

Zoo Ostrava

The Annual Report 2009



OSTRAVA!!!



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Dear friends,

Ostrava Zoo is coming with their new annual report. The year 2009, which is the period covered by the document, was a major milestone for the zoo in terms of breeding activities as well as upgrading the zoo grounds and building new exhibits.

Having dubbed 2008 a "year of project development", I dare to say that 2009 was a "year of construction" thanks to the largest volume of funding ever received from Ostrava Zoo founder - the Statutory City of Ostrava. This allowed the zoo commencing several works for which the preparation process already started a long time ago.

As soon as the spring came, the zoo formally opened the Little Amazonia exhibit, a result of alterations that had been made to the entry area of the parrot house due to its unsatisfactory condition. This new display has added new species on the list, one of which is featured under a separate chapter.

For the major works, they namely included completion of extensive background facilities for the zoo's Horticulture Department - glasshouses and a biomass-fuelled heating plant, two eagle aviaries and the Papua exhibit, plus a process of complete reconstruction of outworn children's zoo could be successfully launched at the end of the year.

The construction of the Chitwan exhibit - a complex designed for bears, langurs, otters and other animals including two aquariums - can sure be called the most extensive work of the year.

Besides the large constructions mentioned above, a number of minor repairs, alterations and reconstructions listed elsewhere in this report were underway. In addition, plenty of learning and play elements for children were installed throughout the grounds, like an above-lifesize model of a kangaroo or varied education spots featuring native fauna species.

The large-scale development process is something that has essentially reshaped this long uncared-for zoo of the Moravia-Silesia region, thus contributing to a common goal of the zoo personnel - creating a place where both animals and humans could feel good.

The increased interest of visitors continues to be the most tangible evidence of the fact that this institution has something to offer: 358,892 people visited Ostrava Zoo in 2009, this being the second largest attendance within the recent 20 years. I am also pleased to see the rising numbers of schools coming to join our informal learning schemes as part of the zoo visit.

Against all the economic troubles that the country has suffered, Ostrava Zoo still enjoys the favour of their donors and supporters, receiving a total of 3,143 thousand CZK from them in 2009.

The passed year can also be titled "the year of rare offspring". Although you can learn more about these as well as other breeding successes in the respective sections, at least the reared critically endangered Sclater's lemur should be mentioned at this point, as it was the first offspring produced outside Madagascar, West Europe and the USA.

Another premiere Ostrava Zoo can boast are mother-raised birds of prey - a young cinereous vulture and bearded vulture; these kingly birds were successfully released into the wild in the French Alps as part of international cooperation, when the young bearded vulture was even released in the presence of H.S.H. Prince Albert II of Monaco, as his foundation became an umbrella to the project. This special occasion was however not only an

acknowledgement of the Ostrava Zoo team efforts as well as an excellent opportunity to promote the City of Ostrava as well as the Czech Republic, but central to this was the fulfilment of one of the key objectives of modern zoos and example of recovery of damages caused to Mother Nature by man.

Other key events included the import of a breeding male elephant, who subsequently managed to get two of our female elephants pregnant. If things go well, we in Ostrava can enjoy the first baby elephants born in the country in the spring 2011.

*Ostrava Zoo continues to be a participant in the in situ schemes dedicated to selected animal species, like the barn owl and little owl, as well as the one focusing on the Sahamalaza region in Madagascar. The Returning the Golden Eagle (*Aquila chrysaetos*) to the Mountains of Moravskoslezské Beskydy project, one of the highest importance, for which the zoo has teamed up with another key member, Zachranna stanice pro volně žijící živočichy a středisko ekologické výchovy (Wildlife Rescue and Conservation Education Centre) Bartosovice na Morave, and which has been successfully running for four years, is covered under a separate paper.*

As part of science and research activities, which forms an integral part of work of modern zoos, Ostrava published a new volume of the European Studbook for the common hippopotamus, the zoo's flagship species.

Besides the happy events, there is also a sad case to mention, this being the death of the oldest and the longest-time dweller of the zoo - Roza, a hippo female and founder of the hippo collection in Ostrava, which is also the reason why the story of hippo breeding is one covered by this report.

To conclude, I wish to thank very sincerely all our visitors for their favour, and the Statutory City of Ostrava, the founder and owner of the zoo, for their assistance and support. Also, all sponsors, donors, friends and supporters of the zoo and in particular all of my colleagues deserve my sincere thanks as well.

May reading this report bring a great time and plenty of inspiration.

Petr Colas
Director



Ostrava, 10 June 2010

Animal collection in 2009

Jiří Novák and Ivo Firla

Animal numbers	1. 1. 2009		31. 12. 2009	
	Species	Individuals	Species	Individuals
VERTEBRATES (<i>Vertebrata</i>)	258	1422	307	2749
Mammals (<i>Mammalia</i>)	66	322	70	324
Birds (<i>Aves</i>)	117	499	128	526
Reptiles (<i>Reptilia</i>)	19	128	32	178
Amphibians (<i>Amphibia</i>)	4	25	4	20
Ray-finned fishes (<i>Actinopterygii</i>)	51	446	72	1694
Cartilaginous fishes (<i>Chondrichthyes</i>)	1	2	1	7
INVERTEBRATES (<i>Invertebrata</i>)	47	113	47	170
Total *)	305	1535	354	2919

Note: *) The animal numbers include all animals on display physically held at Ostrava Zoo as per the respective date, i.e. those held at Ostrava Zoo plus those loaned to Ostrava Zoo from other subjects, excluding those loaned to other entities. The numbers do not and cannot include any farm animals or other individuals held temporarily as feeding animals.

Total numbers of species held increased by 49 in the course of the year, which specifically involved mammals (4 species), birds (11 species), reptiles (13 species) and ray-finned fishes (21 species). In other taxa, numbers of species did not decrease. In terms of total numbers of individuals, there was an increase of 1,384 animals, which is an unrivalled result in the history of Ostrava Zoo, placing the institution amongst the major zoos in the Czech Republic. The book value of the animals on display owned by and held at the zoo plus those on loan in other institutions on 31 December 2009 amounted to CZK 6,790,478.56, while the value of stock loaned to the zoo by other institutions amounted to CZK 558,378.76.

In the course of the year, a total of 500 young in 79 species, subspecies and forms were reared, including 59 mammals (in 26 species), 182 birds (37 species), 7 reptiles (2 species), 230 ray-finned fishes (8 species), and 22 invertebrates (in 6 species), with a total book value amounting to CZK 430,920.

