ALIVE

ZOOLOGICAL SOCIETY
OF MILWAUKEE COUNTY
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Winners of Contest: Role and Importance of Zoos in the World

By Ellen Kuphal, Grade 5
Campbellsport

There's a lot more to zoos than just watching the animals. It's watching, learning, and observing also.

Learning is probably a very important part of visiting a zoo. Children can see how certain animals live in their habitat, as well as how they eat and play. They may also see animals that they don't often see, and learn more about them too.

Zoos can hold important jobs for people who like and care about animals. The people who work at zoos can learn more about animals just as children can. Speaking of "jobs", when children visit the zoo, it may get them to want to help and work in zoos.

By visiting zoos, children may want to help our extinct animals, and realize how important animals are to our future.

Zoos really do have an important role in today's world.

By Heidi Jung, Grade 6
Wauwatosa

While zoos usually are thought of as an enjoyable place for family outings, many visitors don't fully appreciate that at one modern zoo like Milwaukee's, people probably see at close range more varieties of animals than they could observe on a trip to the most untamed areas in the entire world.

In a single visit to Milwaukee's zoo, they can see, in natural settings, animals from five continental groups: Africa, Asia, Australia, North America and South America.

Some are extremely rare, because one of a large zoo's most important functions is to preserve endangered species. Because of man's intrusion, lessening of living space, poaching, pollution of air and water and destruction of elements in the fragile chain of survival, many species are nearly extinct.

A visit to the zoo might make visitors more conscious that dangers to the environment could be making one of the endangered species US!

St. Joseph Hospital neonatal intensive care head nurse Jan Ancona (left) and assistant Cheryl Lipeles find Mandara plays, burps and cries just like a human baby. They directed Zoo and Hospital volunteer care teams during the first month after her arrival in Milwaukee and remain on call.

Milwaukee Journal Photo

Primate area supervisor Sam LaMalfa with Mandara.

Baby Mandara Sweetheart of All

By Gilbert K. Boese, Ph.D. Zoo Director

In November 1979, Terra, the adult female lowland gorilla at Milwaukee County Zoo, was transferred to Lincoln Park Zoo, Chicago, on breeding loan. The decision was made to transfer her to Lincoln Park because Terra did not seem to get along with either Tanga or Samson, our two male gorillas. Lincoln Park had some difficulties working Terra into one of its social groups, but eventually she became a member of the social group led by Frankie.

Although there were many thoughts that she was pregnant and many that she was not, finally, on April 5, Terra gave birth to a female gorilla now named Mandara.

Mandara was a very healthy infant and Terra handled her very carefully and properly, but Terra was not nursing Mandara. After four days of telephone conversations between Lincoln Park Zoo and Milwaukee County Zoo, Lincoln Park Zoo director Lester Fisher and I decided regretfully that Mandara would have to be taken from Terra and hand raised — it was obvious she was not getting enough milk to keep her alive.

Once pulled, Mandara went to the Lincoln Park nursery and then to the home of assistant director Dennis Meritt and his wife, Gail. It was thought that as soon as Mandara had a stable food intake and a steady weight gain, she would be transferred to Milwaukee. On April 22, Mandara was brought to Milwaukee to reside in the nursery developed for her by the staff in the primate house. She was to be supported 24 hours a day, seven days a week, by zoo staff and a group of volunteers called Mandara's Moms.

By now Mandara has gained steady weight and has affection for her "moms" and primate staff. She has prospered and has become the sweetheart of all those who come to visit her at the Zoo. Mandara soon will be introduced to orangutan Sintang, 10 months old, who has come here from Madison Zoo to become one of her playmates.

Mandara's story shows how zoos, their staffs and volunteers can cooperate to assure the survival of this unique endangered species.

Animal Adoption Kick-off July 16: Joan Embery Here

Adopt an animal? Yes! The captivating people-to-animal just-plain-fun (you adopt them, we keep them) program established by zoological societies in support of zoos across the country will take off here next month.

It is being established by the Zoological Society to make possible animal-related improvements in Milwaukee County Zoo, among them the modernization and upgrade of habitats and exhibits.

Kick-off will be Friday, July 16, here at the Zoo. Mark you calendar. Save the evening for:

Champagne Picnic: Details on invitation to come. **Annual Meeting:** Presentation by **Joan Embery:** San Diego Zoo goodwill ambassador, animal handler, television personality (The Tonight Show, Merv Griffin, Those Amazing Animals) and author. **Animal Auction:** Bid to adopt selected Zoo animals, Mandara included, 20 in all. **Adoption Center Opens:** Remaining 4000 plus Zoo creatures released for adoption — first come, first served.

William G. Christensen Photo

Small Is Beautiful Too!

A Review of Small Cats in Zoos

By Ken Kawata
General Curator

Left: Caracal kittens. Following: Pallas cat Waldo, gift of Gary Machine Company, Inc. in memory of founder Duane C. Hockerman.

"On account of its generally majestic appearance and the assumed nobility and fierceness of its character, the title 'King of Beasts' was universally bestowed upon the lion . . . The magnificent proportions of the animal, coupled with the splendid flowing mane decorating the head, shoulders and chest of the male, render the lion by far the most striking in appearance of the whole cat tribe and, indeed, of all the carnivores," wrote Dr. W. Reid Blair, former director of the New York Zoological Park, in 1929.

The legendary tiger, too, seems to fascinate the public endlessly.

Along with primates and elephants, big cats are always a great attraction. These are the animals which might be called the "stars" of the zoo. Throughout the world, much of the same roster of wild animals has been relied upon to provide the main attraction for the zoo-goer.

Indeed, the lion and the tiger may give the impression that they are the representatives of the cat family. Interestingly, the so-called big cats make up only a minority in the cat family, as shown on page 7. The most advanced and best equipped in the world of carnivores, cats vary in size and appearances considerably. Even though they are not native to the Australian region and Madagascar, we find them in most other parts of the world, particularly in its warm sections.

The cat family may be broken down into two arbitrary groups, the big cats and small cats. The former group consists of seven species: puma, lion, tiger, leopard, jaguar, snow leopard, and cheetah.

Although small cats are the majority in terms of number of species, the average citizen has never seen, or heard of them, except for a few popular species such as the bobcat and ocelot. Even scientists do not seem to have extensive knowledge on many of the species in remote jungles of the tropics. Loss of habitats and excessive hunting are pushing those least-known cats, which do not generate a great deal of public attention and emotion, to the verge of extinction. A study of reliable data on threatened wildlife species reveals an alarming picture.

The International Union for Conservation of Nature and Natural Resources (IUCN), headquartered in Switzerland, periodically publishes the IUCN Red Data Book which is the informational basis for the protection and management of threatened wildlife species. Compiled data sheets in the book are color-coded in accordance with categories designated by specialist groups, as follows:

Red: Endangered. The populations are reduced to critical level and are in immediate danger of extinction.

Amber: Vulnerable. Populations under threat, or seriously depleted, decreasing and likely to move into the Red category.

White: Rare. Not at present endangered but at risk.

Green: Out of danger. Formerly in above categories but considered relatively secure.

