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Abstract: The purpose of this paper is to tackle records themselves, what they are, what they could be and offer a digest of notable longevity data from my files.

Zoos do have records against the meaning of researchers who are of the opinion that there are no records, but there is also the problem with the zoo's budget. The director must be willing to make a commitment in this regard, he must realize that some basic records are necessary, and must see that they are established. Several zoos in America now have progressive record systems. Attached is a longevity record for zoo felids including cheetah.

RECORD KEEPING AND LONGEVITY OF FELIDS IN CAPTIVITY

Marvin L. Jones

Over the past three months I have attended a number of meetings where the principal topic has been the use of zoos in research, and one major complaint that constantly appears concerns records of the animals in the particular collection being discussed, or the lack of suitable records. Unfortunately many academic researchers are of the opinion that there are no records, which is far from being true, or that the files available are meager, which is quite to the point.

For over 30 years I have been digging into zoo files in an attempt to record longevity and exhibition data for more than 2,800 species and subspecies of mammals that have been a part of the world's zoo collections. These files are somewhat a mirror of what the zoos have to offer; in some cases I have more only because I have been able by careful analysis to determine origin of specific individuals, and keep track of one animal as it moves about the zoo world. You might call this an informal studbook. Scientists have been calling for the establishment of studbooks or registers for all of the many felines now in captivity, and I would agree this seems a necessity, in as much as many of our zoo specimens are closely related, and deleterious inbreeding does occur (Appendix A).

The purpose of this paper is to tackle records themselves; what they are, what they could be and offer a digest of notable longevity data from my files.

Record keeping has been part of the everyday administrative work at many zoos, and one can find card files going back to 1829 at London, 1840 at Amsterdam, 1865 at Berlin, 1874 at Philadelphia, and 1900 at both the Bronx and Washington. Unfortunately many of the files of European zoos were lost in the massive air raids of World War II, and for many of the zoos established in this century record keeping is a new procedure. It is closely tied to how the zoo is operated and by whom. The zoo that does not have a secretary, or a zoologist, cannot be expected to have very good records, and while in this day and age it would seem the height of folly to expect any zoo to operate only with a director, several do.

At the recent meeting of the A.A.A.S. in San Francisco the subject of hiring a

staff member who would be in charge of just research was given considerable comment. The salary range proposed was close to \$20,000 a year, and at the time I could not help but think of the many zoo directors around both the U.S. and Europe who make far less than that; and not having any assistance, are expected to perform Herculean tasks in conservation, education and research and still run a clean and complete zoo. The London Zoo has for many years funded the position of records keeper, and among zoos now paying someone just to handle records are Oklahoma City, the Bronx, National Zoological Park, San Diego and Berlin. However, most zoos cannot afford this luxury, which must be taken into consideration by anyone involved in research of zoo animals, felines as well as primates, birds or what have you. Still one does expect something, and what does exist is admittedly in many cases very little.

Normally records are small cards, often one per each individual animal. These list the sex, date of arrival, and date of departure when it leaves. The name of the animal may also be recorded, although not always. This is the sum total of what one will find on the majority of zoo records at most zoos of the world. Missing are such important data as origin, previous and present medical history and behavior in captivity. Only a handful of zoos can offer this vital data so vital to captive breeding programs. It is just this lack that brings the average studbook keeper to the point of frustration, and brings down on the head of the zoo director the wrath of the scientific community.

Conservation of felines in captivity has been the overriding theme at this and past symposia; yet almost all of our various projects are threatened by the lack of information on just where the animals we are working with came from. For Siberian tigers we know the origin of a few animals, since the Zoo Center in Moscow used to provide each animal with a passport; giving important facts on the area of capture, date and history until departure from the U.S.S.R. If such passports are still being used they are not being sent along with the animals by present animal brokers. One can assume the major point of origin for many of the cheetahs now in captivity based on the fact that the dealers and trappers working out of South West Africa secure their animals in that general area; however, the fact that animals often pass through two or three or more hands before finally arriving at the zoo has tended to obscure the original point of origin. I know of one black leopard caught in Kenya, now in the Zurich zoo, but have no idea where virtually all of the other black leopards in the zoos of the world came from. One can assume that if the supplier worked out of Calcutta, they may have come from India, but this may not be true.

My investigation of zoo records revealed that the new zoo at Kinshasa, Zaire, secured some of its leopard stock from a European zoo and, quite possibly, also from America. If this zoo should now offer leopards onto the animal

market, how many would assume they were securing rare Congo leopards, rather than just a zoo cocktail mix? To cite a similar problem, the Arizona Sonora Desert Museum has constructed a series of new off-exhibit facilities for the breeding of margays. Yet, the animals to be used in this breeding program have come not only from Sonora region, but Brazil, Colombia, Paraguay, and Central America; many confiscated by government agents. In fact, it is more than possible that both *Felis wiedii* and *Felis tigrinus* are involved in the program and no attempt has been made to determine points of origin or subspecific identity; making this major feline breeding program of doubtful value in conservation. There are many more such programs underway where origin of stock is totally unknown.