There were several major developments in the largest mammal held in Ostrava, the Asian elephant (*Elephas maximus*), with the arrival of the breeding male Calvin being the most important one. The difficulties with incorporating the two females from Belfast Zoo into the group of Ostrava females persisting from the time of arrival continued. Unfortunately, every effort to put the animals together failed in 2009 as well. The major female-female conflicts between dominant Johti and hand-raised Jumbo, a member of the primary stock, resulted in necessary separation of both elephants. This was an issue that had to be resolved before the male was to arrive, so the zoo agreed to make use of the opportunity to place the problematic female Jumbo at Givskud Zoo, which was offered by this institution. Jumbo was carried away, which finally made adding

the new breeding male Calvin coming from Hannover Zoo to the elephant group possible. The process of uniting the females and the male went very well and mating already occurred as well, with both Belfast females mating with the male in turn. In the late 2009, both females were confirmed pregnant. The elephant management is discussed in more detail under a separate paper in this annual report (page 62).

At the **African Animal House**, the offspring of the southern ground hornbill (*Bucorvus leadbeateri*) was produced for a third year in a row. Nonetheless, the year 2009 was the more successful as the zoo managed to rear both chicks hatched. More details can be found on page 60. In addition, natural rearing was underway in African ostriches (*Struthio camelus*), with all of the six young successfully reared. On the other hand, the eland (*Tragelaphus oryx*) did not do well - the breeding male and two females died of heart disorder and trauma, respectively.

The zoo also recorded a number of offspring in hoofed animals elsewhere around the area - three young Siberian red deer (*Cervus canadensis sibiricus*), three Pere David's deer (*Elaphurus davidianus*), four Vietnamese sika deer (*Cervus nippon pseudaxis*) and seven individuals of domestic llama forms - three llamas (*Lama guanicoe f. glama*) and four alpacas (*Lama guanicoe f. pacos*). The death of the old female hippo (*Hippopotamus amphibius*) Roza was a great loss - read more on hippos in the article on page 65.

In the primate section, several important developments were registered, with the birth and first successful rearing of a male Sclater's lemur (*Eulemur macaco flavifrons*) being certainly the greatest success. The young animal was one of a mere three more young Sclater's lemurs in Europe in 2009. Some time later, this success was stigmatised by the death of the breeding male due to bone tumour of the animal's spine. Subsequently, the zoo imported a pair of this lemur species from Poznan Zoo at the end of the year. Read more about the Sclater's lemur on page 44. Aside from the lemurs above, the zoo reared a third young red-bellied lemur (*Eulemur rubriventer*) in a row. The ring-tailed lemur (*Lemur catta*) was another species with traditional breeding success, with a female born and reared.

For visitors, the birth of a chimpanzee female (*Pan troglodytes*) must have been the top event. This was the first baby chimp born following a nine-year break. A third young chimpanzee born in the recent period, it was the first descendant of the male Sebastian, who arrived from Krakow Zoo a year earlier. Read more on page 46. In addition to the reared animals mentioned above, offspring was produced in the species that breed routinely: the Hanuman langur (*Semnopithecus entellus*) and Diana monkey (*Cercopithecus diana diana*), with sex of the two animals still unknown. A new breeding male arriving from Lisbon was successfully integrated into the group of lion-tailed macaques (*Macaca silenus*).

In the first half of the year, a group of cotton-top tamarins (*Saguinus oedipus*) was imported for the new **Little Amazonia** exhibit from Dresden Zoo, and enlarged very early with two new individuals - young tamarins born a month after arrival; see separate report on page 43. The new exhibit was also the place of introduction for many other animals, especially some lesser species. The vivarium imitating the primary forest habitat became a new home for frogs, more specifically, two poison dart frogs - colour, but feared and poisonous members of the Amazon Basin fauna. The three-striped poison frog (*Ameerega trivittata*) is the more common of the two; black and green in colour, it is not easy to detect in the vegetation. Critically endangered, the golden poison frog (*Phyllobates terribilis*) is found in the wild in three different colour tones,

of which a member of the very rare "mint" form is on display. Very admired among the visitors became the hollow tree trunk hosting death's head cockroaches (*Blaberus craniifer*) and females of the white-banded tarantula (*Acanthoscurria geniculata*). Nonetheless, the artificial waterfall and small river stream is something that attracts at the first glance, being exactly the place of living for the creature discussed earlier in the 2008 Annual Report - the ocellate river stingray (*Potamotrygon motoro*), so far the only member of the cartilaginous fishes held in Ostrava. In 2009, the displayed stingray stock counting two animals was enlarged with five new individuals arriving from Beauval Zoo (France). In addition, several medium-sized fish species native to fast-moving streams of the Amazon region make a company to the stingrays.

The world of water, still little known and mysterious to man, is to continue its expansion from the zoo's background facilities to the visitor area and many species to be located in the planned **Papua** and **Chitwan** exhibits already found their new home behind the scenes. Nonetheless, endangered species continued to be the focus of animal care personnel, with the critically endangered killifish (*Pachypanchax sakaramyi*), the vulnerable polleni cichlid (*Paratilapia polleni*) or the butterfly goodeid (*Amea splendens*) extinct in the wild being the species that reproduced again in 2009.

Facilities behind the scenes play a very important role in animal breeding, which for instance in the case of the **Elephant Jungle** exhibit enabled the zoo adding new species that once had to grow up in minor tanks under the keepers' control. This following a year break helped the zoo to recover the stock of the giant pangasius (*Pangasius sanitwongsei*) placed amongst critically endangered species, with five young animals released. A newcomer to the zoo, the silver shark (*Balantiocheilus melanopterus*) is another critically endangered species. Despite the very promising water dragon (*Physignathus cocininus*) clutches, artificial hatching of eggs undergoing out of scenes failed to result in the breeding success in this Elephant Jungle exhibit dweller.

It was not only the agama efforts what marked the evolving reptile breeding, which once did not have any greater tradition in Ostrava Zoo: the out-of-scene animal management personnel was also successful to breed the pond turtle (*Emys orbicularis*), Hermann's tortoise (*Testudo hermanni*), Madagascar day gecko (*Phelsuma madagascariensis*), as well as the East African spiny-tailed lizard (*Cordylus tropidosternum*). Construction of several much-needed breeding vivariums behind the scenes also provided the opportunity to acquire demanding and rare creatures to be ranging in the **Papua** exhibit under development, with especially the blue-spotted tree monitor (*Varanus macraei*) being an exceptional rarity. Papuan endemic species, this black and blue arboreal animal is the first Ostrava Zoo's monitor lizard. A pair of these creatures was obtained from Pilsen Zoo, where they has managed reproduction and rearing of the species very well. Ostrava Zoo visitors are to admire this new monitor lizard in the new exhibit in 2010.

A very special success in breeding birds out of scenes is the first rearing of two male blue-winged geese (*Cyanochen cyanopterus*), a species endangered in the wild. Conversely, the long-term zero success in making the rare, endangered and sensitive white-headed duck (*Oxyura leucocephala*) reproduce is something that has frustrated the zoo personnel. Although the species started hatching over time, efforts to achieve rearing still has not met with success. Beside some other Anseriformes, offspring was successfully produced behind the scenes in the pigeon species again, this in particular being the case of the rare Mindanao bleeding-heart pigeon (*Gallucolumba crinigera crinigera*) and Luzon bleeding-heart pigeon (*Gallucolumba luzonica*), with

even 11 chicks reared in the latter species. Further reading about four reared red-crested seriemas (*Cariama cristata*), a member of the Gruiformes order, is available in a separate paper on page 58. - this bird is also to be on display in 2010.