Grey: Indeterminate. Suspected to belonging to either Red, Amber or White but sufficient supporting information not currently available.

What follows is an excerpt from the Red Data Book on small cats on the species level. (This requires a bit of explanation. In different parts of the range of a species, populations of animals have evolved differently. Those populations that can be distinguished from others in the same species sometimes receive a subdivision within the species, the subspecies. Thus, the tiger from Manchuria to the north of the Korean peninsula, in the southern Primorsk region and in the Khabarovsk region, is known as the Siberian tiger and can be distinguished from the much smaller Sumatran tiger. The Texas ocelot, a subspecies of the ocelot, is considered endangered; however, as a species the ocelot is not yet endangered.)

Flat-headed cat: Grey. Very little is known about the status or habits. A detailed study is required.

Bay cat: White. No information on population, habitat or ecology is available. Virtually nothing is known of this cat. A thorough survey is required.

Marbled cat: Grey. Little is known of this cat. A survey of status, distribution and ecology is required.

Greg Anton Photo

Temminck's golden cat: Grey. A survey of status, distribution and ecology required.

Iriomote cat: Red. Immediate effective action is needed if this species is to survive.

Ocelot: Amber. No precise information on numbers available. In great demand by the fur industry.

Mountain cat: White. Further studies to determine the status and ecology of the species proposed.

Clouded leopard: Amber. Total numbers unknown but reported to have declined drastically because of habitat loss and hunting for its beautiful pelt. Surveys to learn more of this species are still very necessary. Such surveys will however be difficult due to its secretive and arboreal habits.

Obviously, what little evidence has been available suggests that there is a scarcity of information on rare small cats. One suggestion for the reason for a poverty of knowledge is that there are relatively few of the small cats in captivity where they could be studied.

If zoos make a concentrated effort on small cat species that are threatened in the wild, zoos can play an important role in preserving the species and in offering materials for study.

Moreover, zoos can generate public's interest in small cats. There is however, a big If: If the species are able to breed well in captivity so that zoos can maintain populations without importation of wild stock.

During the third international symposium on the world's cats in Seattle in 1974, Dr. Randall Eaton, a feline scientist, presented a paper entitled "Status of Felids in Western Hemisphere Zoos with Emphasis on Breeding Smaller Species." After closely scrutinizing zoo records, he concluded that "Many of the smaller species are either poorly represented or appear to reproduce at rates sufficiently low for concern." Some of the rare species in zoos appeared to be good breeders while others were both extremely rare in captivity and poor breeders, necessitating zoos relying primarily or wholly on animals imported from the wild.

Cats of the World

European Wild Cat	Europe West Asia
African Wild Cat	Africa Asia
Cat	Domestic
Sand Cat	North Africa Southwest Asia
Jungle Cat	Asia North Africa
Chinese Desert Cat	Central Asia
Leopard Cat	South Asia Sumatra Java Borneo Philippines
Rusty-spotted Cat	South Asia
Flat-headed Cat	South Asia Borneo Sumatra
Bay Cat	Borneo
Black-footed Cat	South Africa
* Caracal	Africa Asia
Lynx	Europe North Asia North America
Bobcat	North America
* Pallas Cat	Asia
* Serval	Africa
Marbled Cat	South Asia Sumatra Borneo
African Golden Cat	Africa
Temminck's Golden Cat	South Asia Sumatra
Iriomote Cat	Iriomote Island
Fishing Cat	South Asia Sumatra Java
Ocelot	Central America South America
* Margay	Central America South America
Tiger Cat	Central America South America
Mountain Cat	South America
* Geoffroy's Cat	South America
Kodkod	South America
Jaguarondi	Central America South America
Pampas Cat	South America
* Puma	North America South America
* Clouded Leopard	South Asia Borneo Sumatra Java
* Lion	South Asia Africa
* Tiger	Asia Sumatra Java
Leopard	Africa Asia Java
* Jaguar	North America South America
* Snow Leopard	Asia
* Cheetah	South Asia Africa

*In collection at Milwaukee County Zoo.

In my recent letter to Dr. Eaton, I wrote "Years have gone by (since his survey), but my 'gut feeling' is that zoos have not made significant progress in the area of small cat propagation." His response: "I suspect you're right about zoos not having made much headway altogether in smaller cat breeding." He went on to say that a few zoos have progressed in habitat design, citing Chicago's Brookfield Zoo's outstanding small cat exhibit, and Seattle Zoo's Anatomy-of-a-Cat house which he himself helped in developing. Dr. Eaton, however, maintains, "but overall you're surely correct."

There is a need to turn a critical eye on accomplishment, or the lack of it, made by zoos in recent years.

Basically, successful and repeated breeding is recognized as the main criterion of good zoo animal husbandry. Using this as a yardstick, one can evaluate performance of animals or zoos by examining the number of animals born in zoos. Carol Boyd of our Zoo staff compiled data, as shown below, based on information from the International Zoo Yearbooks published by the Zoological Society of London.

Cats Born in Zoos

	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
European Wild Cat	35	54	61	72	79	68	89	96	91	75
African Wild Cat	8	0	0	0	0	2	3	7	0	6
Sand Cat	2	0	0	4	12	0	6	5	3	3
Jungle Cat	37	43	23	40	27	33	42	44	26	28
Leopard Cat	16	40	29	28	34	43	28	35	58	43
Rusty-spotted Cat	0	0	0	0	0	0	0	0	1	1
Flat-headed Cat	0	0	0	3	0	0	0	3	1	0
Black-footed Cat	1	0	0	0	0	0	5	5	4	4
Caracal	30	27	43	34	40	47	42	27	45	57
Lynx	53	63	65	68	74	75	85	72	79	69
Bobcat	14	27	39	31	45	23	33	26	32	29
Pallas Cat	0	0	2	0	10	26	13	8	15	20
Serval	29	26	35	66	65	65	63	64	99	107
Marbled Cat	0	0	1	4	3	2	3	2	0	0
African Golden Cat	0	0	0	0	0	0	2	2	0	0
Temminck's Golden Cat	6	9	14	13	20	18	15	8	10	17
Fishing Cat	1	2	5	2	4	11	2	3	5	8
Ocelot	11	13	19	21	16	27	27	34	33	32
Margay	1	3	4	3	1	6	4	15	7	13
Tiger Cat	1	1	2	3	0	1	1	1	0	1
Geoffroy's Cat	0	3	6	8	7	12	16	24	18	18
Jaguarondi	2	0	0	0	5	5	6	5	6	8
Pampas Cat	0	0	0	2	1	1	2	1	2	2
Puma	247	256	273	291	308	295	233	242	201	151
Clouded Leopard	15	13	10	14	21	11	24	15	19	12
Lion	648	636	543	742	1,119	930	878	690	777	652
Tiger	299	363	395	461	442	495	475	396	524	481
Leopard	212	255	299	299	316	327	333	309	313	280
Jaguar	90	125	122	122	144	143	109	131	139	134
Snow Leopard	20	12	19	28	29	29	32	25	49	27
Cheetah	0	6	12	16	34	57	75	94	45	74

What strikes us first is the incredible numbers of big cats, especially lions and tigers, that are born in zoos. Behind impressive figures, I suspect, was the rise of so-called safari parks (drive-through animal parks) in early to mid 1970s that created a commercial demand on lions and tigers. During 1972, Lion Country Safaris in the United States alone produced 164 lions! As mushrooming safari parks reached a saturating point, the baby boom of lions started receding.

