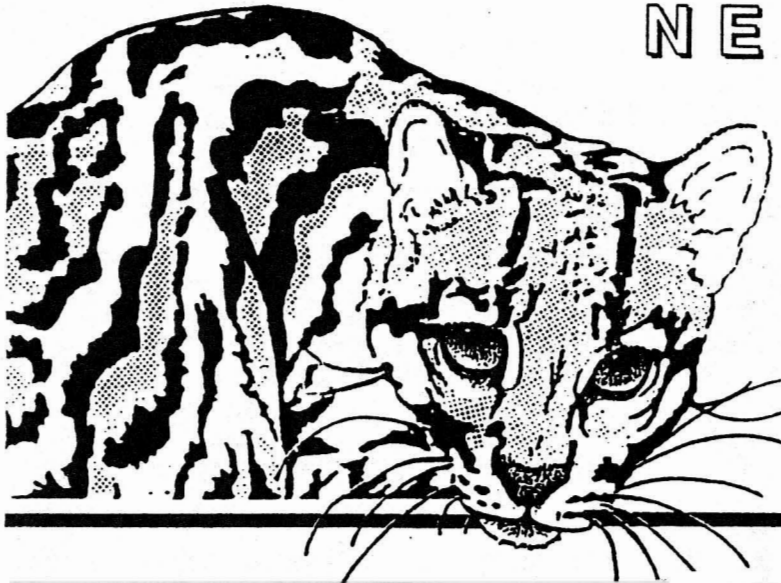


NEWSLETTER



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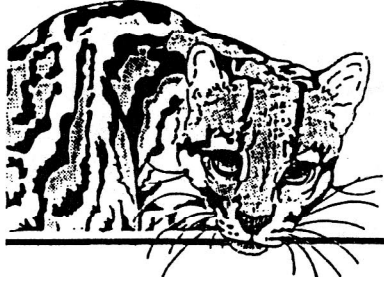
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Savannah Cat - MUNGO JERRY

Owned by Mike & Suzi Mutascio, Mungo is quarter hybrid. His Mom is a 50/50 serval-domestic cross and dad is a white Turkish Angora. This accounts for the fact that in each litter to date

at least one and sometimes more white males are produced. As is often the case in hybrids, these males have so far been sterile.



L.I.O.C. Endangered Species Conservation Federation Inc.

This newsletter is published bi-monthly by the LIOC Endangered Species Conservation Federation, Inc. We are a non-profit (Federal I.D.#58-9100616), non-commercial organization, international in membership, devoted to the welfare of exotic felines. The purpose of this newsletter is to present information about exotic feline conservation, management, and ownership to our members. The material printed in this newsletter is contributed by our members and, in many cases, reflects the point of view of the person whose name appears on the article rather than the point of view of the organization. The organization's statement of intent is contained in our by-laws, a copy of which can be requested from the Secretary/Treasurer. Reproduction of the material in this newsletter may not be made without written permission of the authors and/or copyright owner LIOC. Persons interested in joining LIOC should contact the Term Director in charge of Member Services.

Since the newsletter consists primarily of articles, photographs, and artwork contributed by our members, we encourage all members to submit material whenever possible. Articles concerning exotic felines are preferred and gladly accepted. Articles involving other related subjects will also be considered. Letters and responses to articles may be included in the Reader's Write column. Please send all newsletter material to the Managing Editor.

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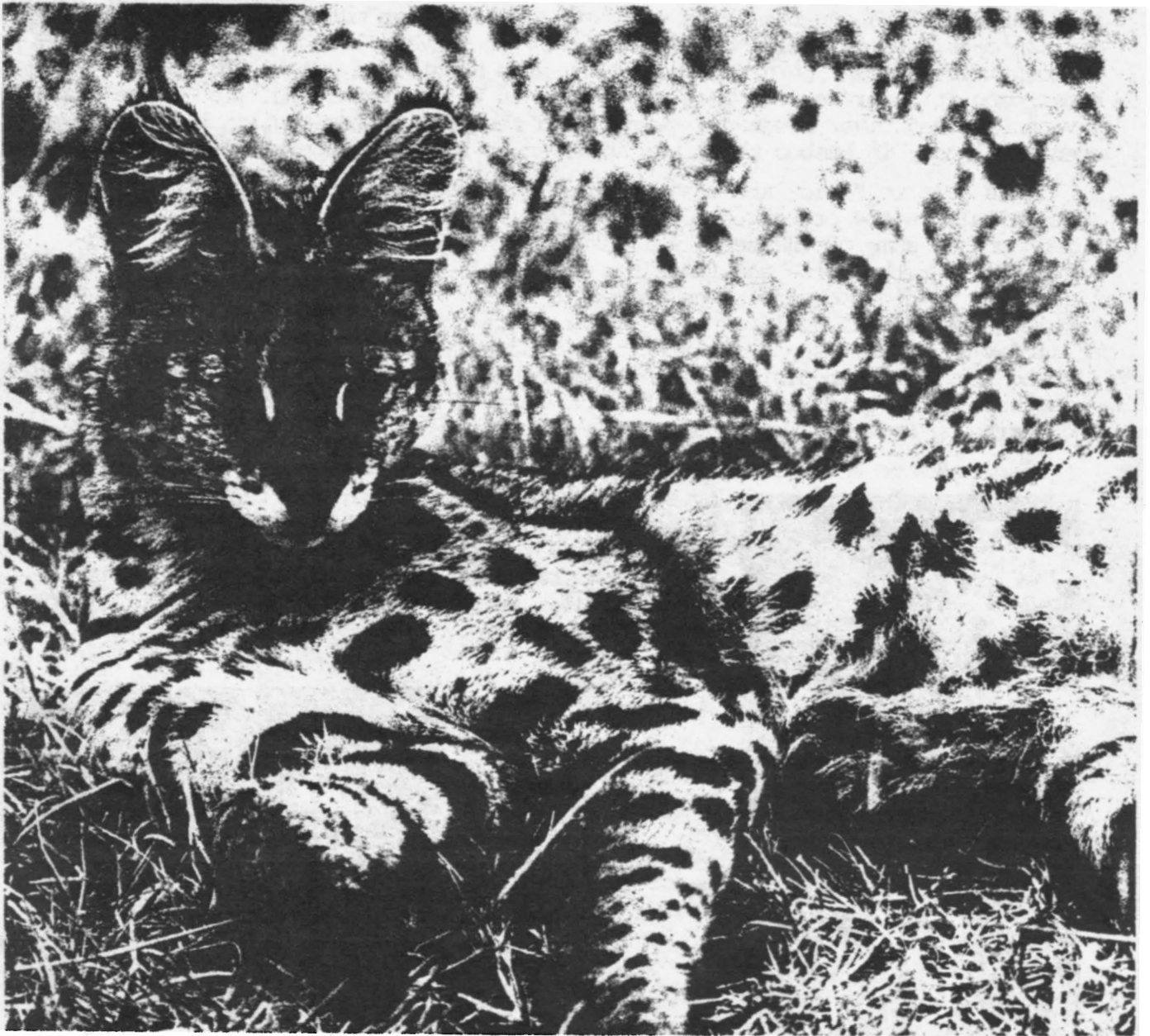
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The Servals of Gorigor

Elusive and shy of humans, these small cats thrive in the grasslands and marshes of Tanzania's Ngorongoro Crater

