

ZOOS AND AQUARIUMS OF GERMANY AND THE U.S.A., 1974-1986-1994

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The June 1994 issue of *International Zoo News* contained a guest editorial by Dr Hubert Lücker, Director of Dresden Zoological Garden, in which he expressed his concern over the rise of a number of groups that are now having some effect, directly or indirectly, on the operation of his zoo. Many of his colleagues in Germany probably share his concern; American readers of *I.Z.N.*, however, may have been a bit puzzled by his remarks. This is understandable, since live animal collections in the United States of America have undergone tremendous change in the last twenty years. The dissolution of the German Democratic Republic (GDR; also formerly known as East Germany) and the consolidation of all the German states into the Federal Republic of Germany (FRG; formerly known as West Germany) has had significant administrative and economic effects on the operation of zoos and aquariums in Germany, but the basic methods of operation have changed only slightly. The purpose of this paper is to illustrate what has taken place in Germany and the United States with respect to live zoological collections in the period 1974 to 1994.

Statistical information for the United States collections has in the main been drawn from the 1974 directory *Zoos and Aquariums in the Americas* edited by Michael Crotty and published by the American Association of Zoological Parks and Aquariums (AAZPA). For a few collections the 1968 directory edited by William Meeker and the 1972 directory edited by Paul Linger have also been used. For 1994 data the directory now called *Zoological Parks and Aquariums in the Americas* edited by Linda Jo Boyd and published by the American Zoo and Aquarium Association (AZA – successor to AAZPA) has been used. Two very good guides to collections in both the GDR and the FRG were published in the mid-1980s, but they lack statistical information. On the 100th anniversary of the Verband Deutscher Zoodirektoren (Union of German Zoo Directors) in 1986, Berlin Zoo published a special edition of its journal *Bongo* with detailed statistical data on the Verband by Prof. Dr Heinz-Georg Klös, and it is quoted in this paper. I have also used data in the reference section of the *International Zoo Yearbook*, published by the Zoological Society of London, for the year 1974 for collections in the FRG, and both 1974 and 1986 for collections in the GDR.

The author has been visiting American collections on a regular basis

about today; the problem has not been solved in the 20 years since 1974 – except that today it is talked about in the media by the anti-zoo groups, as well as by the AZA.

Something new for the United States was the creation of a few companies offering advice on exhibit design and long-term planning and providing their services nationwide: until now zoos had depended on local architects and few thought about long-range plans, or master plans as they were usually called. Fibreglass had revolutionized the actual appearance of exhibits; some collections were mixing fibreglass and concrete, which allowed the growing of plants on the artificial rocks thus created. The naked cage was fast disappearing.

Many zoos were still part of municipal park departments, and in some there was still no director in 1974; there would be a curator, maybe, but the local Parks Director would also be in charge of the animal collection. However, this was changing as younger men with college training entered the zoo field. I say men, for there were few women. AAZPA had gone independent a few years before, divorcing itself from the National Recreation and Parks Association, successor to the American Institute of Park Executives which was the parent organization when AAZPA was founded in 1924. Zoological societies had always operated the major zoos of New York, Philadelphia and Chicago, but many were now being created to help the municipal zoo with acquisition of animals, construction of exhibits and perhaps operation of the Children's Zoo. Some also took over the food and drink concessions. In-zoo transportation systems such as motor-driven caravans or trains were also often operated by these support groups, but they had little voice in day-to-day zoo operations.

Several of the major collections were engaged in education programs supervised by a professional staff educator, but the majority of zoos and aquariums could not afford this luxury. In 1964 Mrs Max K. Jamison of the Greater Los Angeles Zoo Association came up with the idea called 'docents', volunteers trained by zoo staff, who would conduct educational tours of the zoo for school children and other students. This won widespread acceptance and, with the docents, zoos and aquariums had to hire at least a volunteer coordinator; actually, many used the opportunity to finally add a professional educator to the staff, and with this increased attention on education, it was naturally a major topic for the 1974 conference.

A few major zoos and aquariums, such as Philadelphia, San Diego, New York, Chicago and Washington, also had research programs ongoing, and the subject was discussed at the 1973 AAZPA meeting in Houston, where it drew some criticism from organizations interested in animal rights and humane issues.

Many collections issued a very simple yearly inventory and, as mentioned above, some were loaning one another single animals for a few breeding programs. With the endorsement in 1972 by AAZPA of the new International Species Inventory System (ISIS), collections were finally able to determine just what species U.S. zoos exhibited. This program began to be widely accepted in 1974.

Safari parks were a new innovation in zoo design, but had a very short life. Several were opened in various parts of the country, featuring large

enclosures that one drove through in one's automobile viewing lions, rhinoceroses, ungulates and often primates. Initially quite popular, most soon disappeared. On the other hand, the San Diego Wild Animal Park, where the visitor rode on a comfortable open-air monorail car on the outside of the enclosures, has proved a success.

The Anheuser-Busch company operated a few bird parks next to its breweries; which often had very large collections in California, Texas and Florida. Today only the Florida operation continues, and is now a full-fledged zoological park which draws millions each year.

In 1974 the New York Zoological Society established an off-site breeding center at St Catherine's Island in Georgia, and the National Zoological Park a similar center in 1975 at Front Royal, Virginia. Neither is open to the general public, and statistics for them are not included in data in this report. Both are flourishing in 1994 and doing the job they were intended to do.

In Germany animal collections are usually called Zoo, Zoological Garden (Zoologischer Garten), Animal Park (Tierpark), Animal Garden (Tiergarten) or Aquarium and AquaZoo. However, in the United States in 1974 one faced an often bewildering array of names in addition to the expected Zoo, Zoological Garden, Zoological Park and Aquarium. These included Biological Park, Zoo Farm, Zooland, Children's Zoo, Children's Zoo Garden, Baby Zoo, Fairyland, Storyland, Opryland, Alligator Farm, Herpetarium, Serpentarium, Reptiland, Jungle Habitat, Monkey Jungle, Game Farm, Wild Animal Farm, Wildlife Refuge, Wildlife Sanctuary, Miniature Zoo, Teaching Zoo, Desert Museum, Junior Museum, Living Museum, Deer Forest, Conservatory-Aviary, Safari, Lion Safari, Lion Country Safari, Japanese Village, Animal Haven, Bird Park, Nature Park, Institute, Sealand, Seaquarium, Sea World, Marineland, Marine World, Ocean World, Marine Science Center, Aquatarium, Seven Seas and Sea Life Park.