By comparison, small cats in general have not shown a noteworthy improvement. Several species, including caracal, lynx and serval, exhibit a steady increase in captive-born numbers. On the other hand the track records of some other species are not overwhelmingly promising; although captive-born specimens may appear to be on the increase, the numbers fluctuate from year to year as shown in jungle cat, bobcat, and clouded leopard. It is probably safe to assume this indicates instability of the species in captivity.

Sample sizes of the rest of the species are too small to allow evaluation. A small sample size means the species is still rare in captivity, and only a small number of zoos maintains it.

For example, all pampas cats, listed on page 8, were born in Cincinnati Zoo. Likewise, all the tiger cats born during the period were born in four zoos, more than half of them in Oklahoma City Zoo. Apparently a mere handful of zoos has been successful in rearing small cats. Rotterdam Zoo is an exception, making an outstanding record in breeding many species. In the western hemisphere, Cincinnati Zoo and Brookfield Zoo have made noticeable achievements in breeding small cats. By and large, however, it seems likely that small cats are born rather sporadically, and that with the exception of several successful species, small cat propagation on a world-wide scale is supported by a relatively small number of zoos.

In terms of genetics, there is a possibility that a few highly successful breeding females contribute a disproportionate number of offspring to the overall zoo population, resulting in a very rapid loss of genetic variation.

The figures on page 8 show viable births, including offspring that did not grow to maturity. This is a critical point because some species may show relatively poor survivorship of young. In order to see if zoo propagation is contributing to wildlife preservation, one has to examine the proportion of captive-born, as opposed to wild-caught stock in a population of a given species. On pages 10-11 is the ratio of captive-born specimens in a selected group of rare species from 1970 to 1979, excerpted from the International Zoo Yearbooks.

Big cats, again, show a remarkable improvement during the 10 year period. Already in 1970, 77 percent of populations in four rare subspecies of tigers were born in captivity; by 1979, over 95 percent of the populations were captive-born. In comparison, the snow leopard is not as prolific a breeder as the tiger. Still, captive-born stock increased gradually, from 31 percent to 65 percent.

Along with good news, however, comes bad news: those captive populations may have started with relatively small numbers of founder animals (wild-caught specimens), which inevitably will result in an extremely limited genetic diversity, and inbreeding problems. Yet, we now know that those big cats breed well in captivity, and that we can justifiably remove a small number of animals from the wild for zoos.

As for small cats, the overall picture is not very encouraging. With exception of the Pallas cat and the clouded leopard, the sample sizes are insignificantly small to draw a reasonable conclusion. In the Pallas cat and the clouded leopard, we can assume that they are beginning to establish sizeable captive populations as an insurance against extinction, their captive-born stock on the increase from 8 percent to more than half of the captive population, and a quarter to 44 percent, respectively.

Some other species have also increased captive-born stock; for example as of 1979, 60 percent of sand cats in zoos were captive-born. Unfortunately, there were only 28 sand cats in zoos across the world. This means not only that the population has an inadequately small gene pool, but also that a major war in Europe could easily wipe out a large part of this population — a rather chilling outlook.

This leads us to realize that captive propagation may not necessarily be a cure-all for all endangered wildlife species. A wild animal species in captivity often appears to be a jigsaw puzzle.

Suppose you have a pair of river otters in your zoo. Otters seem to be in a trial-and-error stage in captivity and do not reproduce regularly. Year after year you keep wondering why they don't breed. Is the diet insufficient? Is the pair incompatible? Or is the den too small? Then suddenly one morning you will be surprised to find little pups with mother in the den, but you still don't know what triggered their reproductive behavior, or what it takes to get them to breed. More than likely, the animal will stay in a hit-and-miss stage if zoos do not have the right combination, or all the pieces of the puzzle.

When zoos do not have the know-how to breed a highly endangered species, it seems adviseable not to introduce the animal into captivity — for the animal would be more endangered in captivity than in the wild. Instead, emphasis should be focused on preservation of habitats to ensure survival. The Iriomote cat is a case in point.

This unique cat is found on a very small island, 120 square miles in size, near Taiwan. Its population is estimated to be between 40 and 80 with the lower number more realistic — critically low to the point that its future is now in doubt. The forest is being cleared for agriculture, further threatening the species.

If the animal in question is a subspecies of the tiger, or the lion, it can be safely stated that we should try captive propagation. Unfortunately, none of the species closely related to the Iriomote cat, such as the fishing cat, has been a successful breeder in captivity. It appears too risky to capture Iriomote cats, which is undoubtedly an additional drain to the species.

One cannot afford to use founder animals as guinea pigs to experiment if they are feasible candidates for captive propagation, since the entire population is down to 80 at the most.

However, this does not automatically mean that zoos must subscribe to a wholesale hands-off policy on all endangered species. It is hard to believe that tigers were always difficult animals to breed. The world-famous London Zoo, which had been opened in 1829, did not succeed in rearing its first tiger cubs until after the last war, and the story is similar for most other urban zoos.

Today so many tigers are produced in zoos that it is quite a problem finding a purchaser for them. It seems likely that animals, at some point in their captive history, break the ice and start reproducing. If there are sufficient numbers left in the wild, attempts can be made to capture a small number of them for captive breeding.

Back to Dr. Eaton.

Prior to his survey, Marvin Jones, currently with the San Diego Zoo, made a study on the status of small cats in zoos in 1966. Dr. Eaton, after comparing his data with that of Jones', made a suggestion "that the interest and/or ability to acquire, breed or keep smaller species has decreased slightly."

As a matter of fact, small cats comprised a greater portion of all cats in zoos in 1966 than in 1973. Dr. Eaton recommended that zoos consider the merits of expanding their small cat collections.

And that is exactly what the Milwaukee County Zoo intends to do, giving priorities to exhibiting and breeding selected and representative small cat species. Our project was launched in February 1980 when Zoo director Gilbert Boese took directorship. Housed in the Small Mammal Building and Feline Building, our small cat inventory includes:

Caracal: From the deserts of southern Russia to Africa there is found this cat with short sleak reddish-brown coat, and exceptionally long ears ending in long tufts. Among the most active of the feline tribe, it is agile, and speedy over short distances, and puts this ability to use in hunting.

Pallas Cat: A small spotted cat that dwells in central Asia, including the highlands of Tibet, this species owes its name to Pallas, the man who discovered it in 1778, rather than the goddess Pallas Athene. It hunts partridges, pikas and rodents.

Serval: A medium-sized, long-legged, short-tailed and brightly spotted cat, the serval is a creature among the grasses of the savannahs of Africa. Its large, acutely pricked ears and large bright eyes equip the serval for hunting, using sound and sight, respectively.

Margay: Liberally marked with black stripes and spots, the margay is a close relative of the ocelot and has very much the same distribution, from Central to South America. It is usually smaller in size. The fact that the tail of the margay is longer than that of the ocelot may lend some support to the view that the former spends more of its time in trees hunting, using the tail as a balancer.

