to be euthanized.

Acknowledgements:

Thanks and grateful acknowledgment are due to Bernice Speer Cross, for her help in assembling the database of reference material and finding the papers, Robert L. Spitz, DVM, for veterinary care and support, Tim Thomas of the RSPCA, Horsham, England and Les Stocker of the Wildlife Hospital Trust for sharing their experiences and knowledge of foxes, Suzie Sutton, Missouri Wildlife Center, for reviewing the paper, and Robert G. Hanes, for doing the math.

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In Memoriam: Mae Hickman

Jan White, DVM
Executive Director, IWRC

On October 11, 1991 Mae Hickman, an early pioneer in the field of wildlife rehabilitation, died. Mrs. Hickman had many achievements in her career and was a very special person to all who knew her.

Mae Hickman was born in 1907 in Kansas. Her mother died when she was an infant and she spent seven years in foster care until her family was reunited. Mae was trained as a secretary and was married in 1926 to Bill Hickman. She had three children.

The Hickman's came to the Washington DC area in 1930 where Mae began to provide care for wildlife. She took in all different kinds of wild animals including starlings, jays, robins, herons, hawks, opossums, raccoons, and deer. As is the case with many home wildlife rehabilitators: funds for wildlife rehabilitation came out of pocket.

A determined person, Mae successfully fought cancer in the late 1960's and went on to not only resume her work with wildlife but also to publish a wildlife care book.

She co-authored (with Maxine Guy) the first major book on wildlife care in 1973. *Care of the Wild Feathered and Furred,* published by Unity Press, is a book that virtually all long-time rehabilitators have read and many greeted with joy as they struggled to find information on wildlife care at a time when there was virtually none.

In October 1982, the Wild Bird Rescue League (Falls Church, VA) established its Service to Wildlife Award and Mae Hickman was chosen as the first person to receive it.

Having a soft spot in her heart for all creatures, Mae provided a home for various stray dogs and cats, collared doves, and even an abused pony. She also provided permanent care for various non-releasable animals on a 50 acre tract of land near Marshall, Virginia.

Mae was a pioneer and a teacher: one who devoted over 40 years of her life to caring for wildlife. She will be missed by her many friends and by the many people who over the years learned the basics of care from her and her teachings.

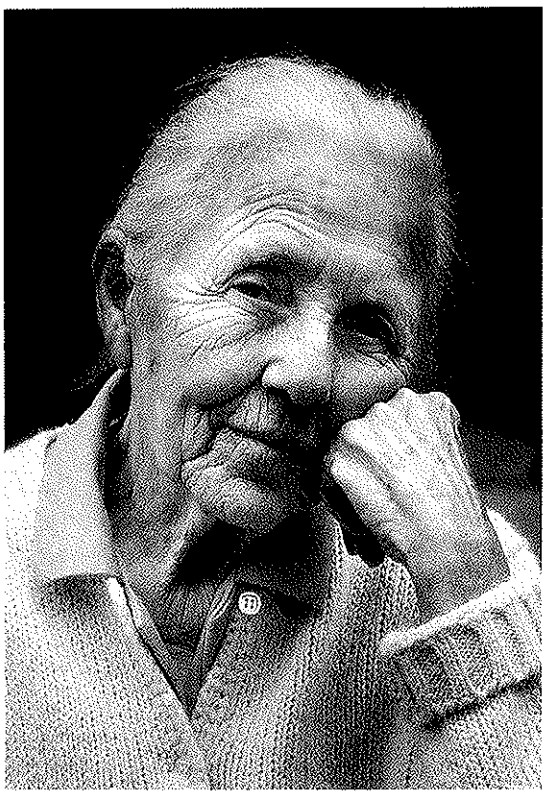


Photo Courtesy of the Fauquier Times-Democrat

Mae Hickman 1907-1991

IWRC Membership Notes:

For a number of years, IWRC has linked its membership renewal system to the mailing of each *Wildlife Journal.* Final notices for expiring memberships went out with the last journal to which the member was entitled. Since the *Wildlife Journal* has been late, members who renewed on last notice would be renewing about every 16 months.

Now, Wildlife Journals are being produced about every two months as we catch up and members may find themselves being asked to renew less than a calendar year from their last check (because more than four *Wildlife Journals* have been mailed). Additionally, we have a new printer, the Sheridan Press, who will be handling our mailing. Hence forth, notices will be mailed separately from the actual journal. However, final notices will still not be mailed until the member is due to receive the very last *Wildlife Journal* that they are entitled to with the expiring membership. We understand this can be confusing. Members can feel free to contact Rose Green at IWRC (707) 864-1761 if they have any specific questions regarding their membership.