Besides the Director, Executive Director or General Director, the animal staff might include Director of Zoological Operations, Superintendent, Animal Manager, Naturalist, Curator, General Curator, Biologist, Aquatic Biologist, Aquarist, Herpetologist, Ornithologist and Animal Supervisor. Still, it was relatively easy, looking at the 1974 AAZPA directory, to pick out the person in overall charge and the curatorial staff. Only a few commercial collections had anyone in marketing, perhaps a few collections had someone in public relations, so that titles were in general relatively few in number, hence the topics at the 1974 AAZPA annual conference.

The American collections of 1994 have undergone a virtual revolution of changes – to the animal collections themselves, the individuals who are employed by them, the titles they use, the departments they work for, and of course the actual names of the collections. Many of the acronyms listed in Dr Lücker's editorial are used on a daily basis; they have a direct effect on the operation of virtually every American collection, and will have a major role to play in what each collection exhibits in the future.

A major change that has drawn notice in recent issues of *I.Z.N.* has been the re-naming of several New York facilities from Zoos or Aquariums to Wildlife Conservation Centers. A few collections outside the New York area have also made the switch, but in the main most AZA facilities in

1994 are called Zoological Gardens, Zoological Parks or Aquariums. Some still use other names such as Desert Museum, Living Desert, Parrot Jungle, Reptiland, Wild Animal Park, Wildlife Safari, Alligator Farm, Sea World, Sea Life Park, Marine World and The Living Seas. It is still an American habit to name a facility for an individual, as with the Chaffee Zoological Gardens of Fresno, California, named for a previous director.

The most noticeable change has come in titles for staff. The primary Director is now often called the Executive Director, Chief Executive Officer or President, or a combination of these. The heads of departments may often be called Directors, such as Director of Education. Where the Director is now the President, the chief animal curator may now be called Vice President for Animal Management. There are still General Curators and just plain Curators, but other senior animal staff may be called Director of Collections, Director of Land Animals, Director of Marine Mammals, Director of Oceanarium, Director of Zoological Operations, Biologist, Zoologist, Area Supervisor, Collections Manager, or Animal Care Manager. All of this may be a bit confusing to the German zoo animal staff member who is still just a Curator or Scientific Assistant. Keepers also have a new title in some collections, that of Caregiver.

Along with the array of new titles has come a change in duties. Senior animal staff in 1994 may be very involved in the various Species Survival Plans, keeper education and training, keeper scheduling, the budget of their department, import and export permits, keeping track of surplus specimens to ensure they have gone to responsible owners, and myriad other tasks, so that there may be precious little time to go out into the zoo and spend time with the animals. Directors may find themselves equally fully occupied. Thus both groups will be at some disadvantage at international conferences when they met their German colleagues, who still spend some time every day out walking about the zoo or aquarium.

Accreditation is now mandatory for zoo or aquarium membership in AZA, and only accredited collections are listed in the 1994 AZA directory, which accounts for the smaller number there than in the 1974 directory.

In 1974 only the very large commercial facilities were concerned about 'marketing', efforts to sell the facility as a tourist attraction, and to conventioneers and other groups (Group Sales is another name for this at some zoos). Today a great many collections have a Marketing Department which may also be in charge of arranging shows and special events. They may work closely with the Public Relations department, and another new department, that of Development. For instance the relatively small zoo at Lodi, California, which has 81 species and 206 specimens, and a full-time staff of eight, has a Director of Development and Marketing, and the education person is called Director of Education. There is a General Curator and a Veterinarian, and an overall Director of the entire operation. The metropolitan area has 450,000 people.

Public Relations, Public Affairs or Media Relations people are among the most important non-animal related staff in the typical American collection of 1994. Both the print and electronic media have a fascination with live animal collections, and the smallest incident or accident may find scores of reporters and video camera people descending on the collection. All will be eager, if possible, to have the story on the local TV

station's evening news and in the next day's newspaper. It may even go national, via the wire services or one of the TV networks. A lingering after-effect of Watergate is the tendency among many reporters not to accept the press release as being the whole story, to question and doubt. There may be employees eager to talk to the media and see themselves on local TV as 'experts'. Curatorial staff, who may not be easy to deal with in such matters, may not come across as photogenic. It will be up to the local public relations, the 'PR' staff, to make the situation as painless as possible. Zoo board members may be just as critical as the local citizen of the end result. A danger is that the media may contact another collection, perhaps on the other side of the nation, and ask its staff how they would have handled the situation, reporting their remarks or even showing them on the video program. All zoo and aquarium staff should be well aware of such incidents as they occur and practise restraint in what they pass on to the media. With the Freedom of Information Act it is, for instance, possible for individuals or groups to obtain copies of documents the local collection may have sent to governmental agencies in support of permits, or records of telephone conversations, with remarks made innocently that may not appear quite so innocent when mentioned in the reporter's story.

Today's visitor will probably arrive with a hand-held video camera, and be well aware that his footage of an accident or incident may be eagerly bought and used by the local television station. The days of being able to hide such incidents have long passed in both Germany and the United States, as in other parts of the globe.

Band concerts are still quite common in German zoos on special holidays or weekends, but are rarely seen in America; on the other hand, full orchestra concerts or small groups are popular, frequently in mid-week and in the evening. Animal shows, which used to consist perhaps of a chimpanzee act, or lions and tigers in a steel arena, are long gone. They have been replaced by scores of bird shows, usually with one or more talking amazon and African grey parrots, the flight around the show area of some free-flying cockatoos, owls, ibises, cranes, macaws or hornbills, perhaps even some falcons. Eagles may be brought out on the hands of trainers for photo opportunities, maybe even a bird lecture at the end. Most use a balloon suspended several hundred feet above the stadium where hawks will be released to swoop down to the hands of trainers; a species very commonly used is the Harris's hawk. Mammals are usually brought out onto a stage made to resemble a forest or woodland, on a leash, and the animal will jump, leap or wash his food, or illustrate a behavior very similar to what it would do in the wild; all the time the trainer will be giving natural history facts, but there will be no whips, no loud voice commands. Elephants may demonstrate their agility and strength. While circuses have in many cases been forced to abandon animal acts, zoos are adding such modern shows more and more. This also means new staff being added, such as animal trainers, and those who have to do the scheduling, Special Events people, also called Operations Managers or Directors, who may work for the Marketing department.