Text and photographs by Aadje Geertsema



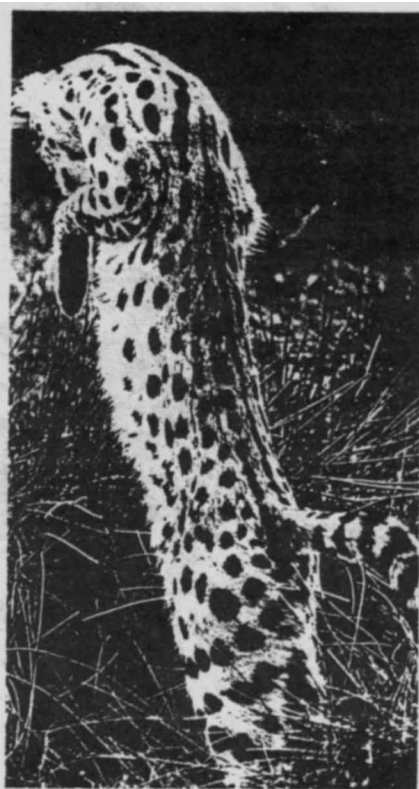
Only two black-and-white eartips were visible above the carpet of tall grass; had I not been following the female cat since early morning, I would have missed her altogether. After moving about for a moment, she disappeared. Once more only golden grass waved in the east wind that rolled across the crater rim. Such fleeting images were typical of my sightings of servals during the many hours I spent watching and following the small cats in northern Tanzania's Ngorongoro Crater.

On and off during a four-and-a-half year period beginning in the late seventies, I lived and worked in the Ngorongoro—a vast caldera with walls up to 2,000 feet high and a floor ten miles across. Watered by springs and streams, its grasslands sustain a great variety of wildlife, including the often-overlooked serval.

Because of its shyness, solitary existence, and mostly nocturnal habits, we know very little about the African serval (or, for that matter, two other small African cats, the caracal and the wildcat). Yet servals live throughout the African continent, except in areas where they have been wiped out by hunting and human population pressures. They are common in well-watered habitats of the grass savannas; along river reedbeds, swamps, and the edge of forests; in brush and open woodlands; in bamboo thickets; and even on high-altitude moorlands.

I was able to follow and observe these cats because tourism had accustomed most animals in the crater to motor vehicles. To my amazement, within two or three months, some of the servals I was studying became habituated to my Land-Rover. Neither the noise and fumes nor my occasional use of a spotlight and headlights during night observations seemed to bother them. From time to time, a female I called Giza would even go so far as to obstruct my observation efforts at midday by seeking shade in front of or under my car. On a number of occasions, I found the young, inquisitive male I had named Uchao looking at me with greenish eyes through the windshield from the Land-Rover's hood, or jumping onto the roof and making my task of keeping-up-to-the-minute records virtually impossible.

Despite these occasional close encounters, weeks would sometimes pass without my seeing the telltale eartips in the tall grass. At other times, I would find servals several days running. Still, over the four-and-a-half years, I was able to build up a picture of servals' distribution, density, ranging patterns, social interactions and feeding habits.



All servals have black ears with a distinct broad white bar. Oversize ears help pinpoint the exact location of prey in tall grass.



SERVALS - cont.

I sighted Giza during my first visit to the crater in November, 1977. Giza was a very approachable female, and as it turned out, she became my best known and most inspiring research companion, sharing her whereabouts off and on through my last sighting of her when I revisited the crater on a trip in 1985. Like all servals, Giza was slender, long-legged cat, about two feet tall at the shoulder and two to three feet long. The species' unusually long legs and neck suggest that it is especially adapted to living in areas with high grass and shrubs, and its huge, oval-shaped ears aid in hunting where visibility is poor. When away from the protection of vegetation, in open areas with short grass, a serval runs or adopts a slinking posture until it again finds adequate cover in taller grass and scrub.

I learned to identify individual servals by their unique spot and strip patterns, ear notches, and coat and nose colors. Eventually, I could recognize 36 servals on the crater floor, but I concentrated on the 13 living in a swampy, seven-square-mile area called Gorigor. With its seasonal waterholes, reeds and watercourses ending in grasslands, Gorigor was an ideal home for servals.

Servals typically range by themselves, although they are occasionally found in pairs or in a family group consisting of a female and her kittens. Soon after I found Giz, I located a fairly tame male I called Gayana. During the time I observed them, Gayana and Giz appeared to have stable, overlapping ranges in Gorigor - Gayana's was seven and a half square miles and Giza's six and a half. Generally, females ranges do not overlap, but male servals try to overlap their territories with those of as many females as they can. Since so little was known about serval movements in the wild, I tried as much as possible to follow animals for continuous 12 or 24 hour periods, both by day and night, in spite of weather or terrain.

I discovered that these cats are extremely active during the early morning and late afternoon - a so-called crepuscular activity pattern. In overcast and cooler weather, servals also hunt and travel in the middle of the day, but normally rest during the hottest time of the day and for shorter intervals during the night-in all, about 40 percent of each 24 hour period.

On bright, moonlit nights, I could follow the cats after sundown and found that they were particularly active between 10:00 and 11:00 P.M. and from 4:00 and 5:00 A.M., and that these bouts were invariably followed by a period of sleep. These nights were often the most challenging times spent down in the crater. Sometimes cloud cover floated over the east rim, making it next to impossible to see anything. And at times, not even hot chocolate, coffee or the view of the beautiful moonlit crater could keep me from dozing off-even while a serval was resting next to my car-and I would wake up with a start to find my cat gone.

Servals generally range one and a half miles each day and about half that at night. Gayana, however, patrolled far and wide within his range, and once I followed him for more than four miles. Males and females mark their territory by squirting or spraying urine on grass clumps, rubbing their faces on the ground, scraping the ground with their feet and claws, and defecating. (Some servals regularly scent marked the Land-Rover and sometimes even clawed the tires). Encounters between servals increased marking activities, and Gayana set a record by scent marking 556 times in the course of a day when he met and travelled with Giza.

Social interactions between male and female servals are usually limited to short travel and rest times together. Early one morning, for example, when I was following Gayana, he suddenly started moving into a fast zigzag pattern with his

SERVALS - cont.

Tremendously agile, a serval can bound more than 10 feet, spring more than 5 feet in the air and swerve in the air midpounce. Failing to catch its prey on the first try, a serval may switch to a bouncy zig-zag pounce. Young servals frequently "play" with their prey before eating it. After throwing a rat in the air and catching it, this young serval will again ambush it if it tries to scuttle off. A serval immobilizes prey by a blow with one or both front paws; once its prey lies stunned, a serval will often pounce again.



nose to the ground, alternately uttering short, barking, meows and purring loudly. When he caught up with Giza more than 150 feet away, the two traveled together for a while then stopped to rest. After a short time, Gayana rose and Giza rolled on her back. As Gayana stood over her, Giza slashed at him with her front paws. A scuffle ensued, with the two snarling and hissing at each other until they broke off and separated. After this encounter, which lasted 55 minutes, they went off in separate directions.

As the female begins to come into estrus, adult servals spend more time together. At such times, Giza and Gayana even hunted together. I remember following them along the road one day, watching them freeze, poised shoulder to shoulder as they detected prey simultaneously. They pounced at the same time, but Gayana got the mouse, which he ate while Giza watched.