Geoffroy's Cat: Another spotted cat from Latin America, it was named after 19th century French naturalist Geoffroy Saint-Hilaire. Found in South America, its spots usually do not form "rosettes" as in the margay. Our Zoo exhibits both normal colored and black phase forms of the species.

Clouded Leopard: Actually, this species is not a leopard at all. Rather, it is considered in some ways intermediate between big and small cats. The species has thick, soft and full fur decorated with stripes and spots with "clouded" centers. An inhabitant in the dense forests in Southeastern Asia, and active at night, it is rarely seen. In zoos it often demonstrates an amazing acrobatic ability.

To date Milwaukee County Zoo has successfully bred the Geoffroy's cat, caracal, and serval. We are awaiting the results of our efforts with the Pallas cat and clouded leopard.

There is no doubt that zoos must keep the lion and the tiger which are familiar to the public and which it, therefore, expects to see and to meet. They belong to the basic stock of large animals without which the public would not regard our institutions as zoos.

Still, each species on this planet, large and small, is unique in its own right; each in the zoo deserves more than just a casual glance by the visiting public.

Let us step into Milwaukee County Zoo Small Mammal Building, where four species of small cats are on exhibit. In terms of size, they do not have magnitude of impact that the lion can have on the public. However, unlike the lion, which may be inactive and appear dull for 20 to 21 hours a day, our caracal is quite active, up and around. Our exhibit renovation program provides a better feeling for the species in its natural habitat. Caracal means "black ear" in Turkish, and you will see that this slender animal does have large, blackish ears. Or how about the Pallas cat's piercing eyes, which are placed high in the face, and its low-set ears? The position of the eye is said to be an adaptation for peering over edges of rocks in search of prey, thus exposing the smallest amount of the head possible. They may be small, but small is beautiful, too!

Wild-Caught/Captive-Born Ratio in Selected Species of Rare Cats in Zoos

Species	1970			1971			1972			1973			1974			1975			1976			1977			1978			1979		
	W.C.	C.B.	Total	W.C.	C.B.	Total	W.C.	C.B.	Total	W.C.	C.B.	Total	W.C.	C.B.	Total	W.C.	C.B.	Total	W.C.	C.B.	Total	W.C.	C.B.	Total	W.C.	C.B.	Total	W.C.	C.B.	Total
Sand Cat	4	1	5	2	4	6	5	4	9	7	6	13	3	12	15	5	7	12	10	8	18	3	11	14	5	13	18	11	17	28
Flat-headed Cat	12	0	12	12	0	12	12	0	12	14	0	14	15	0	15	12	0	12	13	0	13	11	1	12	8	2	10	8	1	9
Black-footed Cat	10	2	12	8	1	9	10	0	10	5	0	5	6	0	6	12	0	12	12	0	12	13	4	17	10	5	15	9	9	18
Pallas Cat	21	2	23	26	0	26	29	0	29	39	0	39	49	0	49	54	7	61	48	17	65	44	13	57	42	18	60	33	35	68
Marbled Cat	3	0	3	4	0	4	8	0	8	10	0	10	9	1	10	7	1	8	5	2	7	5	3	8	3	4	7	6	4	10
African Golden Cat	3	0	3	4	2	6	7	0	7	10	0	10	10	0	10	8	0	8	10	2	12	11	4	15	6	3	9	10	2	12
Kodkod	2	0	2	1	0	1	1	0	1	1	0	1	1	0	1	2	0	2	2	0	2	0	0	0	1	0	1	1	0	1
Pampas Cat	7	0	7	8	0	8	11	0	11	9	0	9	9	0	9	7	1	8	7	2	9	8	3	11	10	5	15	10	8	18
Clouded Leopard	83	28	111	77	30	107	82	31	113	82	30	112	83	42	125	75	38	113	88	47	135	81	60	141	68	68	136	79	63	142
* Tiger (crare subspecies)	71	244	315	64	316	380	53	371	424	70	397	467	70	465	535	62	538	600	66	535	601	52	766	818	50	853	903	46	987	1.033
** Leopard (crare subspecies)	50	61	111	38	77	115	47	84	131	38	120	158	43	95	138	40	119	159	43	145	188	29	132	161	28	143	171	2	173	175
Snow Leopard	64	29	93	67	31	98	80	32	112	84	46	130	72	55	127	71	68	139	70	89	159	68	99	167	57	104	161	54	101	155

*Siberian Tiger, Amoy Tiger, Sumatran Tiger and Javan Tiger
**Persian Leopard, Amur Leopard, North China Leopard and Indo-Chinese Leopard

By Ron Musil and Jim Jabes
Hospital Zookeepers

Black Bear Cubs Tough, Winning

Once upon a time there were two Himalayan black bear cubs named Hawkeye and Trapper John. Brothers by birth and inseparable comrades, they spent their days roving the Zoo hospital hallway and overseeing the daily routine. Life was not always such a bed of roses for the cubs. To see why, we must go back to a cold morning in January 1980.

It found us, along with pachyderm area supervisor Dick Polnow, watching a 700 pound mass of sleeping bears. We were trying to locate the source of a high-pitched cry emanating from the center of the heap.

The reason for our concern was real. Milwaukee County Zoo had housed this group of Himalayan black bears in the pachyderm complex since 1961. Over the years, there had been several matings and subsequent births, but no cub had survived more than 48 hours. It was hoped thay by removing the interference from exhibit mates, the mother would settle down and raise the cub.

A plan was formulated to lure and prod the other bears out of the maternity den into the den adjoining. A bear smorgasbord was set out in the next den, and a pole used to nudge the undesired companions in the right direction. The task completed, mom and her baby were left undisturbed for the night.

Inspection of the maternity den the next morning revealed one sleepy mother bear — that was all. History had repeated itself.

With the bear group approaching old age and its breeding seasons numbered, it became imperative that any future births be saved. The winter-spring of 1980-81 came and went without the hoped-for cry, signaling the birth of a cub. And that summer saw the loss of one of the group's females from kidney failure, further lessening the chance of having offspring.

During the past winter, attention once more was turned to the bear dens for signs of the hoped-for birth. On December 30, the sound of crying cubs was heard once again.

The news was quickly relayed to the office and the decision made to remove the cubs for hand rearing. Musil was called in to assist consulting veterinarian Robert Marold.

This year, there were only two bears in the corner of the straw-bedded den and they picked the best den of four possible, giving the rescuers good access. The mother bear was distracted and one of the cubs was maneuvered through the bars on one door while Dr. Marold used a floor squeegee to position and remove it from the den.

But there was another cub, and mother bear was not to be fooled so easily a second time. Each time an attempt was made to get the second cub, the mother would pick it up in her mouth — a reaction that meant the cub was being handled too much and too harshly.

Drugs were loaded into darts to immobilize the mother, and one last rescue attempt made. This time, the cub was close enough to the door to be snatched through the bars before the mother arrived. The cubs were then rushed to the hospital and a waiting incubator.

After initial warming in the incubator, the cubs were bathed and their umbilical cords treated with iodine to prevent infection.