There are only two collections listed in the AZA 1994 directory that do not have gift shops, hence a separate line lists the Gift Shop Manager, who obviously is a very important staff member. Shops may be as small

as a kiosk, or larger than stores at the local shopping mall, but are very important sources of revenue, even if operated by a concessionaire. Many collections operate the gift shop themselves, as well as restaurants, snack bars, cafeterias, and dinner party facilities. Employees of these two operations may in fact form a major part of the total number of employees listed in Table 3. Buyers of merchandise can be very key people, who can expect to travel to trade fairs, just as animal staff may attend AZA annual and regional conferences.

Income tax laws in the United States are such that most zoological support groups are allowed to accept donations of cash or cash-in-kind while the individuals or companies may deduct such amounts from their gross income, and this has led to the creation of another new department, Development. The amount of money raised may be in the millions of dollars every year; many zoos have a yearly party which may raise many thousands of dollars, and this is usually a function of the Development department. Estate giving is an important function of this department and the tax laws for this are very different from those in Germany.

Membership may be a separate department or in some cases a part of Development. There are listed in the 1994 AZA directory 128 support groups having 1,471,752 memberships, and since many groups calculate that 80% of these represent two or more individuals, it is obvious that several million Americans belong to local zoological societies, which may be called that or Friends of the Zoo, or use the title Zoological Foundation or Trust. Members usually receive free admission to the collection, even if it is municipally operated, tickets for guests, some kind of publication, such as San Diego's *Zoonooz*, and invitations to special events. Politicians in some of the cities where the zoo is still municipally operated have questioned free admission by such support group members, suggesting that it be withdrawn. That of course might have a major effect on retaining members of the support groups, and indirectly the zoo might lose much more money than it would gain by charging these individuals for zoo admission.

Many of the larger American collections have a staff library, and the Librarian may be a college-trained individual, skilled in providing assistance to all staff members of the various departments, perhaps via the new national computer network services.

In the 1970s another new staff position was created, that of Registrar, whose job is to ensure accurate reporting of the collections to ISIS (now called the International Species Information System) and assist with studbook reporting or even initiation. All of these individuals are computer-knowledgeable, and may also assist in the shipping of animal specimens, arranging for permits, keeping up with changes in national and international regulations, and providing historical information to staff and outside experts. They too now have their own national organization which meets annually, shortly after the national AZA conference.

A recent German visitor to San Diego reminded me of another staff position unique to America, that of Chief of Security. Many collections have uniformed officers, who may carry firearms, patrol the collection in vehicles, and keep a watchful eye on parking lots. They also carry money from finance offices to the various kiosks or restaurants, help in matching up lost children with parents, and make announcements on the

collection public address system. At some collections they may wear suits or dark sport coats, and carry not firearms but two-way radios.

In-house transportation systems are quite common in many American collections, such as the large double-decker tour buses of San Diego Zoo or the Wild Animal Park monorail, with driver guides who provide a commentary on the collection. Many visitors may only have a limited amount of time, and thus the guided bus tour is practical and also a source of revenue.

As will be seen in the statistics, many collections now have a full-time veterinarian, or at least one on call or working part-time; these are assisted by Animal Technicians, more or less nurses. There may be an in-house laboratory for fecal and blood analysis, perhaps a Physiologist, a Pathologist, and at many collections a Nutritionist. In many cases these form the Animal Services Department.

Research has been abandoned as a name in favor of Conservation or Science, and while the major collections have long had such a department, several smaller collections now also have a Curator of Conservation or a department with a totally different name such as San Diego's Center for the Reproduction of Endangered Species. Many of the individuals working in this area have advanced academic degrees, although in general very few zoo staff in America have ties to local academic institutions. They may have such titles as Virologist, Geneticist, Population Manager, Endocrinologist, Animal Behaviorist, or simply Resident Scientist. They will represent the collection at scientific gatherings and present papers, as well as publishing articles in journals. They will be the link between the collection and the academic world.

Many of the organizations mentioned by Dr Lücker have a direct bearing on the daily animal activities of American zoological collections, especially zoos. Species Survival Plan (SSP) committees were formed in the 1980s, mostly volunteers elected by their peers, who make recommendations on maintenance of many species. They work closely with the European counterpart, EEP, and similar consortia globally.

For many years large land mammals have had little commercial value within the collections of Europe, being loaned from one collection to another, but until the EEP not as part of any formal plan. With the initiation of the SSP much the same has taken place in America; specimens are moved between collections only for the cost of transportation, which – due to the distances involved and perhaps various medical tests – may be quite expensive. But this has allowed relatively small collections to exhibit rare species like snow leopards, gorillas, Sumatran tigers, black rhinoceros and the like, which they would never have been able to afford in 1974. Some of the SSPs are more successful than others, it depends to some degree on the membership of the plan and who is the coordinator. Many of the plans meet twice a year, once at the AZA meeting (most are open to anyone who wishes to sit in) and once in the winter months primarily for members. A more recent development is the formation of the Taxon Advisory Groups (TAGs) and the Faunal Interest Groups (FIGs), also usually volunteers interested in specific groups of animals or geographical regions. Internationally, a few years ago, a somewhat moribund group called the IUCN/SSC Captive Breeding Specialist Group (CBSG) was given a new breath of life by Dr Ulysses S.