The American Association of Zoological Parks and Aquariums (A.A.Z.P.A.) is now establishing a national data bank on zoo animals, and I would hope one of the major goals is to be able to identify individual animals. Input should come not only from zoos but, far more importantly, from brokers so that better checks can be made in movement about the U.S. of many felines. I appeal again, as I have so often in the past, to both dealers and zoos to be frank with those to whom animals are sold, and to be inquisitive about where stock has come from. We must do a better job in this regard.

I feel that for the majority of what we refer to as animal dealers, broker is far more correct. Somewhat like a share of stock, the zoo animal of today passes through many hands in its lifetime and the dealer rarely, if ever, actually captures the animal. There are exceptions like John Seago and Tim Barley, but most zoo animals are caught by one individual, sold to a local supplier, sent to the great animal markets of the Far East or Europe or South America and sent to a broker in America. Along the way it may even lose its original identity, adding to the confusion already mentioned regarding identification.

In past years most animal firms had their own trappers, and some like Hagenback even employed a zoologist on the staff to be sure that species identification was correct. As anyone interested in taxonomy soon learns, if the name did not fit a new one was coined, and thus we have several forms with the name *hagenbecki*, described from animals seen for the first time at the Stellingen Zoo. In fact, this lack of interest in taxonomy is at the root of the problem today.

Zoo research for many years consisted primarily of describing new species and subspecies of animal life in the major zoos of the world. Dead animals were eagerly examined by anatomists and taxonomists and findings published in the

major journals. Mammals were the major concern, and many of the species we now see in zoos were initially named based on specimens brought to zoos in years past. The zoos of London, Paris, Vienna, Berlin, Amsterdam and Rotterdam formed the basis for the work of many early zoologists such as Gray and Sclater, Cuvier and Milne-Edwards, Fitzinger, Matschie, and Jentink. This was the rationale for a zoo, to bring to captivity new species of the animal kingdom. Each new animal was carefully examined while still alive and in more detail dead by men whose principal profession was taxonomy. Thus, there is little doubt as to the identity of animals exhibited in the past.

Today there is virtually no interest in mammalian taxonomy in our zoos. The emphasis is the "S-S Count", where the value of a zoo is measured not so much in terms of what it is breeding or what it is contributing to conservation and education, but by the number of species and subspecies it has in the inventory. In fact I was somewhat surprised to find in my recent tour of both American and European zoos how inadequate the average zoo is in identification of the mammals it had. The name given by the broker is routinely accepted, although the broker rarely if ever has had any zoological training. One rarely sees the use of subspecific names in mammal inventories, but just the opposite is seen in the bird and reptile areas. Admittedly, not being sure of the exact origin contributes to this lack of knowledge, but the same ignorance contributes to the pressure against zoo breeding by its critics. We need to once again examine and utilize the tools of identification.

Thus far I have defended the zoos in that they do have records, but I have also joined the opposition in highlighting some of the deficiencies of the problem. Now I would like to turn to some solutions, for even on the meager zoo's budget there is room for some improvement. The director must be willing to make a commitment in this regard, he must realize that some basic records are necessary, and must see that they are established.

Are the zoo keepers involved? This facet of keeping zoo data has long been overlooked. Many keepers do have diaries and notebooks with detailed information on the animals they have cared for, or have knowledge which can be put on paper. I find that many zoos have not even thought of this medium. We have learned at recent research panels that far too often the zoo directorial staff has dismissed the keeper for his technical skill. One system that I have showed to many zoos in Europe and America was that devised by Professor Hediger when he arrived almost 30 years ago in Basel, and which he then introduced later at Zurich. Despite any personal animosity the system has been kept at Basel and in fact improved upon. However, at both zoos the basis is a daily keeper report, where the keeper makes detailed notes on his or her animals. It gives the keeper a sense of participating in the work of the zoo, apart from just keeping

the cage clean. Reports that contain the expression "nothing new" are looked upon as reflecting a lack of attention to the job. One does find a wealth of behavior data in these zoo files.

While there is a tendency on the part of zoo staff to dismiss the expressions of the keeper as being too anthropomorphic, there is no doubt that the person caring for the animal on a daily basis can offer much to its captive history. To those who have regarded the keeper as a dim-witted creature who was hired solely to keep the zoo clean, I would suggest a visit to the average zoo of today where the keeper may possess a higher degree of education than the management staff. At one zoo over half the keepers are college graduates.

Several zoos in America now have progressive record systems, some of which have been in use for several years, others were initiated in the past decade and some only since 1970. I would suggest that these zoos be consulted the next time you are giving thought to the establishment of a particular research problem. All exhibit some species of feline, and almost all have successful breeding programs. They are in Denver, Topeka, Honolulu, Houston, Columbia, Oklahoma City, Milwaukee, and the Bronx, San Diego, Evansville, Salt Lake City, Jacksonville, Indianapolis and Cincinnati. Others are joining the trend to better records as funds permit and help becomes available. Thus, despite what many think, there is something out there available for you. Exactly how much often depends on funding of the local zoo. Anyone interested in research, conservation and education can be a major help by supporting zoos.