Another time, Gayana joined Giza twice during the day. At the first meeting, after they had sniffed each other's faces, Giza snarled and struck out at Gayana when he came too near. During a second encounter, after the pair had been separated during two hours of rest, Giza walked up to Gayana, rubbed her side against his shoulder and underneath his chin, then rolled onto her side and over. Gayana remained standing, and when Giza moved off, he smelled the ground. **Giza then** lifted her tail to Gayana, but still he did not react, although they continued traveling together. This part of the courtship - as the female becomes attracted to the male in advance of actual mating - was all I observed between these shy creatures. Judging from the behavior of their close relatives, the domestic cats, and of servals in zoos, the female changes her evasive behavior and may approach the male and invite courtship over the course of several days.

Gestation for servals is between 65 and 75 days and the female raises her litter - usually 2-3 kittens - alone. Giza had her kittens in the marsh, but I was nonetheless able to see them. Early one morning, I found her carrying a mouse in her mouth and followed her for about a mile. About 130 feet from the edge of the marsh, she stopped and called. **Through my binoculars I saw three pairs of** ears behind a clump of reeds. Suddenly, one of the kittens - probably already

SERVALS - cont.

three or four months old - rushed out and galloped boldly toward Giza - and my Land rover. Who knows what the kitten thought of the great gray monster standing beside its mother? The others followed, meowing a greeting to Giza. After receiving a few tentative glances, the car was soon forgotten as one kitten started to eat the mouse while the other two suckled and Giza groomed herself along the swamp edge about thirty feet from the car.

Giza's activity pattern changed dramatically when she had the litter, for now she had to hunt constantly for herself and for her kittens, only resting very late in the afternoons. **As the kittens grew older, they tried to follow her, and it** sometimes took up to half an hour and much growling and spitting before she could leave them behind and start hunting anew.

As young servals became independent, they are usually driven out of the home range. Giza chased her son Ghafula away when he was about one and a half years old. Two months later, Gayana also chased and attacked Ghafula. I had been with Gayana all morning when he suddenly came upon Ghafula some thirty feet ahead. I could barely keep up with the servals as they raced ahead through the grass toward the swamps edge. They ended up in a wet part of the marsh, but I could see Gayana attacking Ghafula in the water. When I found Ghafula the next day, I saw he had a nasty flesh wound on his back.

Three months after this incident, Ghafula was still regularly seen on the border of Giza's range. After that, I lost track of him completely. Five years later, looking through photographs taken by a colleague in 1984, I was able to identify Ghafula. He had established a territory some six miles from his natal range. That he had moved so far is typical of young servals approaching adulthood - males especially. Expelled from the parental range, they become transient, probably for one or two years, roaming widely in erratic patterns as they move through the ranges of resident animals to find a territory to permanently settle down.

Servals prey on rodents, birds, snakes, lizards, frogs and insects; very rarely, they eat carrion. While hunting through the grassland, a serval scans the immediate surrounds and periodically stops to listen, at times for as much as fifteen minutes. Once a prey animal is detected in the surrounding vegetation, the serval's ears prick up and pinpoint its exact location, while its body remains tense and still. Only the tail twitches at times. Moving forward very cautiously, often with one foot poised in the air, the serval suddenly pounces upon the victim.

I saw servals catch frogs along the wetter parts of the swamp and stalk spoon-bills, ducks and other waterfowl. A serval will leap 3 to 6 feet into the air to catch a bird or an insect in flight. I watched Gayana barely miss a spurwinged goose: as the swipe of this front paw raked the bird, feathers fluttered onto the grass. Servals also flush prey by extensive sniffing or rummaging about in the vegetation: dabbing with front paws, digging and smelling, poking into holes. Snakes and lizards are captured by a pounce, followed by repeated slap-type strokes with one of the front paws.

In the crater, servals make good use of the tracks and road. Giza often walked up and down one particular stretch of road, turning around at more or less fixed points. By walking on the graveled surface, she could move silently and easily, listen and scan the areas on either side of the road. She pounced repeatedly into the high grass, and if successful, she carried the prey to the road and ate it there.

SERVALS - cont.

Young servals in particular like to play with their prey. Rats, mice and birds are thrown up in the air, caught and pounced upon, or ambushed again as they try to scuttle off. Snakes are watched intently as they try to slither off and are then stalked again. Normally, a serval catches and eats five to seven rodents or other prey per day.

As I was not always able to identify the particular prey that the servals caught (especially the rodents), I collected and analyzed their feces. Even though a wide variety of prey was available in the crater, rodents such as the vlei rat, and frogs were the preferred diet.

The servals in the crater rarely come into conflict with other small predators - caracals, wildcats, bat-eared foxes, and nongoses - or the larger cheetahs and lions. Although the serval often encountered hippos, rhinos, buffaloes and elephants, especially in the dark, they did not seem to be upset by them. Leopards are opportunistic hunters and, together with hyenas, are the servals' most probably "natural" enemies. Upon meeting a hyena, a serval crouched down or ducked and waited. If the hyena approached too closely, the serval bounded away in a series of confusing, darting leaps.

The Ngorongoro Crater is an ideal habitat in which to collect data on servals. Other findings on these cats originate mostly from the large farms and semi-agricultural areas in Zimbabwe and southern Africa. In spite of the presence of humans, servals are attracted to such places because of their abundance of rodents. To maintain a niche, however, these cats turn to an exclusively nocturnal mode of life. In equatorial Africa, servals are shot for their skins, which are worn during special ceremonies. Despite the continuous destruction of natural habitats in Africa, the status of the serval at present still seems relatively secure.

While my research only partly lifted the veil on the lives of these elusive and elegant creatures, perhaps others will uncover new aspects of serval ecology and behavior that will add to our understanding of this highly specialized member of the cat family.

Reprinted from NATURAL HISTORY

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VACCINATIONS IN ANIMALS

reprinted from ANIMAL FINDERS' GUIDE

submitted by Peggy Hayes

As a general rule, the term vaccination refers to stimulating an animal to build an immunity to a disease. Notice that the animal builds its own immunity by producing antibodies (Not antibiotics) to the disease. The vaccine stimulates it to build this immunity. Injecting a vaccine does not give it an immunity. Therefore, we sometimes forget that we need, first of all, a vaccine that will stimulate the animal to build its immunity, an animal that is capable of building an immunity (meaning old enough, with an advanced enough immune system), and an animal that is healthy enough to do that.

Also, many vaccines need to be administered more than one time to build up enough immunity to withstand a challenge to the disease against which the animal is being vaccinated.

Many of the live virus vaccines are rather fragile and need to be refrigerated. Vaccines that have been poorly cared for also will not stimulate immunity. Sometimes vaccines come in a powder form and are reconstituted with a liquid, the two being mixed. Once they are mixed, they last only a short time and cannot be put back into the refrigerator to be used a later date.

If one uses a syringe in which there has been another drug, such as an antibiotic, or even a killed vaccine, or most anything, it will kill the live virus and therefore it will not stimulate the animal to produce an immunity.

Mixing a killed vaccine and a live vaccine will kill the vaccine and, therefore, render it useless.

Many people think that the minute an animal is vaccinated they become immune. Not true. The vaccine stimulation can take up to two weeks, and sometimes multiple vaccinations are required before the animal is actually immune.

A problem in vaccination effectiveness is that sometimes sick animals do not have a healthy enough system to respond to a vaccine.

Remember that colostrum has lots of antibodies in it, and if the animal has been nursing its mother and gained a lot of antibodies into its system, it takes a long time for them to disappear. If an animal is vaccinated while nursing or shortly thereafter, the antibodies from the colostrum can sometimes block the vaccine. Then when the antibodies it got from its mother are gone it is susceptible to a disease.