Seal, who had created the ISIS system. Ulie Seal, as he is widely known to his friends, in very quick time enlarged this group, which was genetically oriented, into a major worldwide group. He was able to persuade the hosts of the yearly gatherings of the International Union of Directors of Zoological Gardens (IUDZG) to allow him a day or two prior to the conference for a meeting of CBSG. Attendance at some meetings has been well over 100 individuals. CBSG has also been holding a varied series of workshops around the globe, under their own acronyms, which may have an effect on the species that collections will be exhibiting in the future. *Symbiosis*, the journal of the Association of Zoo and Aquarium Docents (of North America) has a two-page article in Vol. 8, No. 4 (1994) covering the aims and work of CBSG by one of its staff, Dr Onnie Byers. It talks about the newest program, the Global Captive Action Recommendation Workshop, or GCAR, previously called the Global Captive Action Plan (GCAP). The purpose of both GCAR and GCAP is the same – they recommend which taxa are most in need of captive propagation, and hence: (1) which taxa in captivity should remain there; (2) which taxa are not in captivity but should be; and (3) which taxa currently in captivity should no longer be maintained there. These are global recommendations, and thus affect collections in both Germany and the United States. Their adoption would to some degree remove from the director and his staff the decisions as to what species a collection should have, or may acquire in the future.

German zoos may see all of this as an unwarranted intrusion into decisions to be made by zoo staff, but such views are widely accepted in American collections in 1994. Dr William Conway has often commented on the limited holding space in the zoos and aquariums of America, and if the major effort is to keep and breed endangered species, the amount of space available to the others will be very little indeed. San Diego is unique in still bringing to America new species, such as MacNeill's deer, Siberian musk deer, and Barbary red deer, all on the endangered list, as well as Sudan Barbary sheep which are not. Finding homes in American zoos for surplus young is still not difficult, but may become so in the not too distant future. All of these would be welcomed in Germany.

The 1994 AZA annual conference was held in late September in Atlanta, and the program covered the entire range of interests of American zoological collections. Many animal programs were to be found in the meetings of the various SSPs, FIGs, and related groups, rather than in the general sessions, but they were well attended; over 1,200 people came to the meeting. The range was far broader than at the 1974 Philadelphia meeting.

Yes, American collections in 1994 are much different from in 1974, many more people are employed by zoos and aquariums, and the number of visitors has also risen. The American public must like what it sees, or it would stay away. Zoos and aquariums are businesses, and as in any business money must be made to pay the bills; American zoos and aquariums just do it in a different way from German ones. Many are engaged in wildlife conservation projects in foreign lands that can be very expensive, and may not result in new species for the collection. As has been mentioned, several collections are very involved in a variety of research projects, which may have a bearing on expanding wild

populations as well as those in captivity. There is much more interest in genetics in American zoos than in German ones. The American zoo is still a quality institution, and has, one hopes, a bright future. It is under constant attack by many animal rights groups, and to some degree by some of the media, but it survives. Visiting the average American zoo or one of the large new aquariums is a very educational and recreational experience. There may be more people working in many more occupations, but all have the best interests of the animal collection in mind; the animals are still very important, without them the collection could not exist. Just as I enjoy visiting German zoos, I also look forward to every visit to an American collection.

Germany in 1974 was divided politically into two independent countries, the German Democratic Republic (GDR) and the Federal Republic of Germany (FRG), with the western part of Berlin still technically controlled by the allied governments of France, Great Britain and the United States, but using the money of the FRG, and to the visitor it seemed like any other city in the FRG. Many new zoos and aquariums had been created in each country since 1945. In the GDR they were viewed as part of the cultural life of the city and admission fees were kept low, so they could be enjoyed by everyone at little cost; almost all were subsidized by the municipal authorities. A totally new and large zoo had been created in the eastern portion of Berlin, called Tierpark Berlin; in land area it was the largest zoo in Europe, with many multi-acre exhibits for ungulates, and very large bear exhibits all using natural rock – no gunite here, and no artificial plants, even indoors in the large reptile house, called the Snake Farm. The Alfred Brehm House for large carnivores, small mammals and birds was the largest of its kind in the world, its center hall for birds and fruit bats as big as some tropical houses in American zoos just now being built in the 1990s. The national currency was not convertible and hence, while there was some trade with collections in the FRG and western Europe, the primary orientation was eastern. Russian was widely spoken and used on zoo labels, and species from the Soviet Union were exhibited in many collections, as well as species from other countries in what was then called the 'bloc', such as Vietnam and Cuba. San Diego maintained excellent relations with the Tierpark, which served as a quarantine place for many species from China, such as tufted deer and gorals. There were occasional meetings between zoo personnel from both the GDR and FRG at the yearly Europe-wide veterinary conferences, the arranger of which for years was Dr Ippen of the Tierpark research staff. Being a member of the United States Army from 1951 to early 1972, I was not allowed to go behind the 'Iron Curtain', but since the whole of Berlin was still technically under four-power rule, I could visit the Tierpark, which I first did in 1955.

The basic daily method of zoo operation was much the same in the GDR as in the FRG. The director and his staff were responsible for the animal collection, and this was the primary reason for the existence of the zoo or aquarium; there were no gift shops, and food service was handled by the nationalized restaurant service. Guide books were issued and postcards available. The German zoo professional journal *Der Zoologische Garten* was published periodically and the editor was Prof. Dr Dathe, Director of Tierpark Berlin; it was also the journal of the IUDZG.

The other part of Germany, the FRG, had a freely convertible currency and many animal importers bringing to the market many new species every year. The majority of collections were municipally funded and operated, a few, like Hamburg's Carl Hagenbeck's Tierpark, were totally private, a few were operated by private societies (Verein) or AGs (Aktien-Gesellschaft), which were companies that many years before had issued stock to establish the collection. Quite often shares were now held by the municipality, who may have made considerable money available to the collection, but technically it still operated as an AG.

All the damage from World War Two had been removed and many new exhibits created; zoo staff from the United States were coming over regularly to see some of the innovations, such as the use of thin strands of wire almost invisible to the naked eye (first developed at Basel Zoo, Switzerland), and the excellent new bird house at Frankfurt. Almost every collection had a lavish guide book, many using color photographs. Large posters were widely used to advertise the zoo and placed at railway stations, or wherever potential visitors might gather. It was (and is) common for zoos to have, somewhere in the zoo, an exhibition of such posters from other collections, even some very close by. There were so many different animal species available for exhibit in such a variety of settings that the German public gave wide support to its scores of animal collections.