I have prepared a series of maximum known longevity records for zoo felids (Table 1). Table 1 gives the scientific and vernacular name which has been taken from Volume 12 of the Grzimek Animal Life Encyclopaedia, published in 1974 by Van Nostrand Reinhold. For each species there is one or more records, expressed in years and months, followed by the year in which the record animal died. This will be useful in some instances to show that despite the fact that many species are now part of zoo collections, longevity has not increased. Where the individual on which this record is based was still living an asterisk appears after the year known to still be alive (in as much as some of these are living in Europe, and dates were recorded in 1972, I am not certain if they are now still living or not, and have decided to use as a cutoff the date the data were recorded in my files). The name of the specific collection has not been used with the exception of the bobcat; many zoos have objected to my showing captive longevity records for them specifically. Additions and/or corrections, are welcomed.

Literature Cited

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Table 1. Longevity records of wild felids in captivity.

<i>Felis silvestris</i> - European wild cat	12 YR 6 MO	1974*
<i>Felis s. ocreata</i> - Abyssinian wild cat	14 YR 7 MO	1907
<i>Felis s. caudata</i> - Turkestan wild cat	8 YR 11 MO	1974*
<i>Felis margarita</i> - sand cat	7 YR 5 MO	1959
<i>Felis nigripes</i> - black-footed cat	10 YR 10 MO	1971
<i>Felis chaus</i> - jungle cat	9 YR 10 MO	1901
<i>Otocolobus manul</i> - Pallas cat	11 YR 6 MO	1970
<i>Leptailurus serval</i> - serval	19 YR 3 MO	1967
<i>Lynx lynx</i> - European lynx	21 YR 10 MO	1932
	16 YR 5 MO	1974*
<i>Lynx rufus</i> - bobcat	32 YR 4 MO	1974
	This individual was captured in January, 1942 by Fred Space, owner of the Space Farm Zoo in New Jersey, died 10 May 1974.	
<i>Lynx r. baileyi</i> - Bailey's bobcat	21 YR	1974*
<i>Caracal caracal nubicus</i> - Nubian caracal	16 YR 10 MO	1927
<i>Profelis aurata</i> - African golden cat	12 YR 2 MO	1947
<i>Profelis temmincki</i> - Temminck's golden cat	17 YR 8 MO	1945
<i>Prionailurus bengalensis</i> - leopard cat	13 YR 6 MO	1960
<i>Prionailurus viverrina</i> - fishing cat	9 YR 3 MO	1879
<i>Ictailurus planiceps</i> - flat-headed cat	5 YR 10 MO	1974*
<i>Pardofelis marmorata</i> - marbled cat	8 YR 2 MO	1974*
<i>Leopardus pardalis</i> - ocelot	18 YR 4 MO	1973
<i>Leopardus wiedii</i> - margay	13 YR 2 MO	1911
	11 YR 4 MO	1972*
<i>Leopardus geoffroyi</i> - Geoffroy's cat	11 YR	1951

<i>Leopardus g. salinarium</i> - Salt Desert cat	11 YR 4 MO	1968
<i>Leopardus guigna</i> - kodkod	11 YR 4 MO	1926
<i>Lynchailurus pajeros</i> - pampas cat	10 YR	1948
<i>Lynchailurus p. garleppi</i>	13 YR 1 MO	1972*
<i>Oreailurus jacobita</i> - mountain cat (only captive record)	0 YR 2 MO	1964
<i>Herpailurus yagouaroundi</i> -jaguarundi	10 YR 6 MO	1908
	9 YR 6 MO	1974*
<i>Puma concolor ssp</i> - South American puma	19 YR 6 MO	1947
<i>Puma c. hippolestes</i> - Rocky Mountain puma	19 YR 0 MO	1923
<i>Neofelis nebulosa</i> - clouded leopard	17 YR 8 MO	1970
<i>Uncia uncia</i> - snow leopard	15 YR 4 MO	1944
	14 YR 11 MO	1972
	14 YR 0 MO	1974*
<i>Panthera pardus ssp</i> - leopard	23 YR 7 MO	1973
	21 YR 2 MO	1972*
	20 YR 1 MO	1971
<i>Panthera onca</i> - jaguar	20 YR 1 MO	1971
There are several records beyond this, however, I have not been able to fully authenticate them.		
<i>Panthera tigris tigris</i> - Bengal tiger	26 YR 3 MO	1958
	23 YR	1963
<i>Panthera leo</i> - lion	24 YR	1927
	23 YR 11 MO	1914
	21 YR 9 MO	1966
<i>Panthera l. goojratensis</i> - Indian lion	14 YR 1 MO	1935
<i>Acinonyx jubatus</i> - cheetah	15 YR 9 MO	1972*
	15 YR 6 MO	1917
	14 YR 7 MO	1957

There is a possible 20 year old animal at London-Whipsnade

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