For the small mammals held out of scenes, breeding achievements include the first rearing of the Northern Luzon giant cloud rat (*Phloeomys pallidus*), while in terms of management, the new imported species which in fact is even a new order for Ostrava Zoo, the tree hyrax (*Dendrohyrax arboreus*) seen only rarely in captivity, can be considered a good success. These and other new species are going to add increased attractiveness to the exhibits throughout the zoo grounds.

Notwithstanding the list of successful breeding stories behind the scenes, most of the animal species can be seen on display. In the large felids with established breeding success, no offspring was born, with the main reason being the fact that the females of two popular species were rearing the cubs from the previous year, which on the other hand still allowed the visitors admiring five Sri Lanka leopards (*Panthera pardus kotyia*) and three Amur tigers (*Panthera tigris altaica*). With the snow leopard pair (*Panthera uncia*) already reaching high age and the pair of Indian lions (*Panthera leo persica*) failing to produce offspring despite long-term mating efforts, small felines took the lead: two Carpathian lynxes (*Lynx lynx carpathicus*), three Canadian lynxes (*Lynx canadensis canadensis*) and, following a year-long break, one caracal (*Caracal caracal*) were bred in 2009.

The Caribbean flamingo (*Phoenicopterus ruber*) has become a bird species where breeding has been mastered and occurs on a routine basis. In 2009, six young flamingos hatched - five males and one female - which is the highest ever number reached at Ostrava Zoo, so the zoo could supply four flamingos to Prague Zoo to help their stock thrive.

Important for the zoo's avian collection are new species, like much-sought Dalmatian pelicans (*Pelecanus crispus*) - new dwellers of one of ponds, very rare and endangered Chinese mergansers (*Mergus squamatus*) kept in the mixed enclosure called Crane Exhibit, and Baer's pochards (*Aythya baeri*), inhabitants of the Chinese and Tibet Avifauna exhibit, plus a pair of Siberian cranes (*Grus leucogeranus*), certainly newcomers of extraordinary value, kept currently behind the scenes to adapt to the zoo's environment.

In parrots, breeding success occurred namely in established breeders - we were pleased again with the young in the vinaceous-breasted amazon (*Amazona vinacea*), yellow-headed parrots (*Amazona oratrix oratrix*), scarlet macaws (*Ara macao macao*), golden-capped parakeets (*Aratinga auricapillus aurifrons*) and African grey parrots (*Psittacus erithacus erithacus*). Some other individual parrots are still in the process of reaching sexual maturity. Having seen the repeated breeding failures and deaths in red-fronted macaws (*Ara rubrogenys*), we assume to give up any breeding attempts in this very demanding species in the zoo situation. On the other hand, the Tasmanian rainbow lorikeet (*Trichoglossus moluccanus*) presents an attractive newcomer and the first member of the group of these parrots. The parrot exhibit also includes several bird species different from those of the parrot order. Thanks to the successful reproduction and rearing, described in more detail on page 55, yellow cardinals (*Gubernatrix cristata*) - perching birds endangered in the wild sharing the aviary with green-winged macaws (*Ara chloroptera*) - are worth to mention. Despite there being many other various bird species, be it the members of passerines, galliforms, ciconiiforms or owls, which could be added to the list of the best breeders, we have to admit that birds of prey reached the highest score in 2009, where however

success refers to the offspring produced and transferred as part of rehabilitation schemes rather than numbers of chicks reared in two species that have bred only occasionally. The rearing success in the bearded vulture (*Gypaetus barbatus aureus*) and cinereous vulture (*Aegypius monachus*) including the releases into the wild in France is discussed in more detail in special articles (page 48 and 50).

This has placed both birds of prey amongst the species, which Ostrava Zoo has not only managed to breed but even return into the wild. In this respect, the barn owl (*Tyto alba guttata*) and little owl (*Athene noctua noctua*) are those with established success, with total 21 young barn owls and 4 little owls forwarded to the Zachranna stanice (*Wildlife Rescue Centre*) in Bartosovice for releasing into the wild. In addition, the zoo was again involved in the Returning the Golden Eagle (*Aquila chrysaetos*) to the Czech Republic, page 68. The work done in the zoo fish ponds also assisted the breeding success of the tufted duck (*Aythya fuligula*) - at least four hatched chicks could fly out from the water level in Ostrava. The zoo also installed a first white stork nest assuming that this bird species might start nesting in the zoo grounds in future.

Economy in 2009
Pavína Konečná and Petr Čolas

Costs and revenues

Indicator	2009 (CZK thousand)	% of total costs	Difference against 2008 (CZK thousand)
Total costs	72.853	100 %	+ 179
Incl.: Feedstuffs used	4.307	5,9 %	- 579
Medical prod., veterin. servicesces	1.000	1,4 %	+ 176
Other materials, costs of goods	7.276	10,0 %	- 639
Energy	8.880	12,2 %	+ 882
Repairs and maintenance	5.013	6,9 %	+ 1.274
Other services	5.651	7,8 %	- 626
Total staff costs	29.940	41,1 %	+ 2.248
Secondary staff costs	10.786	14,8 %	- 2.557
Total revenues	73.620	100%	+ 255
Founder's allocation and other resources*)	39.013	53 %	+ 941
Total own revenues	34.607	47 %	- 686
		% from own revenues	Difference against 2008 (CZK thousand)
Includes: Admission fees	21.827	63,1 %	- 573
Rental and advertising	2.338	6,8 %	- 134
Other services	1.256	3,6 %	+ 122
Animal sales	333	1,0 %	- 77
Other revenues and merchandise	1.227	3,5 %	- 283
Depreciations	7.626	22,0 %	+ 256

Note: *) Other funding resources: The Ministry of Environment, Labour Office Ostrava