A few zoos had begun to become involved in education – Frankfurt Zoo had a full-time staff member who prepared detailed reports on the collection which were sent to schools in the general area, and Cologne built a Zoo School on the premises. But there were no docents, and the emphasis was on giving information to the teacher rather than directly to the students. Zoo labels were very similar everywhere, following the example introduced years before by Dr Hediger in Switzerland. There was the German name of the species in large bold type, the scientific name with the name of the describer and perhaps the date it was first described for science. The name in English, French or perhaps Dutch might also often be given. The range was on a small map, with the native habitat in red. There might be a black-and-white photograph, and a small amount of text in standard-size typewriter print on white paper giving natural history facts. Frankfurt sometimes had a small red label mentioning the fact that a certain species could not be seen in any other zoo.

As in the GDR, the scientific staff consisted of the director and his scientific assistants, perhaps now called *Kuratoren*. Television was slowly becoming popular; one director, Dr Grzimek of Frankfurt Zoo, had a very well-known TV program. He was also a prolific writer and was perhaps the best-recognized German zoo person, both in Germany and abroad; his animal encyclopaedia was translated into many languages.

1994 has seen little change. The GDR has been abolished and all the German states are now part of an expanded FRG, although people of the eastern parts are frequently called 'Ossies' and those of the western part 'Wessies'. Foodstuffs are more easily obtained, but at higher prices, both for the public at large and for zoos and aquariums. Many of the GDR's zoos have now been converted from strictly municipally-operated administrations to limited liability companies (recognisable by the German

acronym *GmbH*), but with major funding still coming from the city. Many cities throughout the country now have zoological support groups, more or less 'Friends of the Zoo'; they may have a publication, attend lectures and talks about animals, and maybe tour the grounds with staff. They rarely receive free admission. Many German zoos do sell yearly passes, but these individuals have no say in the operation of the collection. Friends' groups frequently travel to other zoos and aquariums throughout Europe, and may even travel overseas.

The nationally operated restaurants of the GDR zoos are now privatized. They and the ones operating in other parts of the FRG are still usually operated by a concessionaire – there are no Food Service departments in German zoos – and while a few may have a kiosk selling souvenirs, no real gift shops, these too will be run by a concessionaire; only one collection has turned this over to a Friends of the Zoo group.

It has always been traditional for the director and senior staff to live on the zoo grounds, and at many zoos this has been expanded to many other employees. Housing outside the zoo may be very expensive, especially in the old states of the GDR, where housing was subsidized by the government. Automobiles are very common, but many employees, especially those living on the zoo grounds, may not own one. Housing may also be available on the zoo grounds for visiting staff from other collections, even Americans. It is usually free and very comfortable, and one can walk about the zoo after the public has left.

As in 1974, the scientific staff consists of the director and the curators, or scientific assistants. Many of the latter are now women, as in America. Virtually all German directors have advanced degrees or are veterinarians. American zoo staff should be warned that the practice of calling individuals by their first name is normally not done in Germany – keepers invariably use the title and last name in speaking to zoo staff. Many curators are prolific writers, preparing papers for the many technical journals that are published in Germany, as well as for *Der Zoologische Garten*, the *Zoo Biology* of Germany. This is now edited by the highly respected Dr Wolfgang Grummt, who also serves as Deputy Director and Curator of Birds at Tierpark Berlin.

German collections use little processed food, as is the norm in America. No monkey chow, few pellets, and no meat sausages to be defrosted. Horse meat is still the norm, perhaps with bones attached, and a variety of grains, fruits and vegetables, many still prepared in the exhibit area kitchen by keepers. Many of these will have windows looking into the keeper room so the public can see what the animals will be fed that day (it also of course means that the room will be kept spotless). Nutrition will be overseen by the curators and principal keepers.

Many collections now have a full-time educator, almost always with local teaching credentials, and there may even be a Zoo School on the premises. A few, like Wuppertal, may even have a special guide book just for students.

Inasmuch as many of the staff live on the zoo grounds, the work day usually begins with a tour of all the major exhibits, frequently accompanied by the director. The purpose is to pay attention to the health of the animals (the veterinarian may also go on these 'rounds'), talk to senior keepers, and see what repair work or maintenance needs to be done (and

in many zoos it will be done that day, not weeks later as may be the case in American zoos). I have always found going around Berlin Zoo with the senior staff on these morning tours to be a major learning experience. The tour may be followed by a breakfast snack, and then it's time for the office work. One benefit of such tours is that all the senior staff get to know the whole animal collection, not just the area each individual curator has responsibility for.

Zoo keeping is still a trade in Germany, a trade one learns by working at the zoo rather than by attending a vocational school, and while there attending classes given by zoo staff. There will be both an oral and written examination which one must pass to receive the necessary papers qualifying one as a Zoo Keeper. In 1992, for instance, senior keepers from all over Germany attended a special multi-week course at Wuppertal Zoo. Keepers in Germany, as in America, now have their own professional organization and their own journal, called *Arbeitsplatz Zoo*.

There is no Registrar in German zoos; this task is handled by one of the scientific assistants, and while many zoos are now part of the ISIS system, many records are still kept on card files – as they are at San Diego Zoo and Wild Animal Park.

A few animal dealers still import a few bird and reptile species, usually non-CITES ones, and while there is no Endangered Species Act in Germany, there are similar regulations dealing with animal import and export, which may be controlled at both state and national levels. All zoos these days have a full-time veterinarian (very often, as in America, a woman) who also works very closely with governmental veterinary offices. Many zoos now have a hospital, but there are very few research facilities – a major one is at Tierpark Berlin.

Zoos maintain good relations with a number of third-world countries and may bring zoo staff to Germany for training. Almost all German senior staff have done field work, perhaps in connection with their degree dissertations, and travel widely to other zoos around the world; unlike their American counterparts, they often prepare lengthy articles on their visits for publication.

There is very little use of fibreglass in exhibits; if stonework is called for, it will be natural stone. Also, there are no national architectural or planning companies – planning is done by zoo staff working with local architects (perhaps employed by the city) on new exhibits. The trend is to exhibits with natural substrate, as in the new bear exhibits at Munich and Wuppertal. There are no in-house tram systems or buses – one has to be prepared to walk. So visiting a German zoo can be a relaxing, and educational, experience. The American zoo staff member just has to be aware of some of the differences, by not asking where is the gift shop, why there is no development or marketing department, no membership booth, no animal shows, few tropical houses... just the animals.