Another problem in building immunity is the use of cortico steroid or cortosone type drugs. These drugs have an ability to depress inflammation.

This is their value. However, if an animal has been given cortico steroids prior to vaccination, it will depress the bodies' ability to create an inflammation or a reaction to the vaccine. In the long run, the animal will not become immune.

Some of the cortico steroids last a considerable length of time in the body and one must know their effects.

Obviously the animal becomes, so to speak, vaccinated as the result of having the infection. If the animal survives the disease, often there is lifetime immunity. Unfortunately, that is not always the case.

Vaccinations - cont.

For vaccination effectiveness, remember what we are building here are antibodies. The animal makes antibodies (not antibiotics), in their system in reaction to the vaccine. The vaccine makes the body's immune system react as if it had the disease, and so some immunity is imparted.

Various vaccines give short term or long term immunity. Read the package insert or consult your veterinarian as to the length of time the immunity will last from a certain vaccine.

Heavy infestations of parasites has an adverse effect on development of immunity after vaccination.

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CONSIDERATIONS IN DESIGNING DIETS FOR EXOTIC FELINES
by Lynn Culver

Feeding exotic felines nutritionally complete diets requires an understanding of the nutrient concentrations of the meat items, or prepared diets that you use. Most wild cats will eat a variety of muscles and organs. You, the caretaker, must decide which items, and how much of each to feed. I researched what foods are fed by various zoos to their wild felines. Not surprisingly, almost all zoos feed exclusively commercial products, with only a token amount of pure muscle meat, or bone added. This is largely due to the convenience and reliability of the commercial products. The same product is fed to the smallest feline as well as the lions and tigers. Nebraska brand Feline Diet, a raw horsemeat-based frozen loaf, is by far the leading commercial product fed by zoos, especially since its closest competitor, Western Plateau, manufacturers of Meat Eater Diet I and II, is no longer in business. Another product fed by zoos is Wisconsin brand Carnivore Diet, which is a raw, beef and chicken based frozen loaf. Hill's Zu-Preem, a cooked, canned, chicken-based feline diet was not used by any of the zoos interviewed. Still another commercial product available for feeding exotic felines is manufactured by Reliable Protein Products, and is a beef-based, moist, packaged food. More information about their Feline-Fare product can be obtained by calling 619-321-7533.

A representative for Animal Spectrum Inc., makers of Nebraska brand frozen Feline Diet told me that their company uses only USDA inspected, human consumption grade horsemeat in their product. The horsemeat used is range horses, which have been decided by their owners to be unsuitable for rodeo or riding purposes, and are mostly unbroken. It is these western horses that produce the bulk of the horsemeat for the European market. The less choice cuts of horse are used for Feline Diet, and then an extra amount of fat is added, to increase the caloric level, and increase palatability. He stated that fat is to felines what ice-cream is to humans - delicious. He related how Gunther Gebel-Williams switched from feeding his big cats whole horse carcasses to Nebraska brand Feline Diet, and reduced his total poundage of food consumed by over 50%. This was due to the better balanced nature of Nebraska brand Feline diet, which provides adequate protein levels, but has increased calories, due to the addition of extra fat, making it energy-dense, so that the feline doesn't have to eat as much to derive his daily intake of calories. Problems with this type of diet are a result of the non-abrasive nature of the ground meat, which can result in tartar build-up, gum disease, or nasal impaction. Many zoos compensate for this by offering shank bones (also sold by Animal Spectrum) for dental health. This product also produces unnatural stools. Nebraska brand Feline Diet comes in five pound frozen logs, and must be ordered in minimum amounts of 1000 pounds, and the price ranges from 60 to 75 cents per pound, including shipping. This is somewhat reasonable, if it does indeed prove to require less than one-half the poundage of a chunk horsemeat diet. Animal Spectrum also sells chunk horsemeat, but the price for that ranges closer to 92 to 93 cents per pound. Persons wishing more information about Nebraska brand Feline Diet can call 1-800-228-4005.

DIET - cont.

Wisconsin brand Carnivore Diet uses a combination of non human consumption grade beef and USDA inspected human consumption grade chicken. The beef used is mostly dairy cows which are either disabled, downed or diseased. They do not use dead cows. Their product is sold mainly to the greyhound industry but a few zoos, such as the Columbus Zoo in Ohio, use their product. Wisconsin Brand is higher in fat and ash than Nebraska's formula. It also has a slightly elevated level of calcium to phosphorus balance. Carnivore Diet is priced at about 53 cents per pound, but minimum orders are one ton. To find out more about Wisconsin brand Carnivore Diet, call 1-800-733-7417.

Hill's brand of Zu-Preem is sold exclusively through your local veterinarian, and you must contact them for price and quantity information.

Many private owners feed a variety of meats and organs. These can provide a highly unbalanced diet, if the caretaker does not take into consideration the inherent deficiencies of the various meats and organs, and take proper measures to compensate for the specific imbalances. To help private owners design adequate feline diets based upon the items available to them locally, I have gathered a variety of nutritional breakdown charts.

Assuming that Nebraska brand Feline Diet, the industry standard, is prepared in proportions that are correct for wild felines, you can compare and adjust your feeding items to more closely resemble those percentages.

One of the most informative, and useful articles about meat diets I have read, was "Meat Diets for Performing Cats", by Duane Ullrey and Joni Bernard. The focus of the article was to formulate a diet that could be both easily handled and nutritionally well balanced for performing exotic cats which are fed the bulk of their meals in boneless meat tid bits as training reinforcements. Deer, horse and cow were analysed for their vitamin, mineral and, protein content. They concluded that if skeletal muscle used as food for exotic cats is obtained from thin, older horses and cattle that are of low value for human food, it will be deficient in calcium and vitamins A, D, and E. Phosphorus, copper, manganese, and folacin will be somewhat deficient as well, and supplies of thiamin will be marginal, so supplementation will be necessary. For big cat caretakers, Ullrey and Bernard concluded that to balance the calcium/phosphorus ratio and vitamin deficiencies in 2 kilograms of horsemeat, 15 grams (1 tablespoon) of steamed bone meal (30% calcium, 12% phosphorus) and one Centrum tablet or one Sentral-Vite tablet should be added. This formula produced .88% calcium, and .69% phosphorus. Or 5 grams of calcium carbonate and 10 grams of dicalcium phosphate can replace the steamed bone meal. That combination created .83% calcium and .69% phosphorus. One word of caution, bonemeal apparently comes in several Ca/P ratios. The bonemeal I can buy at my local feedstore is only 24% calcium, 12% phosphorus. One must take into consideration not only the proper Ca:P ratio, but also the minimum amount necessary. For growing kittens or lactating females should be receiving, a minimum of 160-200 mg/kg body mass Ca daily.

To balance the levels of calcium and phosphorus for cow or deer meat, Ellen Dierenfeld, nutrition advisor for the New York

DIET - cont.