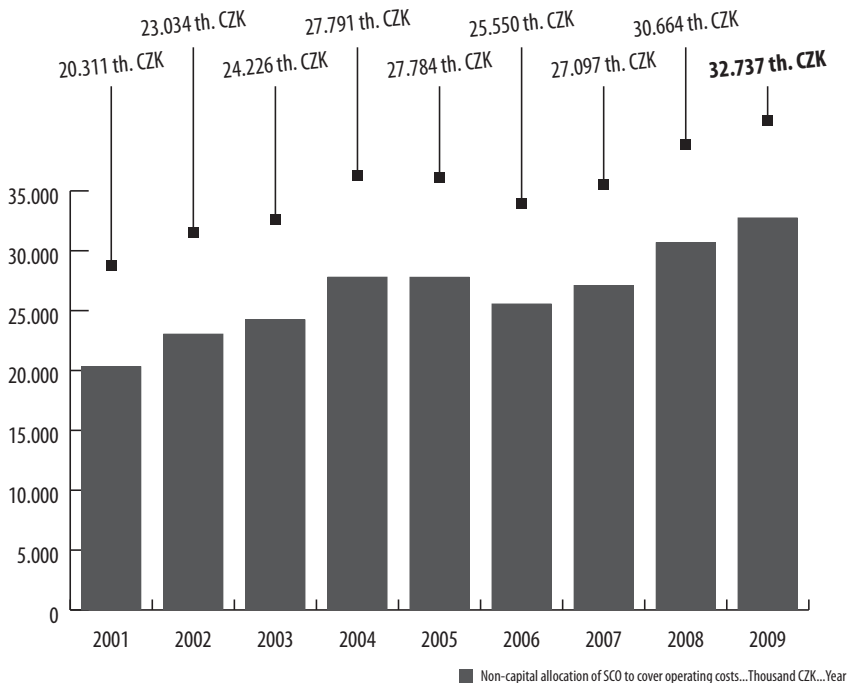
The economical operations of the zoo in 2009 produced a profit amounting to CZK 766.97 thousand.

The founder of the zoo - the Statutory City of Ostrava (SCO) - allocated a total of CZK 34,416 thousand in 2009 to co-fund the zoo's running costs in 2008. This co-funding exceeded the 2008 level by over 3%, allowing the zoo to cover 47.2% of the real costs in 2009.

The founder's non-capital funding consisted of the following components in 2009:

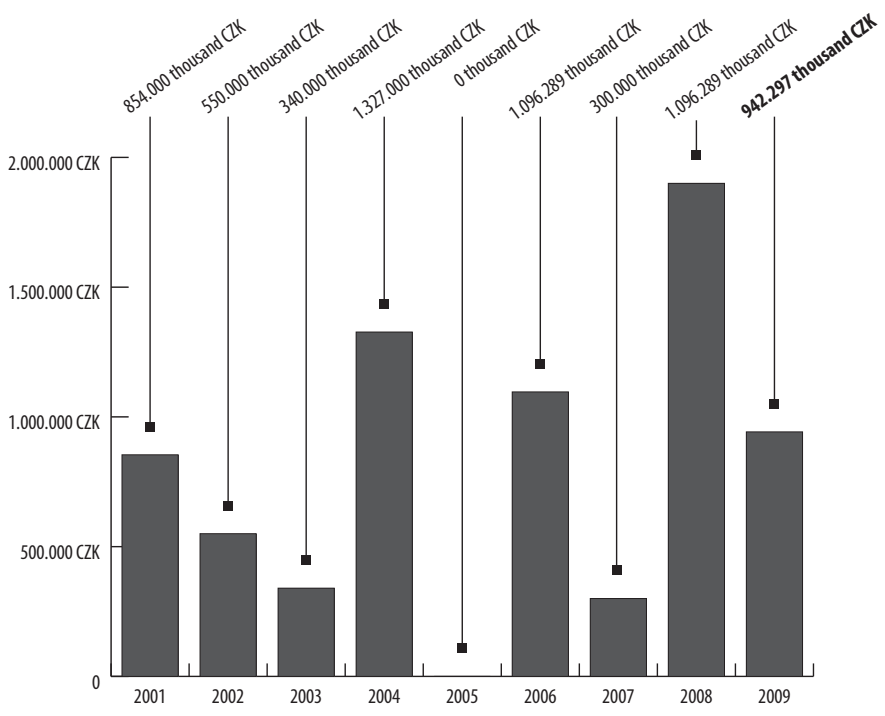
- 1) **CZK 32,737 thousand allocated to cover operating costs** – an increase by a little less than 13% (i.e. 2,073 thousand CZK) against the preceding year (for comparison, see Table 1). This covered more than 91% of staff costs - salaries, social and health insurance, social fund and other expenses, while the remaining 2,797 thousand was used to co-fund the running costs required to ensure the zoo operations, which namely involved increased energy costs and expenditure for repairs and maintenance.

The founder's non-capital allocation to zoo's operating costs from 2001 through 2009



2) CZK 942 thousand allocated as an earmarked grant; this component decreased by about 1 million compared to the preceding year's level, which was historically the highest (for comparison, see Chart 2). Even despite this fact the earmarked contribution helped the zoo pay the significant operating costs connected with the repair of the outdoor and indoor fencing of a stall behind the scenes, where it covered 700 thousand out of the total 1,184 thousand CZK; in addition, this was also sufficient to pay the essential expenses related with the cost-demanding import of the male Indian elephant from Leipzig Zoo, amounting to 242 thousand CZK.

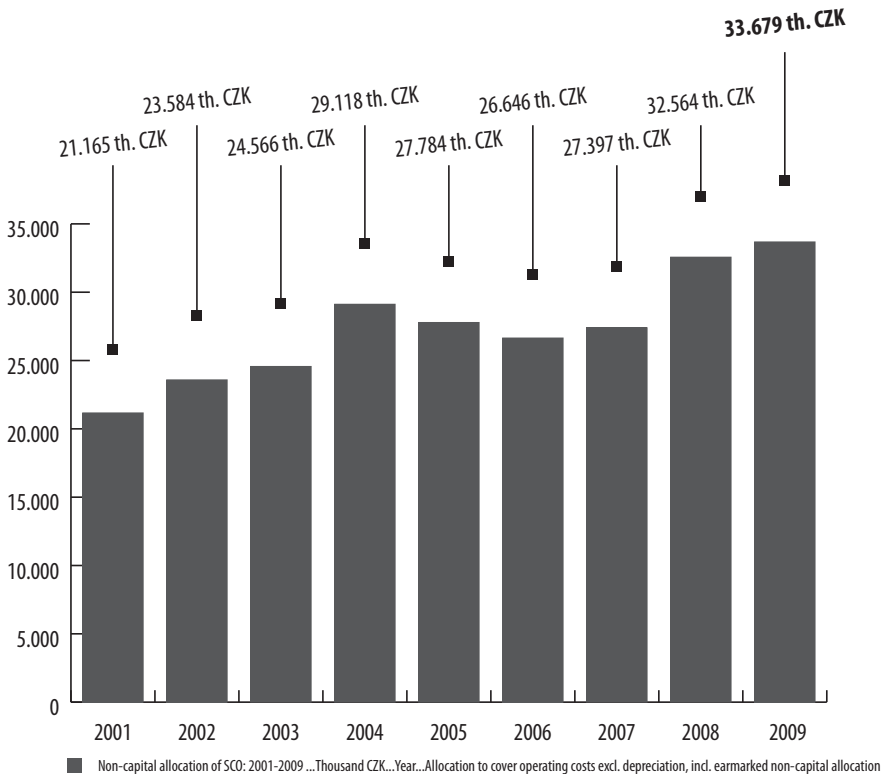
Founder's earmarked non-capital contributions from 2001 through 2009



3) CZK 737 thousand allocated to refund accounting depreciations of long-term tangible assets.