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References are cited in the text. Manuscript completed 5 October 1994.

Table 1. Methods of operation, American zoos and aquariums.

	1974	1994
Municipal (City/County/Metro/Commission)	109	68
U.S. Government/State Government	10	7
Society (also Foundation/Trust/Institute/non-profit Corp.)	50	62
Private (also for-profit Corp.)	82	22
<i>Total</i>	<i>251</i>	<i>159</i>

Table 2. Number of species in the collection, American zoos and aquariums.

	1974	1994
Number unknown	19	0
99 species or less	116	36
100 to 199 species	58	51
200 species or more	58	72
<i>Total</i>	<i>251</i>	<i>159</i>

1974 (200 species or more)

203	T. Wayland Vaughan Aquarium, La Jolla
214	Conservatory-Aviary, Pittsburgh
216	Tulsa Zoo
221	New England Aquarium
224	Arizona-Sonora Desert Museum
231	Cheyenne Mountain Zoo, Colorado Springs
237	National Aquarium, Washington
239	Sacramento Zoo
247	Catoctin Mountain Zoo, Thurmont
249	Randolph Park Zoo, Tucson
251	Roeding Park Zoo, Fresno
267	Jacksonville Zoo
274	Turtle Back Zoo, West Orange
276	Woodland Park Zoo, Seattle
285	Southwick Wild Animal Farm, Blackstone
290	Oregon State Marine Science Center, Newport
318	Cleveland Zoo
321	Birmingham Zoo
321	Point Defiance Zoo and Aquarium, Tacoma

1994 (200 species or more)

206	Knoxville Zoo
208	The Zoo, Gulf Breeze
209	The Greater Baton Rouge Zoo
214	Abilene Zoo
214	Sea World of Texas, San Antonio
215	National Aviary in Pittsburgh
217	Chaffee Zoo, Fresno
217	Burnet Park Zoo, Syracuse
231	Zoo Atlanta
237	Birmingham Zoo
242	Baltimore Zoo
242	Detroit Zoo
244	Kansas City Zoo
247	Tulsa Zoo
247	Franklin Park Zoo, Boston
248	Caldwell Zoo, Tyler
252	Sea Life Park, Waimanalo
252	Metro Washington Park Zoo, Portland
255	Lincoln Park Zoo, Chicago
261	San Francisco Zoo
264	Honolulu Zoo
267	Rio Grande Zoo, Albuquerque
268	Waikiki Aquarium, Honolulu
273	Woodland Park Zoo, Seattle
281	New Jersey State Aquarium, Camden

323	San Francisco Zoo	302	Aquarium for Wildlife
327	Louisiana Purchase Gardens and Zoo, Monroe		Conservation, New York
329	Honolulu Zoo	305	Lowry Park Zoo, Tampa
330	Hogle Zoo, Salt Lake City	308	Wildlife World Zoo, Litchfield Park
331	Denver Zoo	316	Hogle Zoo, Salt Lake City
336	Phoenix Zoo	323	Arizona-Sonora Desert Museum
342	Baltimore Zoo	330	Busch Gardens, Tampa
343	Crandon Park Zoo, Miami	330	Dallas Zoo
353	Buffalo Zoo	336	Point Defiance Zoo and Aquarium, Tacoma
372	Riverbanks Zoo, Columbia	337	Phoenix Zoo
403	Atlanta Zoo	347	Seattle Aquarium
412	Gladys Porter Zoo, Brownsville	356	Sea World of Ohio, Aurora
420	Memphis Zoo and Aquarium	376	Indianapolis Zoo
433	Detroit Zoo	384	Sedgwick County Zoo, Wichita
435	Staten Island Zoo	385	Audubon Zoo, New Orleans
438	Shedd Aquarium, Chicago	388	Louisville Zoo
452	Busch Gardens, Tampa	410	Monterey Bay Aquarium, Monterey
465	Dallas Aquarium	415	San Diego Wild Animal Park
471	Miami Seaquarium	415	Brookfield Zoo
478	Pittsburgh Zoo	417	Tennessee Aquarium, Chattanooga
495	Sea World of California, San Diego	427	Memphis Zoo and Aquarium
526	Oklahoma City Zoo	430	Milwaukee Zoo
541	Houston Zoo	435	Pittsburgh Zoo
557	Philadelphia Zoo	437	Philadelphia Zoo
557	Toledo Zoo	451	Sea World of Florida, Orlando
595	Brookfield Zoo	457	Minnesota Zoo, Apple Valley
600	National Zoo, Washington	462	Henry Doorly Zoo, Omaha
602	Cincinnati Zoo	466	Los Angeles Zoo
631	Lincoln Park Zoo, Chicago	471	New England Aquarium, Boston
677	Los Angeles Zoo	477	Gladys Porter Zoo, Brownsville
684	Columbus Zoo	485	National Zoo, Washington
698	Milwaukee Zoo	488	Toledo Zoo
710	Bronx Zoo	489	Riverbanks Zoo, Columbia
731	St Louis Zoo	528	Aquarium of the Americas, New Orleans
747	Dallas Zoo	573	Cleveland Zoo
808	Steinhart Aquarium, San Francisco	573	Denver Zoo
841	Fort Worth Zoo	577	Oklahoma City Zoo
841	San Antonio Zoo	589	Bronx Zoo/ Wildlife Conservation Park
1203	San Diego Zoo	609	National Aquarium in Baltimore
		627	San Antonio Zoo
		647	Columbus Zoo

650	Houston Zoo
674	St. Louis Zoo
681	Cincinnati Zoo
764	Sea World of California, San Diego
778	San Diego Zoo
836	Shedd Aquarium, Chicago
904	Fort Worth Zoo

Several of the collections have changed names between 1974 and 1994, such as the Conservatory-Aviary in Pittsburgh to National Aviary; Randolph Park Zoo in Tucson to Gene C. Reid Zoo; Roeding Park Zoo in Fresno to Chaffee Zoo. In some cases the 1974 zoo may have been demolished and a totally new zoo constructed at a new site, as in Miami, where Crandon Park Zoo is gone and the collection is now called MetroZoo and at a different location. (As a result of the recent hurricane, the zoo now has only 163 species, and thus is not in the 200-plus list.)