 VARIOUS MEAT FOODS FED TO EXOTIC FELINES

Percentage of; MEAT TYPE -	Protein	Fat	Ash	Ca	P	Ca:P
----- Skeletal Muscle Only -----						
HORSE *	20.56	10.0	1.08	.013	.091	1:7
COW *	17.64	21.0	.84	.008	.154	1:19.25
DEER *	19.5	4.0	1.0	.009	.177	1:19.6
RABBIT **	20.8	7.62	1.08	.014	.224	1:16
CHICKEN **	19.6	11.9	1.00	.010	.190	1:19
----- Whole Animal - with bone -----						
CHICKEN **	19.0	9.01	3.18	.65	.47	1.4:1
RABBIT **	20.8	7.62	3.8#	.91#	.55#	1.6:1#
MICE **	19.9	8.8	3.65	.84	.61	1.4:1
RAT **	21.6	7.6	3.44	.69	.51	1.4:1
EGG +	12.88	11.5		.054	.21	1:4
----- Parts -----						
Beef Heart +	16.9	3.7		.005	.19	1:38
Beef Liver +	20.0	3.2		.008	.35	1:44
Beef Kidney +	15.4	8.1		.011	.22	1:20
Chicken Necks +	7.42	4.51	17-50~			2:1
----- Commercial Product -----						
Nebraska	19.0	12-14	4.5	.60	.50	1.2:1
Wisconsin	17.5	17.9	6.1	.3	.1	3:1
Meat Eater I (no longer available)	17.0	.8.5	4.9	1.2	.5	2.4:1
Meat Eater II (no longer available)	17.0	11.0	5.5	1.2	.8	1.5:1
Zu-Preem	16.0	16.2	2.6	.5	.36	1.3:1

* Meat Diets for Performing Exotic Cats; Ullrey & Bernard

** New York Zoological Society

+ Food Values of Proportions Commonly Used; Bowes & Church

Educated guess, based on comparison of chicken to rabbit

Data variation based on Michael Walsh, DVM, & Murray Fowler, DVM

DIET - cont.

Zoological Society, suggested to me that I add 10 grams of calcium carbonate (40% Ca) for each kilo (2.2 pounds) of muscle meat.

The proper calcium-phosphorus ratio for the domestic feline is thought to be around 1 to 1.5 parts calcium to 1 part phosphorus. Of the items covered in the accompanying chart, beef liver is the most unbalanced, with a calcium/phosphorus ratio of 1:44, requiring serious calcium supplementation. Liver is also very high in vitamin A, so it should be fed sparingly. Chicken necks have plenty of calcium, but offer an extreme overdose of ash, ranging from 17 to 50%, while the ash requirements for the domestic feline is thought to be around 4%. Another problem with chicken necks is their low level of protein. At about 7%, they are less than half what a domestic feline requires. But if chicken necks are fed as a supplement to a high protein, low calcium meat such as deer or cow, in the proper proportions, the diet could be balanced.

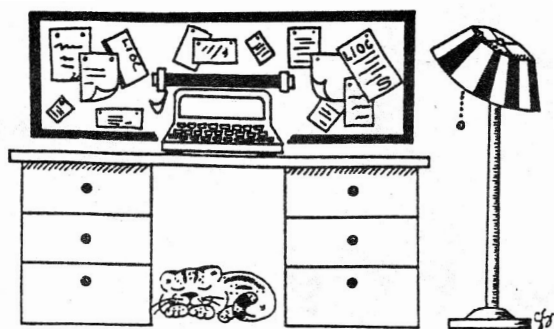
The data I have provided is frustratingly limited. I had access to rabbit meat breakdowns, but not whole rabbit with bone for calcium, phosphorus or ash content. Chicken meat has less overall calcium and phosphorus than rabbit, and has a Ca/P ratio higher in phosphorus than rabbit. I multiplied the rabbit calcium value by 65, based on chicken, and the phosphorus value by 2.5, same as the chicken, to get my guestimate values for rabbit with bone. That approach seems to have resulted in an elevated calcium level.

Other foods possibly fed to large wild felines might be beaver, duck or fish. The only source of information on those animals I located was from Tennessee Wildlife. The breakdown for beaver was for cooked, roasted animals. Beaver is a favorite wintertime food for our cougars. It contains 248 calories per 100 gram portion, and has a protein level of 29.2% and fat levels of 13.7%. These percentages are elevated due to the water loss of cooking. Tennessee Wildlife also gives a breakdown of domestic and wild duck. Raw domestic duck is 16% protein and 28.6% fat. Wild duck is 21% protein and 15.8% fat. Does that tell you anything about what human management of animals has done to the fat levels? Bass and catfish have similar protein levels being 18.9 and 17.6% respectively. They are also low in fat being 2.6% and 3.1% respectively.

I could not locate data for cow, horse or deer with bones. Rib bones are small enough for a large wild feline to gnaw and digest. Likewise, I couldn't find data on calves. I have on occasion been given a calf by my farmer neighbors, to feed my cougars. I'm sure that would provide a meat much lower in fat content than adult jersey cows, which is the animal used for the Ullrey and Bernard study, and due to the consumeable nature of the calf ribs, would provide a significant amount of calcium.

The major source of variation among animal muscle, regardless of species, is the fat content. Season, age and health of the animal all contribute to it's fat level. An energy-dense diet high in fat will require an increased supplementation of vitamins and minerals to insure nutrient requirements are met. *

Modern animal husbandry requires medicine and chemical additives for the feed of meat animals. I feel safer feeding my cougars a varried diet. One must remember that human-grade, mass produced meat is considered safe because humans don't eat it three times a day, 7 days a week, our cats shouldn't either.



FROM UNDER THE EDITOR'S DESK

The Bengal Cat folks must be doing at least one thing right, they're sure getting a lot of press lately. And, the prices I'm seeing asked for these little cats run as high as a pure exotic in some cases!

But unfortunately I see a lot which I also feel is wrong. Now please understand that my personal feelings are mixed when it comes to hybrids of any type. I feel a sense of loss that the exotic side of the equation is not perpetuating itself...there are so few of the smaller cats being bred for all the sad reasons we are well acquainted with. I can also understand those who want that exotic look and to a much lesser degree the exotic intelligence and demeanor without taking on the challenge of a pure exotic, a cat diluted down to limited instincts.

Now admittedly I cannot tell you the difference between the various spotted domestics....Egyptian Mau or Ocicat - all the same to me. And now in the February Cat Fancy, is another article about Bengals.....cats that now look run of the mill.....with some semblance of spots, and now bengals without spots, marbled they call them?

But in looking at these animals, I don't see a bit of leopard cat. Gone is the distinctive head. And sadly too gone is the magnificent coloration. Leopard cats don't come in "red" or "rufous" coloration. Leopard cats are shades of gold with black spots! Leopard cats don't come "marbled". Some recent articles go to great lengths to explain the marbling as desirable. But again, if you know the real thing (a leopard cat), you know that this may just be a mistake from tabby blood that someone is trying to make a buck on.

Judging from the ads in the various magazines and the prices asked, someone is making a buck! I am saddened at this. Not that any reputable breeder does not have the right to make a profit, but that we have strayed so far from the originally stated object of breeding a cat with the distinctive coloration and pattern of the leopard cat, but with a more amiable temperament.

So now the bengal cat can be added to the list of spotted domestics, they don't look exotic and it seems the trend is to sell the mistakes as "rare" creating more demand but straying ever further from the exotic.

Shirley



NORTHWEST EXOTIC FELINE SOCIETY

SPRING MEETING REPORT

Our spring meeting was held at the home of Dixie and Jack Fritzgerald in Mt. Angel, Oregon. They have a beautiful ranch where Jack raises horses and Dixie raises Ostriches, Emus and Rheas. We got to see large eggs in incubators, small chicks and large birds that towered over us. Dixie is extremely knowledgeable in her field and it was very interesting. She also raises Bengals and is constructing a nice compound for them.