The larger cub, Trapper John, weighed in at 12 ounces. The smaller, Hawkeye, at 11 ounces, and far more red in the ears and footpads than his brother — this probably due to the rough handling he had received from his mother.

The cubs were then fed their first bottle, which held 5 percent dextrose in water. This sugar solution gave them a much needed quick-energy boost and allowed us to observe their individual nursing capabilities. (If some of this solution is inhaled, it usually can be absorbed by the body with no lasting effects. If this happens with a milk formula, pneumonia can be the result.) A few hours later, they were given a feeding of milk formula and put to bed for the night.

The next morning, Hawkeye's red color had not faded and he was running a temperature. He also seemed to be somewhat dehydrated, and with an umbilical infection caused by contaminated den bedding. Drugs and fluids were administered with each feeding and he soon showed improvement.

The cubs were put on a schedule of six feedings a day spaced three to four hours apart. They remained in the zoo hospital with Musil taking responsibility for late feedings. In spite of harsh weather and snow storms, the bears were cared for and by the fifth day the cubs were eating 1 ounce of formula at each feeding.

Shortly after the birth of the bears, the only male in the exhibit died, so Hawkeye and Trapper John will be the last cubs to be born at the Zoo for some time.

High protein baby cereal was added to the milk formula January 20. The cubs were now taking 2 ounces at each of four daily feedings. Their weight was up to almost 3 pounds. On January 28 Hawkeye's eyes

started to open. Trapper's followed on February 2. At this time they were moved from their incubator to a larger heated box.

From this time on they increased their intake per feeding by ½ ounce each week until, on February 17, they were at 4½ ounces per feeding. It was then that the cubs could finally stand of their own and take their first steps.

Teething started February 22, and within five days, all canine teeth and some of the molars were out. From then on, the cubs were constantly looking for something to chew.

By the first of March, ground puppy chow was added to their diet and bowl training was started. Night feedings were discontinued — much to the relief of Musil who had been doing all the night feedings since the cubs' birth.

By March 15, the cubs had learned how to eat by themselves, although their table manners left much to be desired. They seemed to enjoy wearing more food than they were able to consume.

They were rewarded for their efforts by being moved into a large cage in the first ward of the hospital and given the run of the building during the day.

The cubs were then put on display in the Lion House, where they now reside. Their weight is now over 20 pounds each. They can still be played with by the keepers, but their play constantly is getting rougher.

If you get a chance, pay them a visit. Hawkeye is now the larger, and has jet black curly fur. He has a "laid back" disposition and likes to sleep.

Trapper John, is the inquisitive type, always ready for action. He can be recognized by the light brown markings on his head. Most often you will see the two of them engaged in a wrestling match.

Although many European zoos, along with about a dozen U.S. zoos, exhibit these interesting Asiatic black bears, births in these captive populations have occurred in less than half the zoos that exhibit them.

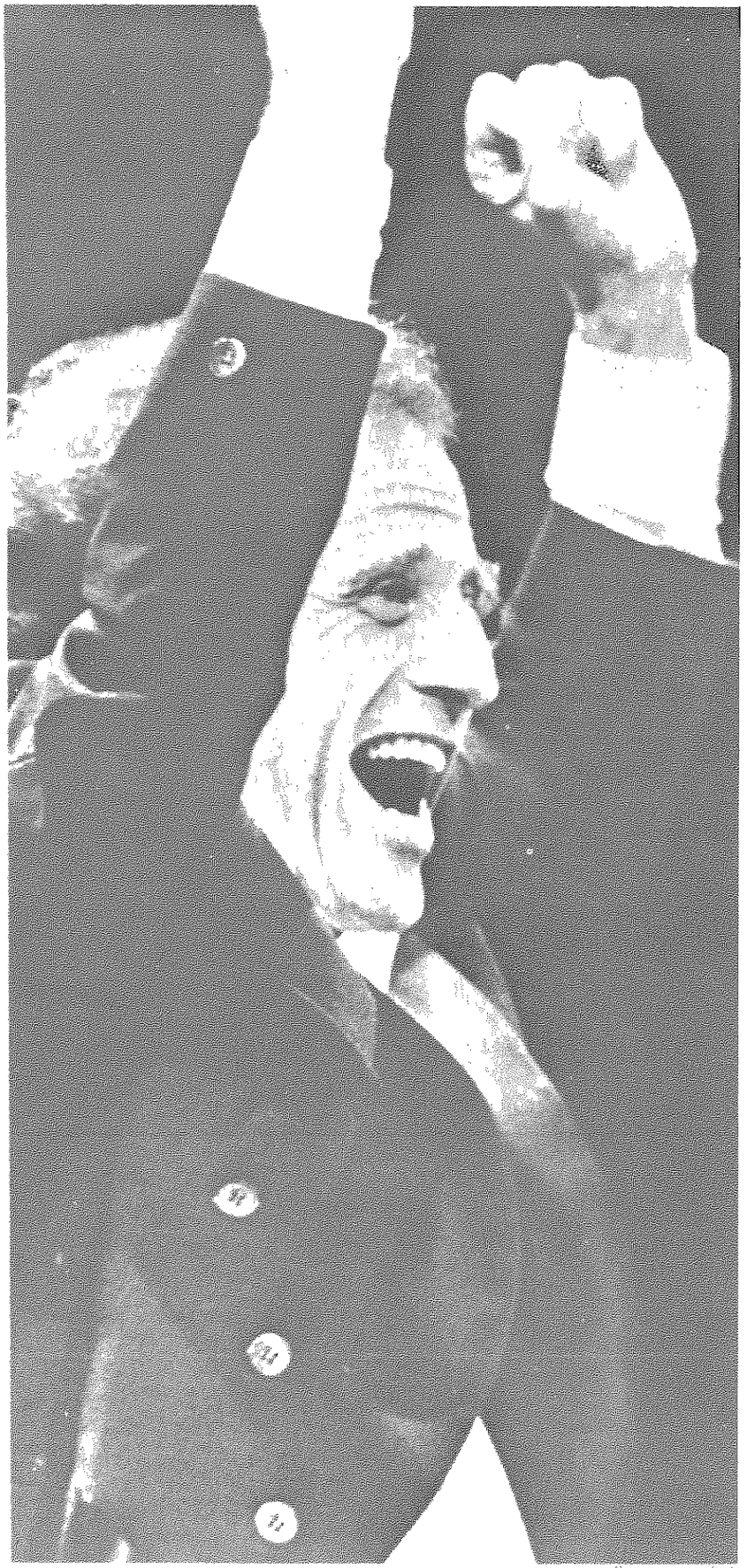
Study Financial Future

Milwaukee County Zoo and the Zoological Society of Milwaukee County have joined to commission a study to determine what might be done to improve the financial future of the Zoo.

Economics Research Associates (ERA) of Los Angeles will conduct the study, estimated to be completed by September.

Chowder Raises $2700

Red Lobster Restaurants raised $2,700 for Milwaukee County Zoo during its Clam Chowder Fund Raising. The Zoo received 50 cents for each cup or bowl of clam chowder sold in the three Milwaukee area Red Lobster Restaurants during the month of March. Total will be used for the Children's Zoo outdoor theater which holds the summer magic shows.