As with the preceding year, the founder's contribution to cover accounting depreciations of long-termed assets was maintained; more specifically, this involved only tangible assets. No co-funding was provided by the founder to cover the accounting depreciations of intangible assets, like buildings and structures, this being a very significant cost item making 10% of total costs - a total of CZK 7,626 thousand. As instructed by SCO, these costs were charged to the zoo's revenues to cover the capital fund of the zoo. This accounting operation caused a significant increase of zoo's total own revenues.

SCO's non-capital contribution, including allocation for operations and earmarked funding



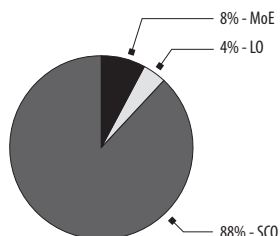
For Ostrava Zoo, 2009 and 2008 were years of great difference, the latter being even a real breaking point. The founder tended to maintain the major support of the zoo, with the operating co-funding (i.e. minus the earmarked and accounting depreciation contribution) still showing the growth tendency compared to the previous years. Even though the rate of increase was 6.8% and not the 13% as with 2008, it still helped the zoo develop new activities. This enabled the zoo personnel handling the ongoing increase in expenditure much better, be it the overhead costs essential for keeping the zoo running or expenses related with new buildings and exhibits and expanding the places and services for visitors and the like.

Aside from this fundamental and key funding resource, i.e. the budget of the Statutory City of Ostrava - the zoo's founder and owner, Ostrava Zoo was successful to raise significant funding from the national budget, the sources being the Ministry of Environment and Ostrava Labour Office. These means helped cover more than 6.3% of real zoo expenses.

As for the Czech Ministry of Environment, a ground-breaking amount of 3,216 thousand CZK was successfully awarded and spent within MoU's funding scheme. The financial means obtained above were earmarked to co-fund the animal management costs related to specific endangered animal species and provide assistance in conservation activities. As part of the grant above, the zoo could cover the costs of various projects, for instance the release of the Hippopotamus European Studbook (a third in the row), activities making the members of the public more familiar with European carnivore issues within the EAZA European Carnivore Campaign 2008/2009 by means of information panels purchased, participation on continued efforts to release the golden eagle into the wild as part of the „Returning the Golden Eagle to the Mountains of Moravskoslezske Beskydy“ scheme, organising and holding the third annual conservation education conference for teachers and educators throughout Moravian-Silesian Region, construction of interactive education points under the „Presenting the Czech fauna and flora at Ostrava Zoo“ project, sustaining and development of a periodical series of talks called „The News from the World of Zoology“, improvement of visitor services through purchasing equipment for narrated animal feeding and night guided tours, as well as CCTV monitoring of nests of endangered birds of prey species like the bearded vulture, griffon vulture and cinereous vulture. Last but not least, support was granted to provide essential means needed for breeding and rearing threatened parrot species, namely the military macaw, golden conure, red-fronted macaw and scarlet macaw, and as part of global conservation schemes using equipment for hatching and rearing young birds behind the scenes. Considering the recession of the national economics and the national budget trends, such record-breaking amount successfully received from the MoE budget seems to be a potential long-term maximum, with any similar repeated success looking like something highly improbable.

Ostrava Labour Office contributed 1,380 thousand CZK to help the zoo cover salaries of 12 new posts including social and health insurance

Co-funding by institutions providing the financial support as part of non-capital allocation in 2009 (%)



To co-fund 46.4% from the operating costs and achieve profit, Ostrava Zoo generated own revenues of CZK 34,607 thousand, these namely including revenues from entrance fees, but also other types of income, especially from rental and advertising, sales of merchandise and materials, etc., as well as uncovered accounting depreciations. Leaving the charged uncovered accounting depreciations of intangible assets item aside, as it was just an accounting operation and as such does not contribute to the own income, the revenues generated by the zoo decreased by **3.4%** compared to 2008, which financially amounts to some **945 thousand CZK**. However, knowing that 2008 was the year of the highest visitor numbers (and thus the largest amount of revenues achieved in the zoo's history) and comparing the same numbers to those of 2007, the own revenues achieved in 2009 are still higher by 3,189 thousand CZK than the 2007 own revenues. Further, the continued crisis of economy that the Czech Republic and the surrounding countries were undergoing in 2009 should be taken into account. In terms of GDP indicators, the Czech economics dropped by 4.2% over the same period.

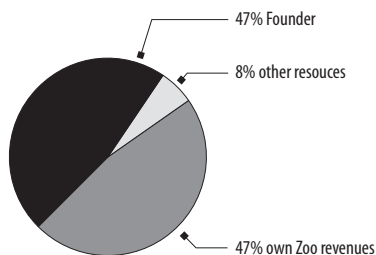
Admission fee was and continues to be the largest and major own income component, participating on the zoo's own revenues (not considering the uncovered accounting depreciations) to the unbelievable extent of 81%. In 2009, the zoo was successful in maintaining 97% of the revenues achieved two years ago, in the best period in terms of economics, meaning that revenues from admission fee recorded only a small decline by CZK 573 thousand. Entrance fee is an element that is very hard to forecast or plan on a long-term basis, as it is closely linked to the favour of weather, as well as to numbers of sunny days throughout the year. Outdoor swimming pools suffer the parallel problem. Even though the 2009 weather was not so favourable and the zoo did not launch any new visitor attraction, with the **Little Amazonia** exhibit being the only exception, the zoo grounds were visited by **358,892 people**, which is almost 99% of the previous year's numbers, reached additionally at the time, when Ostrava Zoo, ranking #19 on the Top 20 of the most visited tourist destinations around the Czech Republic, jumped to place #13, which at the regional level only attested the unmatched position Ostrava Zoo has had within the Moravian-Silesian Region in terms of visitor numbers.

The facts above have proved that the efforts and of course the finances invested in the development of new exhibits and reconstruction of some existing buildings present the very assets contributing on a long-term and systematic basis to increased tourist attractiveness of the zoo as such and even the City of Ostrava, as well as entire Moravian-Silesian Region.

Other important sources of zoo income include rental and advertisement fees, sales of goods, revenues from feedstuffs for specific animals sold through vending machines, fees charged as part of zoo train rides and revenues from miscellaneous secondary services, but even those generated by sales of animals and materials. The continued economical recession influenced to the great extent the revenues from advertisement, merchandising and sale of feeds through vending machines, with the latter being also affected by problems with thefts as well as the high level of vandalism in the beginning of the year. The zoo managed to reduce the extent of decline in these sources of income by increased revenues from rental and other activities, which resulted in only limited reduction of a mere 4.7%.