Table 3. Number of employees, American zoos and aquariums.¹

	1974	1994
Directors (incl. Presidents, Executive Directors, General Directors) (male.female)	248.3	143.16
Veterinarians (full-time) (male.female)	57.2	113.37
Veterinarians (part-time, consulting) (male.female)	28.1	74.14
Educators (incl. Education Directors, Curators of Education) (male.female)	21.16	45.96
Docent programs	30	125
<i>Total full-time employees</i>	<i>7,864</i>	<i>16,411</i>

¹ 251 collections in 1974, 159 collections in 1994

Table 4. Number of visitors, American zoos and aquariums.

1974

Total at 251 collections – 101,628,422

Collections with more than 1,000,000 and price of admission for adults.

1,000,000	Woodland Park Zoo, Seattle	Free admission
1,000,000	Cleveland Park Zoo, Greenville	Free admission
1,000,000	Hersheypark Animal Garden, Hershey	\$5.75
1,000,000	Staten Island Zoo, New York	Free admission
1,091,000	Sealand of Ohio, Cedar Point	\$6.25
1,172,231	Philadelphia Zoo,	\$1.75
1,180,000	Sea World of Ohio, Aurora	\$4.75
1,300,000	Steinhart Aquarium, San Francisco	\$0.50
1,315,000	San Francisco Zoo	\$0.50
1,329,000	Honolulu Zoo	Free admission
1,400,000	Lion Country Safari, Laguna Hills	\$3.95
1,401,382	Crandon Park Zoo, Miami	Free admission
1,427,250	Los Angeles Zoo	\$0.50

1,441,012	Milwaukee Zoo	\$0.50
1,500,000	Marineland, Palos Verdes	\$3.75
1,598,796	Houston Zoo	Free admission
1,700,000	Opryland, Nashville	\$6.00
1,700,000	Jungle Larry's Safari Is., Cedar Point	\$0.50
1,718,588	Sea World of California, San Diego	\$4.50
2,000,000	Busch Gardens, Tampa	\$4.75
2,000,000	Sea World of Florida, Orlando	\$4.75
2,000,000	Brookfield Zoo	\$1.00
2,000,000	Detroit Zoo	\$0.50
2,400,000	Bronx Zoo	\$1.00
2,500,000	Central Park Zoo, New York	Free admission
3,000,000	St Louis Zoo	Free admission
3,036,326	San Diego Zoo	\$2.00
4,000,000	Lincoln Park Zoo, Chicago	Free admission
5,000,000	National Zoo, Washington	Free admission

1994

Total at 159 collections – 111,619,493

Collections with more than 1,000,000 and price of admission for adults

1,000,000	Henry Doorly Zoo, Omaha	\$6.50
1,000,000	Metro Washington Park Zoo, Portland	\$5.50
1,000,000	Woodland Park Zoo, Seattle	\$5.50
1,050,000	Fort Worth Zoo	\$5.00
1,050,000	Detroit Zoo	\$6.00
1,200,000	Columbus Zoo	\$5.00
1,220,000	Philadelphia Zoo	\$7.00
1,300,000	San Diego Wild Animal Park	\$17.45
1,300,000	New England Aquarium, Boston	\$8.50
1,300,000	Cincinnati Zoo	\$7.50
1,342,136	Denver Zoo	\$6.00
1,357,361	Minnesota Zoo, Apple Valley	\$8.00
1,399,579	Houston Zoo	\$2.50
1,400,000	Aquarium of the Americas, New Orleans	\$9.25
1,400,000	Milwaukee Zoo	\$7.00
1,439,000	Cleveland Zoo	\$7.00
1,487,000	Tennessee Aquarium, Chattanooga	\$8.75
1,500,000	National Aquarium in Baltimore	\$11.50
1,500,000	Sea World of Texas, San Antonio	\$24.95
1,500,000	Sea World of Ohio, Aurora	\$21.95
1,600,000	Los Angeles Zoo	\$8.25
1,700,000	Monterey Bay Aquarium, Monterey	\$11.25
1,858,766	Shedd Aquarium, Chicago	\$8.00
1,900,000	Marine World, Vallejo	\$23.95
1,950,000	Brookfield Zoo	\$4.00
2,000,000	Bronx Zoo/Wildlife Conservation Park	\$5.75
2,600,000	St Louis Zoo	Free admission
3,000,000	San Diego Zoo	\$13.00
3,000,000	Sea World of California, San Diego	\$27.95
3,000,000	National Zoo, Washington	Free admission

3,500,000	Busch Gardens, Tampa	\$32.95
4,000,000	Lincoln Park Zoo, Chicago	Free admission
4,600,000	Sea World of Florida, Orlando	\$32.95
6,000,000	The Living Seas, Lake Buena Vista	\$35.00
	[EPCOT (Walt Disney World) admission]	

Table 5. Ages when children become adults for admission price differences, American zoos and aquariums.¹

	1974	1994
5 years of age or under	0	2
10 years of age	2	2
11 years of age	0	1
12 years of age	24	40
13 years of age	52	67
14 years of age	4	3
15 years of age	16	9
16 years of age	11	5
17 years of age	7	3
18 or 19 years of age	17	13

¹ Not all collections mention this in the 1974/1994 AAZPA directories.

Table 6. Name of collection by city, method of operation, 1974 and 1986, German zoos and aquariums.