We appreciate your patience as we change systems. Our new journal production system will free office staff from a major chore, leaving them to perform more creative and meaningful work tasks that help keep IWRC on the forefront. For those members in the east, you may get your journals faster as the new mailing point will be in Pennsylvania!

Literature Notes:

IWRC is changing some aspects of literature production. We are upgrading our bindings to allow for easier and more permanent uses of our papers. IWRC staff and volunteers have been converting papers onto Macintosh disks so that we can edit and revise them more easily. We are also making efforts to get as many papers as possible printed on recycled paper.

As reflected in our Spring catalog, we are offering several new titles. The *Effects of Oil on Wildlife,* a new full-length book, is available and we will be offering a new "how to" paper on the medical care of oiled birds by Jan White, DVM, a veteran of eighteen oil spills in the last decade. We are working on the proceedings from the '91 IWRC Conference and hope to make them available by April. Jan White and Louise Shimmel have been busy editing and revising the *Wildlife Rehabilitation 1AB Manual* and hope to have it ready this spring as well!

We have experienced multiple price increases at the printers as well as postage increases in the last year. Prices in the new catalog have been adjusted to take into account our increased operating costs as well as the new bindings.

-Jan White-

Internship Announcement:

Florida Keys Wild Bird Rehabilitation Ctr.
93600 Overseas Highway
Tavernier, FL 33070
Contact: Laura Quinn, Executive Director
(305) 852-4486

This not-for-profit wildlife rehabilitation center located on 5 acres of wetlands receives about 400 birds/yr, with an average in-house case load of 50 birds including permanent non-releasable residents. The center also has an active nature interpretive program.

Interns will gain experience in various aspects of wildlife rehabilitation including: emergency care, medical procedures, rehabilitation, nutrition, raising orphaned birds, care of non-releasable birds, and public education. Job prerequisites are a genuine interest in the care and rehabilitation of waterbirds. Preference is given to people with an interest in bird rehabilitation as a career. Interns are provided with living quarters and receive a $50.00/week stipend. Length of Commitment: preferably 6 weeks+.

Job Announcement:

Wildlife Waystation
14831 Little Tujunga Canyon Rd.
Angeles Forest, CA 91342-5999
Contact: Fred Perry /Martine Colette
(818) 890-1107

Wanted: a wildlife rehabilitator for a very busy facility to take charge and oversee. Experience in all California species (birds and mammals) is required. Minimum 3 years full-time "hands on" experience required. References are necessary and will be verified. Mobile home and all utilities provided plus salary. Send resumes to Martine Colette at the address above.

Book Review

Falconry - Care, Captive Breeding and Conservation

Jemima Parry-Jones
David and Charles Brunel House,
Newton Abbot
Devon, Great Britain
Price $22.95, 232 pgs.

Falconry - Care, Captive Breeding and Conservation is an opportunity for wildlife rehabilitators in general, and raptor rehabilitators in particular, to acquaint themselves with the best that falconry has to offer. The author, who is director of Britain's National Birds of Prey Center, is absolutely clear about her motives and her goals both as a falconer and as a rehabilitator:

> "True conservation of the species should be the first consideration, welfare and quality of life for the individual birds the second, and one's own pleasure and self gratification only last."

Within her 232 page book, Parry-Jones manages to combine good overviews of captive breeding, beginning falconry techniques, and a fascinating glimpse into Britain's laws concerning birds of prey, with a number of anecdotes and observations that resonate with her own piquant blend of humor, heartbreak, and deep commitment to her work and her sport.

Parry-Jones does not hesitate to defend falconry, stating categorically that, "There is no species of raptor in the world that has been, or is, to date, being threatened by falconry."

However, she is also very practical in her approach to the sport, recognizing that there are "bad" falconers as well as "good" ones, and she takes an opportunity to caution falconry devotees of the need to take their responsibilities towards their birds very seriously.

Parry-Jones calls herself an unabashed conservationist and indeed, much of her working day is devoted to educating the public about the increasing need to protect habitat and wild populations of birds of prey. While some of us may question the wisdom of falconry as a sport, no one can question the sincerity and deep convictions of this author, who has been actively educating the public for over twenty years.