Symphony director Lucas Foss

Beautiful Music at Beautiful Zoo

Milwaukee Symphony Orchestra will launch July 10 the first summer series entirely under its artistic control Milwaukee County Zoo will host.

An audience of 2,000 can be accomodated in the tent to be erected at the Zoo to house the series. Surrounding lawn areas will seat an additional 500.

The four-weekend, eight-performance season will include classical and pops concerts, conducted by music director Lukas Foss and associate director Paul Polivnick, plus free daytime concerts for children. Major guest artists are expected to perform.

Zoo Director Gilbert K. Boese said, "We are extremely enthusiastic about this collaboration and see it as a wonderful opportunity to build audiences and revenue for both the Symphony and the Zoo."

The Zoo grounds will be open at least an hour and a half prior to each evening performance. "We hope our audiences will come early to enjoy an evening at the Zoo, to stroll the beautiful grounds, perhaps to picnic, or to have a tailgate party," Symphony executive director Robert L. Caulfield said.

"Concert-goers will be accomodated by concession stands selling picnic suppers, snacks and beverages including beer and wine before and during performances," he said. "I think our summer series will appeal to families, who can enjoy the amusements of the Zoo during the day or early evening and remain for a wonderful concert."

The series has attracted four sponsors: Evan and Marion Helfaer Foundation, Milwaukee Foundation, American Express Company and Kohl's Food Stores. More are sought.

Exotic Animal Breeding Changing

By Bruce Beehler D.V.M.
Zoo Veterinarian

Milwaukee County Zoo recently has joined other zoos in an animal-breeding exchange program that promises to revolutionize exotic animal breeding. Until recently, the only way zoo animals could be bred was to have a male and female in the same place at the proper moment of the sexual cycle.

Traditionally, zoos obtained these animals by outright sale, breeding loan, trade, or as a gift. These exchanges required the physical transport of the animal, with all of the attendant risks and expenses.

Recent technical advances have provided another method of exchanging genetic material; the collection, preservation, and transport of semen followed by artificial insemination of the female.

Last March, the St. Louis Zoo snow leopard breeding program was jeopardized since its male was aged and infertile. A cooperative effort between the St. Louis and Milwaukee County zoos culminated in the collection of semen from our young male snow leopard, Shigatse, and the artificial insemination of the St. Louis female.

Timing is critical for successful breeding of large cats, so both zoo staffs were on "stand-by alert" for several weeks. When the female started showing signs of estrus ("going into heat"), Roger Birkel, St. Louis Zoo mammal curator, flew to Milwaukee.

Early the next morning, Shigatse was anesthetized and three semen samples were collected. The semen was mixed into a protective fluid and was flown to St. Louis. Seven hours after the semen collection, the anesthetized female was artificially inseminated. If all goes well, she will have kittens in June.

Semen preservation techniques may lead to offspring from Samson, our famous gorilla who recently died of a heart attack. After Samson's sudden and unexpected demise, a team was hurriedly gathered to preserve whatever could be saved of this magnificent animal.

Dr. Jacobs, a urologist at Froedert Hospital, and Dr. Piper from Carnation Genetics, a company involved with artificial insemination of domestic animals, collaborated to collect semen from Samson within hours after his death. This semen was placed in a preservative fluid and frozen to −320°F. Subsequent tests have shown that some of the semen samples were successfully preserved. This is probably the first successful preservation of semen collected post-mortem from a gorilla.

Two vials were flown to the Audubon Park Zoo in New Orleans where a female gorilla has been closely monitored to determine her sexual cycle timing and the male is infertile. Within the next month, Samson's semen will be utilized to artificially inseminate the female.

Exotic animal artificial insemination and sperm transport and preservation are still in the experimental stages. Success resulting in live offspring has been limited for large cats and great apes. However, each attempt adds new information and allows refinements in artificial breeding techniques.

It is possible we will have offspring from Samson at Milwaukee County Zoo next year!

Greg Anton Photo

Wish Comes True

This prehensile tail porcupine, on the Zoo wish list for a year, was purchased for the Zoo through the Society by the family of David Adashek, Whitefish Bay, to honor his birthday. Chico, who arrived with mate Luan, is native to Brazil, has many fine points.

Need a Gift for Someone Special?

Zoo Pride's birthday-parties-for-children program is in its 4th season. The parties, available June-August, accomodate 10 children and two adults.

Participants receive a birthday cake, beverage, train and pony cart rides, and a visit to Children's Zoo, and the birthday child, a zoo T-shirt.

Parties are available Monday, Wednesday, Saturday, twice a day, at $50 which includes Zoo admission for all.

For information: Zoo Pride office 258-5667 or Mary Beth Carr 258-4256. To apply: Clip, complete, and mail along with check for $50, at least two weeks ahead to Zoo Pride Birthday Party, Mary Beth Carr, 6526 Upper Parkway North, Wauwatosa, WI 53213. Date and time will be confirmed by return mail.

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Wisconsin Electric Company

And Patrons

Diane O'Conner
Dorothy Pain

Individuals and corporations are invited to join these members and patrons in their effort to maintain the excellence of Milwaukee County Zoo.

Inquiries are welcome: Zoological Society of Milwaukee County 258-2333.

Director Reports on Renovation, Travel

By Gilbert K. Boese, Ph.D.
Zoo Director

In 1981 the Zoo budget included $55,000 from the county to begin an exhibit update and renovation program. The first building to be considered was Aquarium/Reptile, with focus on the reptile cages which at the time consisted of tile walls and concrete floors. It was decided by zoo staff that the reptile cages should be remodeled in a gunite rockwork motif, utilizing such exhibit techniques as mirrors and glass walls to open up the cages, and to give a feeling of more space for the animals.

The Gunite Corporation of New Berlin made clay models of the exhibits. The first step was to discuss the exhibit concept, and then develop models to give staff an idea of what the exhibits might be. Staff then critiqued and modified the models and they were put into final form. The models then represented miniatures of what the exhibits would be when completed. Cost, Inc., of Rockfield constructed the exhibits. Because of modern techniques, the Zoo was able to expand the project to create naturalistic exhibits in all areas in the Aquarium/Reptile building.

Artificial trees were constructed and sculpted to look as if they were real, ponds were developed for animal activity, heating coils placed in rocks and trees for basking. Many innovations were carried out to present reptiles and amphibians in the most naturalistic way possible. The project from start to completion took about six months and from the response of the public to date, everyone is very happy with the results.

It is the hope of zoo staff that private funding can be obtained to underwrite renovation work in other buildings, specifically, to develop exhibits in all buildings that could serve as prototypes for further facility improvements.

In February the Zoological Society of Milwaukee County offered a safari to Kenya and Tanzania, East Africa, led by my wife Wilma and me which consisted of 18 days in these two countries. The safari focused on the game parks and some of the nature reserves of the countries.