Because of the large number of people present, we dispensed with the business portion of our meeting. All Board members were present. Mary Parker and Liz Ghent drove down from Seattle. Ethel Hauser brought a tiny Safari kitten, soon to be placed, and Corrine Cary brought her Bengal. There were several prospective members present who owned Hybrids and various animals. We were glad for such a large turnout and it was a beautiful day.

Our guest speaker for the day was Dr. Willard Centerwall. I know some of you will remember him for the San Francisco Convention some yeras ago. He went from Engineer in WW11 into medicine, specializing in Pediatrics whcih naturally led into genetics. He said there are only two things which influence a person, animal, etc. . . . They are Heredity and Environment - - which is more important?

Genes determine maximum potential. Environment determines how close you can come to it.

Inheritance = Egg	+	Sperm
19 Chromosomes		19 Chromosomes

Scientists have only recently learned how to match up chromosomes. New World cats have 36 Chromosomes. Chromosomes determine sepcies. Cats are more closely related than other species and are the easiest to cross.

MULTIGENICMULTIFACTORAL =

MANY GENES - MULTIPLE FACTORS

When working with domestic cats, it is impossible to tell how many recessive genes a cat has in her background. Red in cats is NOT a healthy gene. Orange, red, yellow to pale creme depend on a number of recessive genes. Orange is excellent to bring out gold in Bengals. Ranges of kittens in the same litter can show some of the recessive genes.

Dr. Centerwall is an extremely interesting speaker and we thoroughly enjoyed his wit and wisdom. He was delighted to be in contact with fellow feline breeders. He also raises exotic water fowl. He would be interested in receiving current articles on hybrids. (Please send to him at Member Services and they will be forwarded.)

Northwest Exotic Feline Society gave Dr. Centerwall a membership in LIOC in appreciation for his service.

Shirley Malar was our next speaker on Diabetes in Servals. This seems to be a fairly common malady in Servals but not everyone is willing to give the daily shots. Neutered males have higher incidents of Diabetes. It is also more prevalent in overweight cats.

Things to look for are:

1. Change of attitude
2. Behavioral changes
3. Appetite changes
4. Loss of appetite
5. Water consumption

She showed us the difference in needles and explained how she gives the shots. She has to take a urine test daily on her cat to determine the blood sugar level. She also showed us a new cat muzzle which is very simple to slip onto a cat and fastens with velcro. It comes in several sizes.

The rest of the afternoon was spent in visiting and snacking. Thanks to all who contributed. A MOST ENJOYABLE DAY.

Submitted by Barbara Wilton



From left to right, Ken Hatfield, Dr. Centerwall, Barbara Wilton, Mary Parker



MAY MEETING REPORT

The May meeting was held at the home of Ginger Christmas, in Hillsboro. Problems with kittens eating foreign objects was the subject of discussion since one member was having this problem. Also discussed was the upcoming Convention. Members were asked to gather items for the sale table and for the auction. A trip to the West Coast Game Park was planned for the 3rd weekend in June.

Next month Patti and Ray will host the June meeting. We had our usual raffle and dollar game. The rest of the day was spent visiting with old and new friends. We had 34 members and guests attend. I did not attend as my Siberian Lynx, Kisa, acted as if she was about to deliver any time. However she did not have her kittens until Tuesday. She had two males.

Both Bill Donaca and Jerry Boyle were surprised with a Birthday cake at the meeting as each had a birthday that day.

JUNE MEETING REPORT

The June meeting was held again in Hillsboro at the home of Patti and Ray Radcliff. We had a really good turnout with 48 members and guests, plus 5, four-legged guests attended. Not only did we get to enjoy Patti and Rays five cats (bobcats/lynx's) we enjoyed seeing one of their grown kittens from a couple of years ago. We also met one of this year's kittens. Cheryl had her three month old Chaus/domestic hybrid there, Jackie had her baby Couti and Gayle had her lynx there. Then we had one more visitor attend. It did feel a little uptight as Ginger brought her 9 week pomerian puppie.

Gayle reported her Chaus/domestic female Starr, had four kittens and both Starr and the babies are fine. She was bred to a full Chaus male.

We had 2 guest speakers. A lady talked to us about her company making us jacket, hats and other clothing with our emblem on them.

Next the Kustum Mix men were there to tell us about their new Exotic mix. Anyone interested can contact them for free samples. Its a good diet. The cats have given this product mixed reviews. Some of the members are already using it and their cats do like it. However other cats don't like it, such as my lynx.

A report on the Game Park trip was given for those who were unable to go. Sounded as though everyone had a good time seeing the animals, and playing with the babies. Not only did they have 13 kittens to play with, including lynx, both Asian and snow leopards, and tiger, but they had many hooped babies, raccoon, fox and more.

We planned for Convention, gathering items, and counting heads. Our meeting ended with the usual raffle and dollar game.

The next meeting will be held the last weekend of July in St. Helens at Swede and Marlene Truedsons.

SEE YA GAYLE

FROM YESTERDAY. . . .

Exotics are the nicest things that ever happened to people, even when they are nibbling on your toes, arms, neck, etc., purring or parading back and forth about your house.

An Exotic can be sweeter and badder oftener than anything. It can jump around and leap, make funny noises that frazzel your nerves but be a beauty and an agel sitting next to you.

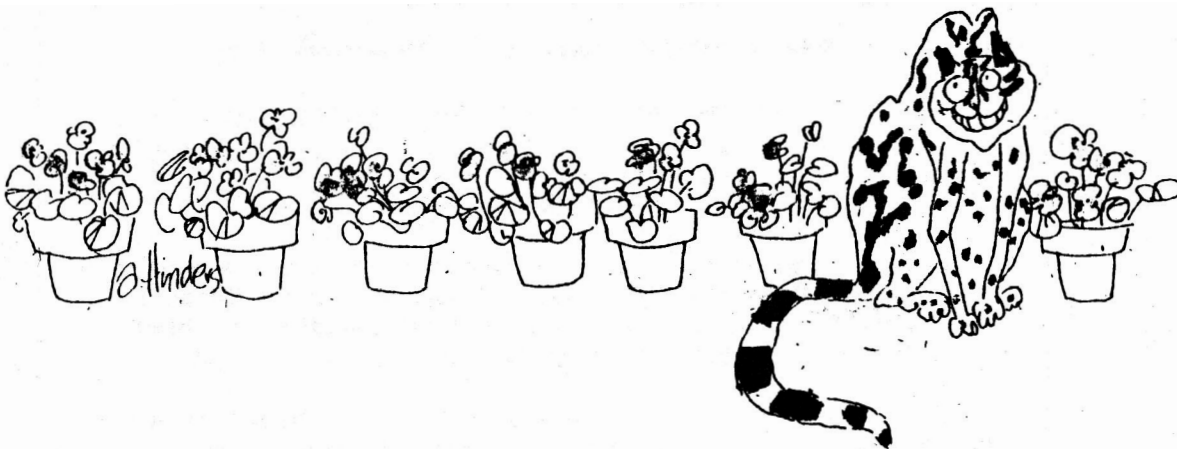
Exotics are available in many colors, yet Mother Nature always selects your favorite color when you place your order. Exotics have the scream of the wild, subboriness of a mule, antics of a monkey and naturally the curiosity of a cat, shyness of a fox and a mysterious mind.