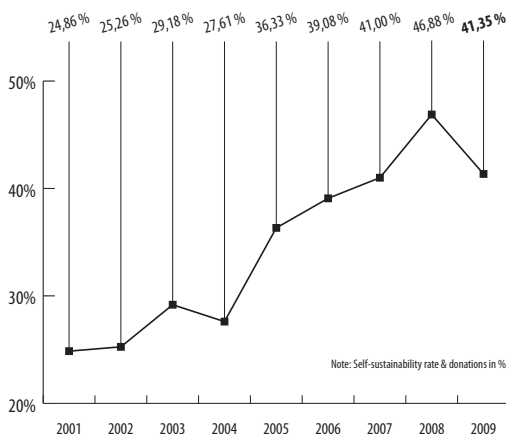
Revenues in 2009	CZK thousand	Difference in % against 2008	Difference in CZK against 2008
Total revenues	73.620	+ 3,5	+ 255
Includes: Founder's allocation	34.416	+ 3,3	+ 1.109
MoE, Labour Office (other resources)	4.597	-3,5	- 168
Own revenues	34.607	- 1,9	- 686
Includes: Own revenues reduced by uncovered accounting depreciations	26.981	-3,4	- 945

Percentage of total revenues per component in 2009 (%)



The zoo's self-sustainability rate, i.e. total own revenues increased by donations received against total operating costs reduced by uncovered accounting depreciations, slightly decreased compared with the record year 2008; nonetheless, it still reached **41.35%**, this being a very great rate.

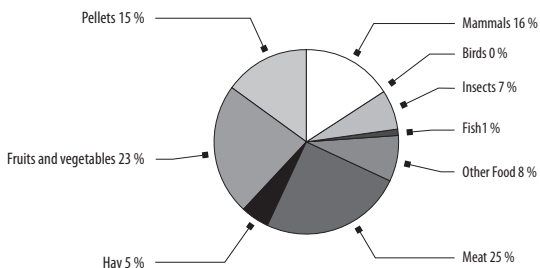
Self-sustainability rate (%) from 2001 to 2009



As regards cost items in 2009, only a small increase (0.25%) was recorded against the preceding year. In terms of finances, this is 179 thousand CZK and another clear example of successful efforts of the zoo management to keep the overall zoo expenses where they are despite the growing mandatory expenditure on energy and a number of other activities, thus minimising the impact of the economical crisis.

The 2009 costs amounted to CZK 72,853 thousand, determined not only by increased prices, changed structure of the species and animal numbers, higher numbers of staff members needed, increased costs in connection with repairs and servicing as well as larger level of energy demands, but also restrictive measures taken by the zoo management. The higher demand for staff to make sure the zoo operates well under the demanding circumstances of development, as well as to provide enough personnel for operating new buildings and those near completion required an increase of 2,248 thousand CZK in personnel costs. On the other hand, expenses as regards animal feeding were successfully reduced by 579 thousand, with the highest cut in costs of meat, fruits and vegetables despite the fact that the numbers of animals increased by 1,384 individuals, where taxa on the rise chiefly included fish, reptiles and amphibians. Nonetheless, any further reduction in the costs of feeding for increasing numbers of animals enforced by negative development of the budget could be counterproductive. A desirable move upwards in costs of materials and services occurred in the activities with 80% co-funding by the MoE grant. The necessity of sustaining two Ostrava Zoo projects continued in 2009. Promotional activities, the projects had been funded by SROP (Joint Regional Operating Programme) scheme within the EU's Structural Funds as well as by the budget of the Regional Office of Moravian-Silesian Region. Creating a provision amounting to some CZK 1.8 million was another major component of zoo's budget, this being necessary due to the persistent lawsuit that remains unresolved since 1994. The volume of repair and maintenance costs was successfully maintained and even increased to a very desirable extent by full 34%. This sounds optimistically as these form an important cost item in terms of continued development and basic functioning of the zoo. The role of the maintenance and repair costs is still considered to be principal due to the large number of existing buildings and facilities constructed namely in the period from 1950s to 1970s, outdated and fully worn and highly demanding in terms of energy supply. Raising this kind of expenses is therefore inevitable for the zoo to work well. In addition to the repair funded from the earmarked allocation of the zoo founder, a number of repairing & servicing operations could be done, including the repair of the freezer inside the animal food preparation facilities, recovery of banks and dyke of the fish pond #2, the repair of chutes in the territory near the zoo entrance, the repair of elephant house gate systems damaged by the elephant male, repairs of power distributors, electric installations and cables, at least a part replacement of the palisade wall in the children playgrounds that reached the end of service life, the repair of safety doors inside the large carnivore house, a full recovery of one of the many rooms inside the animal quarantine facility, and a number of other minor urgent repairs.

Structure of feedstuffs for animals on display in 2009



Staff costs involving salaries as such, mandatory social and health insurance, allocation to the social fund (FKSP), employer's co-funding to staff boarding and medical examinations, accounting for some 41% of total costs, increased by 8.1%, meaning that a total of 22,060 thousand CZK could be paid to 97.35 FTE staff members and the average zoo salary could finally rise by full 1,850 CZK to reach 18,719 CZK, which following the drop of salaries in 2008 brought a desirable increase by 11% approximately. This success was possible thanks to upgraded tariff classes in specific lines of jobs, but also through the legal 3.5% increase in schedule salaries. The fact that the level of this average salary for the zoo as such is affected by recruiting low-skilled workers through Labour Office (VPP = publicly beneficial work) is something which continues to apply, as for comparison, the average salary throughout Moravian-Silesian Region amounted to 21,524 CZK within the same monitored period.

Information on the assets

	CZK thousand		CZK thousand
Total assets	546.223	Total liabilities	546.223
Long-term tangible & intangible assets	579.020	Asset funds	488.647
Accumulated depreciation	- 97.179	Financial and monetary funds	39.938
Inventory	7.262	Profit/loss (profit)	767
Includes: Animals	6.803	Provisions	10.640
Receivables	1.121	Short-term liabilities	5.794
Financial assets	55.712	Long-term liabilities	0
Temporary accounts of assets	287	Temporary accounts of liabilities	437

The Statutory City of Ostrava awarded its zoological park in 2009 **the highest capital grant** in the zoo's history amounting to **109,139 thousand Czech korunas!**

Out of the allocation above, the zoo managed to spend over CZK 88.4 million, which allowed for funding the second largest capital operation in the zoo's history - the Chitwan exhibit complex for bears, langurs and other animals. The second major founder's investment was completion of technical background of for the horticulture department - a set of glasshouses and other associated structures including a biomass-fuelled boiler plant. Further, the attractive exhibit named Little Amazonia topped the process of reconstruction of the entry area of the public relations department. Also, the redesign of the Children's Zoo was launched following a long time of preparation and the restraint box for the elephant male constructed inside the elephant house. The grant allocated for modernisation and redesign of certain structures and buildings provided financial means to reconstruct aviaries for birds and outer cages within the animal breeding facility, replace four front barriers at the feline carnivore house and redesign one of the small carnivore house outdoor enclosures. Instances of design work included finishing a part of design for construction of the House of Evolution (zone planning design phase) and Visitor Centre encompassing a restaurant and conservation education centre. The designing activities launched could also include the work on four new structures and complexes of exhibits,

namely tiger enclosures, hoofed mammal safari exhibit, penguin & seal exhibit and zoo office with the main entrance facility. One of certainly not minor works, two eagle aviaries for the golden eagle and white-tailed eagle, could be implemented thanks to the zoo founder's support which allowed for pre-funding and subsequent co-funding, in cooperation with national budget and EU Structural Funds, this being a project within the Cross Border Cooperation Scheme Slovak Republic - Czech Republic 2007-2013. More details on this field of work are available under a separate chapter of this Annual Report.