As she puts it,

> "To be a conservationist in the sense that I hope I try to be means that one must be an optimist. When looking at the countless problems that affect the conserving of our world as it is today, it would be very easy to give up, to say that what 'I' do is of such insignificance that it cannot possibly have any long-term effect or results would probably be very close to the truth. But it is not the attitude any of us can afford to have. The more of us there are who try and do a little bit, however small and however insignificant, the more it adds up."

I highly recommend this book to rehabilitators, both for a glimpse into the world of falconry and for a truly fascinating read.

-Marnie Allbritten-

Continued from Page 2

literature, etc. Is being the model rehabilitator why they are elected? Should they be judged for their performance on the board, or by how clean their home/center rehabilitation cages are or whether they have been observed to use imprinted animals in their program? Should applicants/board members have annual inspections to see that the rest of the board approves of their methods of wildlife care? What about IWRC board members who are not active rehabilitators? How do we evaluate them? How much further can we extend our expectations? Should there be a standard of dress? After all, if they look sloppy, they may give people the wrong impression of the organization. What about the political correctness test? In Alaska, the state governor recently suggested that all civil servants should be given attitude tests regarding political opinions while on probation and dismissed if they should fail. What about those on the board who believe in using live animals for educational purposes and those that don't? Boy, I sure wouldn't want to write an attitude test for the IWRC board!

I think that the model for police shootings may have merit in protecting the public but it is not the policeman's association that is removing the officer temporarily—it is his/her employer. IWRC is not a policing agency nor an agency of adjudication. It is a professional association of wildlife rehabilitators with the stated purpose of sharing knowledge in order to promote better care for wildlife undergoing wildlife rehabilitation. We have found over the years that working by consensus, setting goals for people to meet and offering positive reinforcement for those achievers (as emphasized by the standards and accreditations program) work better than punitive actions. If many people in the field decide on standards of care or methods of euthanasia or conduct issues, people will generally abide by the expectations because they want to be as good or better than their competitor. People like to be liked and respected for what they accomplish. No one wants to be remembered as the rehabilitator down the block that provided the worst care in the neighborhood.

Will IWRC suffer in stature if a board member stays on the board after such accusations are made? In the last decade several board members on both boards have been accused, one even charged legally. Has IWRC suffered a loss in prestige, recognition, credibility? Had these board members been denied the opportunity to contribute to IWRC, would the organization have suffered a loss greater than the protection afforded by removing the accused?

Even if we personally inspected every applicant's home, personal life, and work place—that is no guarantee that they would be unimpeachable by accusations. In my experience, what usually has triggered the "investigation" is some event that involves poor communication, anger, and a power struggle for control (over animal care or organization structure, etc.). Animals are always the alleged victims—but in reality our collective professionality suffers as well from these unresolved disputes. And, in the long run, it is the wildlife that does suffer from these conflicts.

Why then do we see these attacks on wildlife rehabilitators every so often? Well, I have a lot of theories—but that is a whole separate article. However, it is not just board members that have complaints lodged against them. I would like to note that some of the people who have been attacked are often at the forefront of the field. When I presented my rebuttal to the California Department of Fish & Game Commission, one of the commission members (Elizabeth Varnick, a biologist) said to me, "You are either one of the very best wildlife rehabilitators in the United States, or the worst—this commission, after listening to testimony for seven hours, cannot determine which you are. Go to the court, resolve the legal charges, and if you are innocent, we will reinstate your permit." That was some of the best advice I ever got. I think it is still good advice. I endured 25 days in court and eventually the system came through for me. I believe that people are innocent unless proven otherwise.

Maybe what is needed is a system for resolving disputes between wildlife rehabilitators. Veterinarians in California have such a program to resolve complaints before they become lawsuits. Of course, to implement a system such as the veterinary model requires wise rehabilitators to volunteer to act as mediators, which translates into yet more work for some of our best. Neither NWRA or IWRC is interested in being drawn into disputes between wildlife rehabilitators. So the real question is, are these recurring problems bothering wildlife rehabilitators enough to take their time and energy to develop and operate a system for complaints resolution? Any one have any ideas?