Exotics don't care for visitors, large dogs, or staying in the yard. Bothersome when you are busy, prettiest when provoked, busiest at bedtime. Can cause you more grief, joy, irritation, satisfaction and embarassment.

They can muss your hair and your dignity, spend your money, your time and your temper. They are a nerve-racking nusiance and a noisy bundle of mischief. Wit h the world a mess they can make you feel a king when they climb on your lap, purr in your ears and seem to say "I love you".

-"SNOOPY"-

The above essay was found amongst the memrobilia of Art Freeman."SNOOPY" is a bobcat, and there were several letters from him in the '60's. we think he may have lived with the Kernels but have no way of verifying this.



Readers Write



Dear Shirley,

I wanted to share with the readers of LIOC an opportunity to have their own feline portrait painted or drawn by an excellent realist artist, Monta Black Philpot.

Monta instructs art classes at Rich Mountain College here in Mena. I studied oil painting under her three years ago, and Cinnabar, the cougar in this portrait, and his brothers, Arjan and Sharu were born while I was learning to oil paint. Early this past spring Monta and her daughter stopped by and shot two rolls of film. This photo of the prismacolor pencil portrait of Cinni and I is based on one of the photos she shot that day. The original portrait is 22 inches by 26 inches and looks fantastic. She captured his intense love for me "purrfectly". Cinni likes to stand up and rub his face and head all over Bart's chest and my chest, then he just lays in our arms. His brothers watched this behavior with interest and then they too began displaying it. Sometimes all three will line up for a chance to hug their humans. They have never betrayed our trust while so close to our faces.

Monta loves felines. Her personal collection includes four domestics. She really enjoyed doing this portrait of us, saying Cinni's image called her back into her studio to continue working, many a night. She would love to do more exotic feline portraits. She likes to do commissions, and would be happy to give estimates based on a photo of the feline, and the medium requested (oil or prismacolor pencils) and the size of the finished portrait desired.

Lynn Culver

Note: See photo on LIOC newsletter back page.

Fine Art Portraits By Commission

For further information please call 501-394-2503

Monta Black Philpot

Monta's studio is located in the Ouachtia Mountain area of Western Arkansas. Portraits are Monta's specialty and the artist feels that capturing the personality of the subject, as well as the physical characteristics is of foremost importance in portrait painting.

Studio 402 Polk Street

P.O. Box 815

Mena, Arkansas 71953

SAD NEWS FROM TEXAS



Jean Hamil writes:

Sassi, my 19 year old bobcat died. She lived with me for all but 6 months of those years. She was a beautiful and loving, tame cat. She is missed very much.



Bobcat Sassi -1972-1991
She lived a good life with me
and I enjoyed her very much.

NEW KANSAS LAW ALLOWS THE STATE'S LIVESTOCK COMMISSONER TO REGULATE THE IMPORTATION AND SALE OF EXOTIC ANIMALS.

The Kansas legislature has passed, and Governor Joan Finney has signed, a bill that is expected to increase the budget of the state's animal-health department. It stipulated that the revenues generated by the licensure and registration fees required under the state's animal dealers act are to be credited to a new fund and spent only to administer and enforce the animal dealers act.

One of the provisions of this new law will include authorizing the state livestock commissioner to promulgate rules and regulations on the importation and sale of exotic animals.

Condensed from the Humane Society of the United States Newsletter
contributed by Jean Hamil

ENDANGERED CATS VICTIMS OF 'CANNED' TROPHY HUNTS

In a shadowy and grisly underground, dozens of great cats - African lions, endangered leopards, Bengal tigers and jaguars - are dying each year in Texas at the hands of "trophy" hunters and unscrupulous collectors.

Around the country, many more die under similar circumstances because there is a demand for canned hunts and for pristine hides for mounting. Answering a demand is a network of private breeders who sell the cats to individuals or at auction.

Two men pleaded guilty recently in San Antonio to various charges including killing an endangered black leopard during a canned hunt.

Ty Bourgeois, a 27 year old south Louisiana native, paid his friend Dan Moody \$3,000 to shoot a captive-raised black leopard. Bourgeois will testify against his friend Moody, who set up this hunt, and Ron McCloud, who bought the black leopard at the Raz livestock auction in Harper, Texas, and sold it to Moody, in a plea bargain deal which will drop his felony charge and will probably result in just a fine for Bourgeois.

Moody claims he was told by two state game wardens that the hunt was legal, though he declined to name the two wardens. In a home video of the "hunt", the smallish leopard, declawed and unable to fight off a pack of dogs waiting outside its cage, makes a deperate run to safety under one in a line of pickups parked in an open field on a ranch in Leakey, about 75 miles west of San Antonio. The shooter and a number of spectators watch from the backs of trucks as the pack of hounds flushes the cat from beneath the truck and sends it fleeing across the field.

Scant yards away, though, the cat is caught and stopped by the dogs, which send up a curtain of dust as they swirl and nip and bark at their quarry. Bourgeois can be seen approaching the melee with scoped pistol in hand, but the dogs are too numerous and frantic and his is unable to get a clear shot.

An unidentified young man, in T-shirt and blue jeans, moves in to poke at the leopard with a stick, trying to force it to break out of the ring of baying dogs. The distacted animal soon wearies of the fight and slumps to the ground exhausted as the camera shuts down.

When the action picks up again, Bourgeois already has killed the leopard and is accepting slaps on the back from outfitter Dan Moody. Then the pair flank the dead leopard for more photos. Moody pulls back the leopard's lips to show the long, white fangs. The video ends.

During Bourgeois' federal pleading, Assistant United States Attorney Collis White said the leopard's killing was an example of "canned hunts where there is no chance of survival". So-called canned hunts, where animals are released from cages, often into enclosed areas, have resulted in the deaths of endangered animals in other states as well, including Oklahoma, Arkansas, and California.

Availability of adult great cats for canned hunts is blamed on unregulated, unscrupulous private breeders. According to Jerry Stone, head of large mammals at Gladys Proter Zoo in Brownsville, laws protecting great cats are ineffective. They cannot be effectively enforced because there are so many breeders and so few inspectors and law enforcement officials.

"There are large numbers of great cats out in the community", Stone says. "Private breeders breed the hell out of them because they sell the hell out of them. A lot of them die, or they get shot."

Mickey Sapp, a San Anonio breeder of big cats, has been in the business longer than anyone else in Texas and at one time kept as many as 50 animals. According to U.S. special agent Alex Hasychak, several animals that Sapp sold wound up being killed for their hides. "One was shot in its cage, another poisoned in its cage", Hasychak says. A third died under questionable circumstances. "There was one leopard and two jaguars."

Under Texas law, African lions can be shot under any circumstances. "There is no restrictions on lions", prosecutor White said. "they're the same under Texas law as a Hereford or Jersey cow." Anyone can buy and shoot an African lion. The recent coverage on the popularity of shooting captive-bred great cats has caused a nationwide uproar. In Texas, legislation which would seriously restrict private ownership of captive wild felines is being drafted. According to White, who prosecuted the most recent leopard case, three things needed to be addressed before Texas could begin putting an end to the underground market in big cats. White suggested 1. The state rewrite the states' definitions of wildlife and livestock. 2. Revise the states' endangered species list so it conforms with the federal list. 3. Prohibit the breeding of big cats in captivity.

condensed from articles by Mike Leggett
Austin American-Statesman newspaper July 20 - 23, 1991

Contributed by Katie Knight-Monteiro

The U.S. Department of the Interior claims 3,600 domestic species are being considered for endangered status. A recovery plan to save these is estimated to cost \$5 Billion - current USDI budget is \$8.4 million.