In Kenya, the safri focused on the northern frontier district to see Shaba Game Reserve and the Samburu Game Park. In this park, the participants observed Grevy's zebra, reticulated giraffe, lions, magnificent leopards and the biesa oryx. Shaba and Samburu were chosen because their game species differs from the plains game which would be viewed in Tanzania. Other highlights of the Kenya trip were the stay at Mt. Kenya National Park where we observed such animals as the bush pig, giant forest hog, elephant and black rhino. The stay at Lewa Downs, a private ranch in northern Kenya, provided game viewing on foot and horseback, giving all participants a truly new perspective of the safari adventure.

Tanzania provided the group with magnificent game viewing. Although the ecomony is having difficulties in Tanzania, the game parks are still in excellent shape. Highlights of the Tanzania trip included a day in the Ngorongora crater where many black rhinos still can be observed along with a large number of clans of spotted hyena. Ngorongora crater borders on the Serengeti National Park which is the site of the large game migration of well over a million zebra, wildebeest and Thompson's gazelle. The Milwaukee group was one of only two safaris present in this vast National Park. We observed cheetah and many prides of lions, along with the many plains game species.

All of the people on the safari thought it was the trip of a lifetime, and there is talk among the participants of a second adventure somewhere in Africa.

Zoo Pride Birthday Party

Name

Address

Telephone

Birthday Child Name

Birthday Child Age

Birthday Child T-Shirt Size

Chocolate or Vanilla Cake

First Choice Party Date

Second Choice Party Date

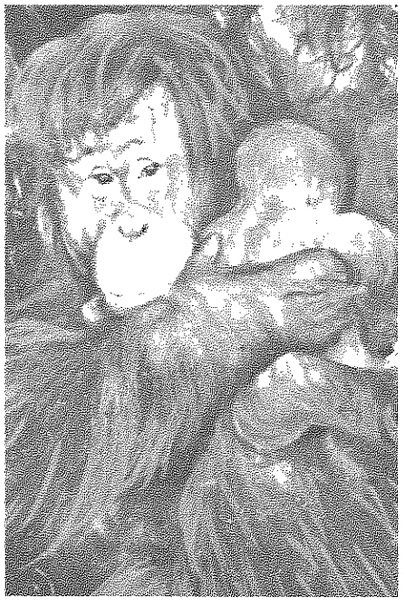
Number Children Attending

Number Adults Attending

Morning or Afternoon

The first orangutan born at Milwaukee County Zoo in 12 years arrived on St. Patrick's Day. He was named Thomas O after Thomas S. O'Byrne, president of the board of trustees of Milwaukee County Zoological Gardens.

Mother Saba and baby are doing well, as is father Dick. They are on display in the primate building.



Milwaukee Journal Photo

Many Born, Again

By Robert Bullermann
Assistant Zoo Director

Births in our zoo family are always a happy occasion, not only for the public which enjoys watching the baby animals, but also for zoo personnel who deal with the young on a day-to-day basis.

Milwaukee County Zoo has many births each year. When we talk about births, we usually refer to mammals, but we must also include birds, reptiles and fish.

Each birth is treated individually and tailored to the needs of not only the species but the individuals involved as well. Make-up of the quarters is also considered. Where do we put the nest box? Is a nest box needed? Should we use straw, hay, or shavings for bedding? Should the male be separated? Should we restrict the area from the public? When should the mother and baby be re-introduced to the herd or group? All of these questions and many more must be answered.

One of the biggest worries is whether or not the offspring is nursing which must be answered through observation. Is the female staying in the nest box? Can you hear cries from the nest box? (Sometimes we can even hear the babies nursing.) The decision to pull (separate) and hand-rear an infant is done only after the mother has been given every chance to care for the baby on her own, as in the case of Mandara, our baby lowland gorilla.

During the past 16 years, Milwaukee County Zoo has had over a thousand mammals born, not counting 350 domestic mammal births in Children's Zoo.

But numbers of births are not most important. Reproduction of select species and quality of births are. Indiscriminate breeding leads to large inbred herds which result in birth defects, stillbirths and weak genetic lines. Animal collections must be managed to prevent such mistakes.

In some species, birth control methods have been adopted to prevent reproduction. This even applies to some of our endangered species such as the Siberian tiger. Zoos in the recent past have allowed these beautiful striped cats to inbreed, and breed with individuals with undesirable traits and characteristics.

The AAZPA — sponsored Species Survival Plan should help in breeding programs between zoos for numerous select species. As an example, if one zoo owns a female animal with good genetic lines the Species Survival Plan will match her to a male from a different zoo, to keep the species strong and purebred for future generations.

The story of our breeding loan program has appeared in previous issues of ALIVE. The project continues to be vital to zoo populations throughout the world.

Mandara, our baby gorilla, is a result of a breeding loan agreement between Milwaukee County Zoo and Lincoln Park Zoo. Successful breeding loans have also been made to our benefit in regard to Geoffroy's cat, ruffed lemur, bongo, Siberian tiger, fennec fox, wanderoo macaque, mongoose lemur and marmoset.

Mammals are not the only type of animals on breeding loan. We also have a number of birds and reptiles on breeding loan.

The bird department reported nearly 200 hatchings in 1981, in 20 different species.

Reptiles hatched during the past year numbered 117. And fish hatchings went into the thousands — but, remember, big fish eat smaller fish, and smaller fish eat still smaller fish, so the survival rate is low in this group of animals, less than 1 percent.

Milwaukee County Zoo has a commendable birth rate for the size of its collection. It is hoped in the future we will see gorillas born here or at other facilities, as results of loans of animals or semen from Milwaukee County Zoo.

By Hugh Evans, Assistant General Curator
Gilbert K. Boese, Ph.D., Zoo Director

While attending a meeting in Madison in February, 1980, Evans had a discussion with Charles Schwartz from the Alaska fish and game department about raising moose. Schwartz, a game biologist, works at the Kenai Moose Research Center, Soldotna, Alaska. As a result of his research, a pelleted feed was formulated in Alaska that has been successful in maintaining animals for several years.

For moose to have a well-functioning rumen, they need a quantity of hard-to-digest carbohydrates. This means a large amount of fiber of woody origin. Moose regularly eat browse, that is, twigs and leaves high in fiber lignin. Lignin, a part of the plant cell, has been determined to be the essential ingredient for healthy rumination.

To cut, store and feed browse for captive animals throughout the year is not only time consuming but expensive. The problems of feeding browse was the reason Milwaukee County Zoo did not keep moose in the past 10 years.

The cellular fiber material found to be of practical use in a commercial moose diet is aspen sawdust. This product, available from manufacturers of sweeping compound, has proved to be palatable and accepted by the animals.

It was thought the success of the moose pellet produced in Alaska could be the answer to keeping moose at Milwaukee, without the problems associated with browse, but the question which remained unanswered was: are the forest products of Wisconsin as suitable for pellets as the Alaskan products?

After corresponding with Schwartz on this subject, arrangements were made to send 1000 pounds of two forms of Wisconsin forest by-products to Alaska. George LaBudde, former president of the Zoological Society and still a director, arranged for the acquisition of the forest products to be shipped. It was Schwartz's belief that with this amount of material, he could determine the pelleting and digestive qualities of the Wisconsin forest by-products.

By the middle of June 1980, 25 bags of sawdust were trucked from American Excelsior Company of Rice Lake to Seattle; funded by the Zoological Society of Milwaukee County.