Augsburg, Zoologischer Garten	Municipal (1974), GmbH (1986)
Berlin, Zoologischer Garten	AG
Berlin, Tierpark	Municipal (1974, 1986), GmbH (1994)
Bremerhaven, Tiergrotten & Aquarium	Municipal
Darmstadt, Vivarium	Municipal
Dortmund, Tierpark	Municipal
Dresden, Zoologischer Garten	Municipal*
Duisburg, Zoologischer Garten	AG
Düsseldorf, Lobbecke-Museum & Aquazoo	Municipal
Erfurt, Zoopark	Municipal*
Essen, Aquarium-Terrarium	Municipal**
Frankfurt, Zoologischer Garten	Municipal
Gelsenkirchen, Ruhr-zoo	Private
Halle, Zoologischer Garten	Municipal*
Hamburg, Carl Hagenbeck Tierpark	Private
Hannover, Zoologischer Garten	Municipal
Heidelberg, Tiergarten	GmbH
Karlsruhe, Zoologischer Garten	Municipal
Köln (Cologne), Zoologischer Garten	AG
Krefeld, Zoologischer Garten	Municipal
Leipzig, Zoologischer Garten	Municipal*

Magdeburg, Zoologischer Garten	Municipal*
München (Munich), Tierpark Hellabrunn	AG
Münster, Zoologischer Garten	AG
Neumünster, Tierpark	GmbH**
Neunkirchen, Tiergarten	GmbH
Neuwied, Zoo	Municipal**
Nürnberg (Nuremberg), Tiergarten	Municipal
Osnabrück, Zoo	Verein
Rheine, Tierpark	Verein
Rostock, Zoologischer Garten	Municipal*
Saarbrücken, Zoologischer Garten	Municipal
Straubing, Tiergarten	Municipal
Stuttgart, Zoologisch-Botanischer Garten	State
Walsrode, Vogelpark (Bird Park)	Private**
Wuppertal, Zoologischer Garten	Municipal

* in the GDR in 1974, no data for 1986, Tierpark Berlin only for 1993.

** not members of the Verband Deutscher Zoodirektoren, no data for 1986.

Table 7. Number of species in the collection, German zoos and aquariums.

	1974	1986
Augsburg Zoologischer Garten	354	393
Berlin Zoologischer Garten (31 Dec. 1993 – 1409)	2285	1785
Tierpark Berlin (31 Dec. 1993 – 878)	885	959
Bremerhaven Tiergrotten & Aquarium	225	226
Darmstadt Vivarium	280	198
Dortmund Tierpark	336	304
Dresden Zoologischer Garten	450	487
Duisburg Zoologischer Garten	602	608
Düsseldorf, Lobbecke-Museum & Aquazoo	269	346
Erfurt Zoologischer Garten	166	206
Essen, Aquarium & Terrarium	271	83
Frankfurt Zoologischer Garten	667	677
Gelsenkirchen, Ruhr Zoo	213	220
Halle Zoologischer Garten	402	383
Hamburg, Carl Hagenbeck Tierpark	292	342
Hannover Zoologischer Garten	352	238
Heidelberg Tiergarten	215	355
Karlsruhe Zoologischer Garten	163	218
Köln (Cologne) Zoologischer Garten	835	637
Krefeld Zoologischer Garten	323	276
Leipzig Zoologischer Garten	555	503
Magdeburg Zoologischer Garten	280	195
München (Munich), Tierpark Hellabrunn	511	377
Münster Zoologischer Garten (under construction in 1974)	–	350

Neumünster Tierpark		445	170
Neunkirchen Zoologischer Garten		147	176
Neuwied Zoo		169	101
Nürnberg (Nuremberg) Tiergarten		346	355
Osnabrück Zoo		230	300
Rheine Tierpark		164	95
Saarbrücken Zoologischer Garten		209	256
Straubing Tiergarten		175	221
Stuttgart, Zoologisch-Botanischer Garten		1004	1007
Rostock Zoologischer Garten		232	317
Walsrode Vogelpark (Bird Park)		920	932
Wuppertal Zoologischer Garten		518	514

Table 8. Number of employees, number of visitors, German zoos and aquariums.

		1974	1986	
Augsburg Zoologischer Garten	22	281,037	49	457,773
Berlin Zoologischer Garten	229	2,453,043	263	2,663,165
Tierpark Berlin	378	2,283,000	449	2,515,301
Bremerhaven Tiergrotten & Aquarium	16	225,000	20	289,661
Darmstadt Vivarium	18	150,000	26	195,229
Dortmund Tierpark	45	703,540	68	610,877
Dresden Zoologischer Garten	93	1,250,000	114	1,073,000
Duisburg Zoologischer Garten	132	1,081,955	90	1,058,050
Düsseldorf, Lobbecke-Museum & Aquazoo	25	120,000	51	56,184
(closed in mid-1986 for move to a new site)				
Erfurt Zoopark	45	350,000	71	400,000
Essen, Aquarium & Terrarium	16	181,588	25	1,574,644
Frankfurt Zoologischer Garten	154	2,930,764	157	2,330,884
Gelsenkirchen, Ruhr-zoo	42	512,000	53	268,311
Halle Zoologischer Garten	73	630,534	85	509,214
Hamburg, Carl Hagenbeck Tierpark	86	1,000,000	90	800,000
Hannover Zoologischer Garten	90	962,000	106	786,323
Heidelberg Tiergarten	28	242,716	35	313,776
Karlsruhe Zoologischer Garten	60	1,400,000	63	1,001,168
Köln (Cologne) Zoologischer Garten	118	1,627,744	118	1,479,926
Krefeld Zoologischer Garten	36	298,531	45	358,589
Leipzig Zoologischer Garten	122	1,300,000	171	1,230,000
Magdeburg Zoologischer Garten	52	450,000	65	483,965
München (Munich) Tierpark	83	1,100,000	114	1,282,236
Münster Zoologischer Garten (under construction in 1974)			86	812,650
Neumünster Tierpark	14	150,000	25	113,676
Neunkirchen Zoologischer Garten	12	152,079	18	106,119
Neuwied Zoo	13	180,000	10	100,000

Nürnberg (Nuremberg) Tiergarten	72	921,957	102	914,533
Osnabrück Zoo	28	400,215	38	350,000
Rheine Tierpark	12	197,000	41	150,250
Rostock Zoologischer Garten	86	745,000	109	750,000
Saarbrücken Zoologischer Garten	19	163,000	41	194,537
Straubing Tiergarten	10	120,000	21	171,222
Stuttgart, Zoologisch- Botanischer Garten	112	1,500,000	196	1,611,637
Walsrode Vogelpark (Bird Park)	26	1,430,000	44	1,000,000
Wuppertal Zoologischer Garten	84	928,000	86	712,616

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