A COMMENTARY: Are Our Attitudes Causing Canned Hunts?

In recent years, a vocal minority of those who deal with wild cats every day have been saying to LIOC members, "If you don't get serious about the laws, the opinions of the public, how and to whom your cats are sold, and how they are presented to the public, the choice will be taken away from you..." The story in this issue concerning "canned hunts" in Texas and the call for legislation that has resulted is an example of that prediction coming true. Are LIOC ESCF members knowingly providing cats for canned hunts? No. At least not in Texas. But are they contributing to the environment that leads to canned hunts - and the ensuing legislation that may very well close down all private wild cat ownership? Emphatically, Yes.

The called-for legislation is not targeted at the canned hunts. It is targeted at the people and situations which provide fodder for the whims of those who would shoot a hand-raised captive-born big cat in an enclosed field. The people and situations that provide the "excess" cats to careless auctions to be "disposed of" in whatever manner they may. The breeders and brokers who threaten unprepared private owners with, "I don't know else to do with her, she'll just be turned into a rug if you don't buy her". The situations that create the improperly placed big cat who is shuttled from home to home until it finds itself in the auction or with the unethical broker. The people and situations that breed and sell big cats.

The called-for legislation is not a response to the calls from those who are aware of the abuses and wish to see the abhorrent treatment of wild cats stopped; it is not the response to the opinions of those of us who *know* what is right and wrong with wild cat care. It is the response to a series of activities that make the average citizen - and legislator - shudder and demand a fix be put in place. There is, for Texas and the surrounding states, no more time for a thoughtful evaluation of the very realistic restrictions that should be required of any wild cat owner - those restrictions that the most responsible members of this organization naturally expect of themselves and their colleagues.

Not only is new legislation virtually guaranteed in Texas, but chances are great that the move will spill over to surrounding states with similar problems. And then, very possibly to many other states. Remembering the lesson that all legislation is not necessarily bad, current activities *might* actually be in the interest of the animals. But, it is doubtful that any of us with experience in the realm of legislation will reach that conclusion for normally, as in this case, the changes are not an unemotional well-thought-out response to the calls of those who are experts. Rather, they are an emotional and uninformed response to incidents which are totally unacceptable to the general public.

Read back in the newsletters as far as you can. Talk with those who have watched the evolution of our legislative and enforcement environment. You will see clearly that every action on the books is *in response to a problem*. Those whose job it is to act do so - they enact restrictions based on *incidents*. Those who are knowledgeable about the subject - like LIOC members! - don't provide the self-regulation and public presentation that could balance the issue before it comes to a crisis situation such as the one we find ourselves approaching.

So, it would seem, we - those who know about the special needs of the cats and who breed, buy and sell the cats - are in the uncomfortable position of contributing to the problem. Though we in LIOC ESCF don't set up canned hunts or knowingly sell cats to those who do, we do an awful lot of other things that support similar atrocities. And all the other negative publicity.

Some of us buy cats from people we know nothing about (and correctly suspect quite bad of). Some of us buy cats from breeders who we *know* practice terrible husbandry and sales - just to save the cat! - and in the process simply provide more money and more encouragement to the practice. Some of us pretend we don't know that the kid buying a cat from us really *isn't* living in the country and really *doesn't* have any of the resources to properly keep the cat. Some of us sell anonymously or in other cities so that we don't have to deal with the problems of private ownership. Some of us forswear existing legislation - and encourage its avoidance. And most of us are silent and invisible when *we* are the ones who hold the most information about the issues pertaining to the big cats.

None of these activities are in the interests of the cats. All of them add another straw - or boulder - to the proverbial camel's back of public tolerance.

"They" are much bigger than we are. "They" can and will enact legislation as their only recourse to cat breeder, broker, and buyer unacceptable practices. WE have a choice in what we do and how we present ourselves. WE are members of an organization that has valuable knowledge and much control over the situation of the cats. WE know that wild cats are precious wild resources to protect. It is high time we take the course that represents our interests in the animals - for both information and self-regulation. Though its too late in Texas.

Katie Knight-Monteiro
Director, LIOC ESCF Advertising & Publicity
President, ExotiCare

RARE JAGUARUNDI CAUGHT IN MEXICO

by Jim Morris

After nine years of frustration on the part of Texas researchers, a graduate student working in Mexico last week trapped a jaguarundi, an extremely rare cat that once inhabited the thickets of Texas' Lower Rio Grande Valley.

The 8-pound cat was captured Saturday on a ranch in the Mexican state of Tamaulipas, about 150 miles south of Brownsville, by a student from Texas A & I University in Kingsville.

"It's very important to us," said Mike Tewes, director of the Feline Research Program at Texas A & I's Caesar Kleberg Wildlife Research Institute. "If we are able to capture additional jaguarundis for research, then it will provide critical insight for (the animal's) conservation," he said Tuesday.

A jaguarundi weighs about 10 pounds, on average, and its coat is either gray or reddish-brown, Tewes said. It has a slender body and a long tail, resembling weasels or otters.

The female jaguarundi was fitted with a radio collar, and blood was drawn from it - for use in disease and genetics studies - before it was released. Researchers, who have had to rely on anecdotal information about the species, are tracking the cat's movements in the wild and hope to learn more about its behavior and needs.

Tewes' group is working with the U.S. Fish and Wildlife Service to rebuild the populations of the jaguarundi and another furtive cat once common in Texas, the ocelot. Both cats are on the federal government's endangered species list and have been victims of severe habitat loss. The ocelot at one time was found as far north as Arkansas.

An ocelot weighs 20 to 25 pounds, he said, and its coat is yellow, with black spots.

Tewes and his associates have been trying to capture and collar both species since 1982. They have trapped 55 ocelots in Texas and four in Mexico, but until Saturday had not been about to trap a jaguarundi.

"We've been doing long-term and in-depth ecological, behavioral, and distribution studies of the ocelot, but we've done nothing with the jaguarundi", Tewes said. "It hasn't been studied comprehensively in the wild".

Tewes said he doubts there are more than 15 jaguarundis left in Texas. He estimates the state's ocelot population at no more than 120.

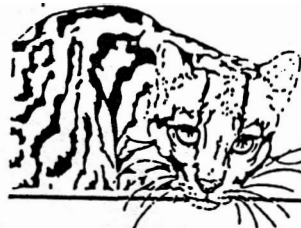
Reprinted from the July 24, 1991 Houston Chronicle

Contributed by Katie Knight-Monteiro



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L.I.O.C. Endangered Species Conservation Federation Inc.



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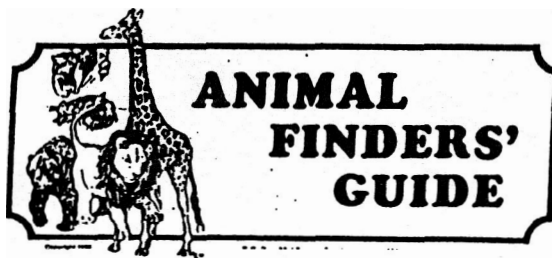


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"Best Friends, Lynn and Cinnabar", a prisma pencil portrait by artist Monta Black Philpot. See Reader's Write page 20.