The feeding trials proved satisfactory and the decision was made to exhibit moose at our zoo, again. After much searching, telephone calls and paperwork, we received a fine young pair from Quebec, January 18.

While the search for the moose was underway, arrangements were made to start production of the Milwaukee County Zoo moose pellet. Using the ingredients for the formulated moose ration, MRC special, substituting Wisconsin sawdust for Alaskan, we went into production in December.

At this time, moose Tundra and Tamarack are thriving on Milwaukee MRC, supplemented by occasional browse and hay.

QUARTERLY Animal Report

By Robert Bullermann
Assistant Zoo Director

Moose have returned to Milwaukee County Zoo after an absence of 10 years. The decision to exhibit moose again was based partially on the fact that we now have a prepared moose food which will cut down on the amount of browse needed, a food item difficult to obtain and store.

A woolly monkey arrived from the Tulsa Zoo on breeding loan, but not before he had a few hours of freedom at O'Hare International Airport. The crate in which he was traveling, split, allowing him to escape onto the field near the American Airlines freight dock.

Our friends from Chicago Zoological Park were able to catch the runaway. Asked if they had any difficulty, Brookfield Zoo personnel replied "No, he was slowed by the cold!" It was 15 degrees on the snow drifts at O'Hare that day.

A female Pallas cat arrived from the Denver Zoo in trade for a female caracal sent last year. The Pallas is mother of the two females we purchased from Denver Zoo in 1979.

We also received a male patas monkey from Baltimore Zoo. This is an unrelated male, one who will replace our other males, sold and traded.

A pair of Chinese leopards returned here from Como Zoo. They were in St. Paul on loan for a year.

Breeding loans sent a male snow leopard to Buffalo Zoo, a mandrill to Lincoln's Nebraska Zoo, another to Brookfield Zoo, and a clouded leopard to San Diego Zoo. A pair of kinkajou was sold to a dealer in Florida and three male Japanese macaques were sold to Binghamton (New York) Zoo.

Among births: a pair of blackbuck antelope, male patas monkey, three female caracals, male orangutan. Twenty-six domestic sheep and 12 domestic goats were born in Children's Zoo and will no doubt become busy little beggars in the Children's Zoo contact area this summer.

Deaths in the mammal collection: kudu, mule deer, fruit bat, axis deer, male Himalayan black bear, male dall sheep, and our oldest cotton-top marmoset.

Most of the birds are now in the outdoor areas for the summer. Glass replacement in the penguin exhibit is scheduled to start soon. Donald Bruning, curator of birds, Bronx Zoo, spent four days in our bird department and has offered many suggestions on our bird collection and aviary exhibits.

AT THE ZOO

June 5 Asian, African and South American Yard Tours, including elephant demonstration, start today, continue through summer. Conducted by Pride.

June 5-6 Blue Ridge County Line Band on Flamingo Lake Patio.

June 6 Kandu the Magician in Children's Zoo Theater 1:30 and 3.

June 17-July 4 Zookeeper-for-a-Day Contest entries accepted. Open to all ages. Three drawings.

June 12-13 Victoria Station Days. Barbecued ribs. Engineer hats for children who ride train. **Lost Marble Band** playing blue grass music on Flamingo Lake Patio.

June 13 Kandu the Magician in Children's Zoo Theater 1:30 and 3.

June 17 Annual Picnic for Zoological Society members and their families 5:30-8:30. Mime Theater's Children's Show. Ooompah Band. Clowns. Magicians. Zoo Pride guides. Zootique. The whole Zoo open. Train and Zoomobiles operating.

June 20 Kandu the Magician in Children's Zoo Theater 1:30 and 3.

June 21 Discovery Center Opens!

June 26-27 Lost Marble Band on Flamingo Lake Patio.

June 27 Kandu the Magician in Children's Zoo Theater 1:30 and 3.

June 29 Zoo Camp for ages 5-6.

July 3 Blue Ridge County Line Band on Flamingo Lake Patio.

July 4 Sierra on Flamingo Lake Patio. **Kandu the Magician** in Children's Zoo.

July 5 Blue Ridge County Line Band on Flamingo Lake Patio.

July 7-8 Zoo Camp for ages 6-8.

July 9 Keeper's Day for winners of Zookeeper-for-a-Day contest.

July 10-11 Brew County Rounders Band on Flamingo Lake Patio.

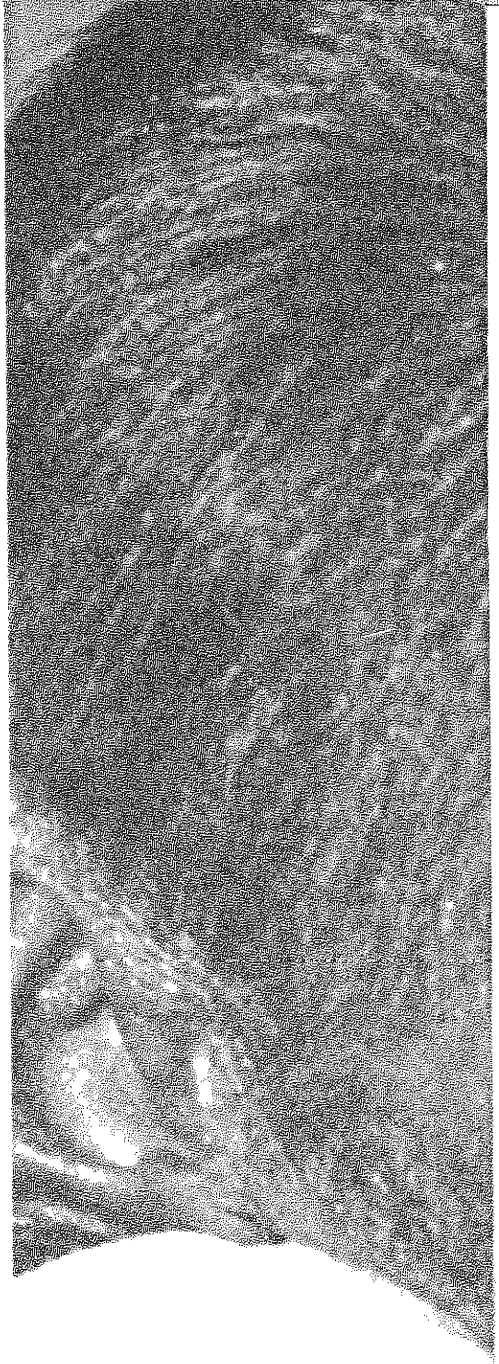
July 11 Kandu the Magician in Children's Zoo Theater 1:30 and 3.

July 14-15 Zoo Camp for ages 9-11.

July 16 Shindig of the Year for members of the Zoological Society and their families. **Champagne Picnic. Annual Meeting of Members** (it used to be in October) to hear San Diego Zoo **Joan Embery. Animal Adoption Kick-Off.** Want to adopt an animal? This is your first chance!

July 17-18 Blue Ridge County Line Band on Flamingo Lake Patio.

July 18 Kandu the Magician in Children's Zoo Theater 1:30 and 3.



Lowland Gorilla Mandara: Edward Leone Photo

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