The budget of Moravian-Silesian Region provided a final payment of 32 thousand CZK as part of the capital grant for development of the project dossier titled "Mud removal and re-arrangement of the fish pond #1". To qualify for the payment, the zoo was first requested to apply for funding to cover the project implementation phase.

The increased interest in Ostrava Zoo on the part of miscellaneous organisations, businesses, minor donors, individuals and school groups continued in 2009. Although not so significant as with 2008, when the sum of financial donations exceeded a limit of 6 million korunas, this interest helped the zoo raise unbelievable 3,143 thousand CZK. This type of funding was focused to support animal breeding and additional equipment of children playgrounds, as well as construction of new displays, like Papua Exhibit in the premises of the education centre. However, it should be noted that the factors affecting the total amount of donations obtained included the application of new legal arrangements in form of newly implemented regulation laying down a provision of required approval of any amount to be donated to a city-owned entity by the city executives in writing. Unfortunately, this paperwork-demanding step and the related time delay in particular was discouraging for a number of potential donors to effect the act of donation as such.

Besides the financial gifts, a number of appreciated and needed material donations were also obtained, including a garden pavilion, brush door-mats to make rubbing installations for animals, wood shavings and others.

We thank all the donors and supporters, whether listed below or not, or even remaining in anonymity, for their favour.

Valuable donors and supporters of Ostrava Zoo:

Nadace OKD; Komerční banka, a.s.; Nadace CEZ; Plzeňský Prazdroj - program Prazdroj lidem (Prazdroj to People Scheme); Alexandra and Vaclav Micka; KR Ostrava a.s.; Severomoravská plynárenská a.s.; Alois Miketa; Statutory City of Opava; Jaromír Veverka; Petr Sach; Vaclavík Libor - LIBROS; Lukas Raida, Mgr; Svatava Siroka; Primary School of B. Dvorskeho St., Ostrava; Vitkovické slevárny s.r.o.; Vitkovice Tours s.r.o.; OZO Ostrava; Iveta Rasnerova; Primary School & Kindergarten of Ostrčilova St., Ostrava; Primary School of Školní 862, Orlova City; Secondary School of Šykorova St., Havířov; Primary School & Kindergarten of Horní Sucha; OkinGroup, a.s. team, Ostrava; KARFO velkoobchod s.r.o.; Foto Morava s.r.o.; MUDr Igor Janík; Ivana Černá; Primary School of Cs. Armády St., Bohumín City; Igor Dvoráček; Vzdělávací centrum Morava s.r.o.; Primary School of TGM, Opava; Emil Micovský; Pavla and Jan Kurka; Primary School of Gorkeho St., Havířov City; Občanské sdružení Zelena (civic association), Ostrava; ZS pro záky se speciálními vzdělávacími potřebami s.r.o. (primary school for students with special educational needs), Aviatiku St., Ostrava; Primary School of Serikova St., Ostrava; ZS s polským jazykem vyučovacím (primary school teaching Polish language), Trinec City; Honza and Danka Plátos; Primary School of Dobra; Primary

School & Kindergarten of Mitusova St., Ostrava; Gymnazium Petra Bezruce, City of Frydek-Mistek; Primary School of Oldrisov; Primary School of Zelena St., Havirov City; Kindergarten of Mozartova St., Ostrava; SPSCCH of akademik Heyrovsky and Gymnazium, Stredoskolska 1, Ostrava; Primary School of Skolska, Karvina City; Albion Alarm s.r.o.; Primary School of J. z Podebrad St., City of Frydek-Mistek; Petr Honek; Primary School of 29. dubna 33, Ostrava; MUDr Mojmir Sedlacek; Ondrej Hruska, Primary School of Na Nabrezi St., Havirov City, Primary School of Slovenska St., Karvina City, Vladimir Janak, Marek Ruckauf, Petr Chobot, Primary School of Ke Studance 1050, Orlova City; Petr Novak, Ludmila Novakova, Jakub Andrs, Katerina Janstova and others.

For a full list of donors and supporters, please visit www.zoo-ostrava.cz.

Design, development and maintenance

Pavína Konečná, Stanislav Derlich and Petr Čolas

Capital projects finished or launched:

In April 2009, a new exhibit was opened in rearranged entrance premises of the parrot house. Named the **Little Amazonia**, this new display area was designed to provide some preview of the diversity of the Amazon forest. The exhibit hosts animal species that were never held in Ostrava before, with the group of cotton-top tamarins, small primates of the callitrichid family whose members feature claws rather than nails being the most remarkable. Other creatures dwelling in the area include tarantulas - large spider-like members of Arachnids, poison dart frogs, several freshwater fish species and also a member of cartilaginous fishes and a freshwater relative to the sea stingrays - the ocellate river stingray, held for the first time at Ostrava Zoo. The construction including design cost the zoo 2.05 million CZK, of which 1.5 million was provided by the OKD Foundation and the remainder co-funded to the great extent from the allocation of the Statutory City of Ostrava (SCO).

The second phase of the **Botanical Park Development Project titled Technical Background for the Horticulture Department** was finished and the works gradually accepted, excluding the boiler plant, which is to undergo trial operation in the first half of 2010. Total costs comprising the preceding challenging design work amounted to CZK 45,730 thousand including VAT, with earmarked capital grants of CZK 20,000 thousand and 25,000 thousand allocated by SCO for the construction in 2008 and 2009, respectively. The completed works replace the old glasshouse from the late 1950s with two state-of-the-art planting glasshouses for plant propagation and subtropical plants and other facilities required for the function of botanical sections throughout the zoo, like a shaded glasshouse, seed-bed, container facility, boxes and shelters for machines and plants. The constructed technical background for the horticulture department will allow the process of development of the Ostrava Zoo's botanical part to continue, with the clear and ultimate aim of establishing the Zoological and Botanical Gardens of Ostrava. The inevitable parts of the project include a modern biomass-fuelled boiler plant and a chipping facility including storing premises with the capacity of 920 m³. The very purpose of constructing such boiler plant is to help cut the zoo's fossil fuel costs, facilitating the desirable increase in the percentage of renewable sources of energy. In addition, the project is in line with the principles of sustainable development. The project design included roads, water and power supply lines, heating mains, sewerage, a giant rainfall pit and fencing. Located behind the scenes, this set of buildings is essential for the zoo operations.