-Jan White-

International Wildlife Rehabilitation Council

Invites You

to our 15th Annual Conference

October 1-4th, 1992

at the

Naples Beach Hotel and Golf Club

Naples, Florida, USA

Come to Naples this year to learn the latest wildlife rehabilitation techniques and enjoy some of the most exciting natural areas America has to offer! The conference site is just a short drive away from the Everglades National Park, Ding Darling National Reserve, The Audubon Corkscrew Sanctuary, and that's not all. Many activities are available in this area from bird watching to canoe, swamp boat or buggy tours!

This year we have a real family resort hotel right on the beach in Naples for only $75 per night! Some of these rooms come with kitchen efficiencies for those who request them at no additional charge (first come, first serve)! The hotel has a golf course, tennis courts, and a pool for those who wish to indulge. Other activities available are windsurfing, and biking. And then there is the incredible beach that looks out over the Gulf of Mexico!

We are planning the a conference you will all long remember. Abstracts are still arriving but we plan to have a topics list out with the next *Wildlife Journal*. Our host group, *The Nature Conservancy*, is planning some great fieldtrips in the area to show off the beautiful sites and the wildlife.

You will want to take a extra couple of days to see the many natural attractions that the area offers! Make plans now. Fall will come sooner than you think! The hotel reservation phone number is (813)261-2222.

Call us at IWRC if you need more information. We are available at (707) 864-1761 from 9 am to 4 pm P.S.T. We will return your call if we miss you.

The Effects of Oil on Wildlife:

Research, Rehabilitation, and General Concerns

The Proceedings from the Oil Symposium held in Herndon, Virginia on October 16-18, 1990.



Sponsored by Procter and Gamble

This is a multi-disciplinary collection of twenty-two current works that provide the reader with an up-to-date overview of oiled wildlife rehabilitation. Papers included in the text are: Oil Spills and the Environment: A Review of Chemical Fate and Biological Effects of Petroleum by Peter H. Albers, Ph.D.; A Perspective on the Effects of Oil on Birds by Lynne Frink; An Assessment of the Capability of the Legal System to Assess Damages and Recover Costs for Damages to Natural Resources From a Large Oil Spill: The Case of the Exxon Valdez by Hope Babcock; Potential Effects of Oil on Manatees by Daniel Odell; Recommendation in the Rescue, Wash and Care Techniques and Rehabilitation of Oiled Pinnipeds in California by Patty Chen-Valet, BS, Laurie Gage, DVM, and Dawn Smith, AHT; The Toxicity of Petroleum Oils to Birds: An Overview by Frederick A. Leighton, Ph.D.; Pathology of Wildlife Following a # 2 Fuel Oil Spill by Virginia Pierce, VMD; Current Treatments for Anemia in Oil-Contaminated Birds by Jan White, DVM; Notes on Health and Safety Concerns When Handling Oil Contaminated Wildlife by Sallie Welte, DVM, Hentry Bryndza, Ph. D and John Embick; Surfactant Efficacy in Removal of Petrochemicals from Feathers by Henry Bryndza, Ph.D. et al; The Question of Avian Water-Repellency: Why are Some Birds More Difficult to Rehabilitate? Lynn Mahaffy; Water Hardness and Waterproofing of Oiled Birds: Lessons from the Nestucca, Exxon Valdez and the American Trader Spills by Curt Clumpner; Nutrition Support of Oil Contaminated Wildlife: Clinical Applications and Research Potentials by Susan Donoghue, VMD, MS, DipACVN; Newfoundland: Crossroads for Seabirds and Shipping in the Northwest Atlantic by John Chardine, Ph.D.; The Natural History of Oil Spills, by Richard Brown, D. Phil.; The Effects of Oil Pollution on Marine Bird Populations by John Piatt, Ph.D., Harry Carter, and David Nettleship; Status and Summer Distribution of Alaskan Yellow-billed Loons Following the Valdez Oil Spill by Judith McIntyre, Ph.D; Consideration in Planning Wildlife Protection Strategies in Response to Oil Spills: Alaska Experience by Pamela Bergmann; Results of the Eagle Capture, Health Assessment, and Short-term Rehabilitation Program Following the Valdez Oil Spill by Marjorie Gibson and Jan White, DVM; Advances in Rehabilitating Oiled Sea Otters: The Valdez Experience by Randall W. Davis, Ph.D.; Evaluating the Long-term Effects of Crude Oil Exposure in Sea Otters: Laboratory and Field Observations by Terrie M. Williams, Ph.D.; and Medical Treatments and Husbandry of Wild Sea Otters *(Enhydra Lutris)* During Oil Spill Rehabilitation by Pam Tuomi, DVM.

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