The construction work involving the development of a bear and langur exhibit named **Chitwan**, with total costs of CZK 66,500 thousand including VAT, was finished and taken over subsequently, excluding the aquarium facilities which is to undergo trial operation in the early 2010. The entire exhibit will be made accessible to the public during the main visitor season in 2010, as the habitat the animals will have to adapt to will be completely different from the one they used to live before. To make the construction possible, SCO allocated earmarked capital grants of CZK 20,000 thousand and 51,000 thousand in 2008 and 2009, respectively. The new facility is to feature primates, i.e. the entellus langur, and Asian black bears in a unique mixed exhibit, using especially an extensive natural outdoor enclosure and indoor housing premises designed for relocation of the species above from the existing unsatisfactory and outdated small concrete facilities,

where the animals have been housed so far, to essentially improve their living conditions. Once in the natural outdoor enclosure, the animals will be held in a situation, which will be very similar to their habitat in the wild. The existing natural ground in the exhibit will be maintained as is including the water stream and small lake. There is a forest with fully grown trees stretching almost across the enclosure. The ground as such is very rugged, which will provide the animals with almost unlimited opportunities to exercise their moving skills. The zoo visitors will have the opportunity to see the animals ranging in the natural habitat, using trees and the forest stand as well as the lake. To make the animal watching more comfortable, the facilities include five viewing platforms with different types of architectural design and an unusual type of access in form of a wooden bridge added in some of them. The expanses of water integrated into the cascade of lakes with streaming water forming fast-moving streams and waterfalls will become another component refreshing the exhibit. The same applies to the central viewing platform to contain two large-sized freshwater aquariums presenting the world of water to visitors, with an outdoor enclosure for Asian small-clawed otters and binturongs including an outdoor pool that the visitor will see before entering the platform. The area is complete with the children's playground containing components for the kids to play with and have some fun, and the much-needed social facility including toilets for physically challenged persons. In addition to the exhibit and related facilities, this extensive project also involves necessary mains and service lines, including drinking and service water, power and communication installations, sewerage, wastewater plant and water management system, vast landscaping and gardening work as well as outdoor lighting. The construction of this up-to-the-minute housing and display facility is sure to increase the zoo's attractiveness, while providing the visitors with the opportunity of watching the animals in their natural habitat.

Thanks to the financial contributions of donors, such as the CEZ Foundation's support amounting 150,000 CZK, but also the 559 thousand korunas raised through a public money collection, the zoo could launch in 2009 the implementation of the capital project called **Papua**. By redesigning existing premises, four exhibits will be developed to depict the tropical natural environment of Papua-New Guinea employing aquariums and a system of small lakes and presenting several threatened animal species, namely members of reptiles and fish, with total estimated construction costs of 2,215 thousand CZK.

In the late 2009, the **Construction of sea eagle and golden eagle aviaries** project was finished. To make this project real, funds were raised within the Operational Programme Cross Border Cooperation Czech Republic-Slovakia scheme as part of the Returning the Golden Eagle to the Mountains of Moravskoslezske Beskydy project, with total expenses including design work amounting to 2,024 thousand CZK. The work was co-funded by the Statutory City of Ostrava extending 285.5 thousand CZK for development of the project documentation and providing means amounting to 1,765 thousand CZK to pre-fund the construction work as such.

A capital project named **Rebuilding the Children's Zoo** was launched in October 2009 with the aim to add attractiveness to the central part of the zoo grounds, as the long-term state of disrepair of the existing facility required immediate solution. Within the project implementation phase, the children's zoo is to be expanded with new attractive forms of domestic animals added, like several breeds of cattle, diverse rabbit breeds and domestic pigs. The project will also involve a farm building with visitor access, water and power supply, sewerage, play components for kids, park furniture and extensive landscaping and gardening work.

This operation was supported by the Statutory City of Ostrava in 2009 by allocating a capital grant amounting to 8.1 million CZK. Because the central area of the zoo has been lacking social facilities for visitors over the long time, a decision was made to enlarge the scope of the works by constructing new-style toilets accessible to physically challenged visitors as well. The total amount needed for this action makes approximately 13.9 million. The new children's zoo will be made available to the public as early as 2010.

Other worth-mentioning updates throughout the zoo grounds namely include the following:

- A part of the front barriers within the lion and leopard exhibits replaced, allowing the visitors viewing the feline carnivores in a more attractive manner - covered from an SCO's grant amounting to 225 thousand CZK;
- Fencing and top of the indoor and outdoor facilities for the jaguarundi and Eurasian lynx at the small feline house redesigned - co-funded by an SCO's grant and zoo resources, a total of 66 thousand CZK spent;
- Existing cages and animal management installations in the room #2 and #3 at the animal separating facility behind the scenes fully repaired - costs of 235 thousand CZK funded from zoo resources;
- Gates at the elephant house repaired and modified as part of the preparation for arrival of the new male elephant - total costs of 2,641 thousand co-funded from the SCO's grant (1,079 thousand CZK) and zoo resources (the remainder);
- Aviaries designed for bird breeding behind the scenes rebuilt with total costs of 324 thousand CZK covered from the SCO's grant;
- Outdoor cages in breeding facilities behind the scenes completely rebuilt - covered from the SCO's grant of 93 thousand CZK;
- Fencing, shelter, a part of the outer shell and water supply mains of a stall behind the scenes fully repaired - total costs of 1,184 thousand CZK co-funded from the SCO's grant (700 thousand) and zoo resources (484 thousand).

Capital projects with expected start of implementation in 2010:

- The hippo house rebuilding project will be launched and also finished to a great extent. The project aims to improve thermal conditions for the animals housed, provide better environment for visitors by reducing the excessive odour indoors, and cut the extreme energy costs. The project covers replacement of the roof, which is in the state of disrepair; in addition, the entrance gate and a part of the building envelope lacking the heat insulation will be replaced, insulation of the house renewed, etc. Essential parts of the works will include converting the heating system of the facility as such by replacing electricity as the source of heating by renewable sources of energy, namely wooden pellets, and implementing at least a simple water filtering system in the hippo pool. All of the measures above will make the operation of this animal and visitor complex providing housing for the Ostrava Zoo's flagship species much more cost-effective and efficient, thus contributing to saving water, energy and human work to a great extent. The total project implementation costs will amount to some 36,500 thousand CZK. Within the project, an application seeking funding under the EEA/Norwegian Financial Mechanism amounting to about 17,500 thousand CZK was approved, with the remainder of 19,000 thousand expected to come from within the SCO's capital grant.
- A capital operation named **Mud removal and re-arrangement of the fish pond #1 at Ostrava**

Zoo with total project costs of CZK 10,100 thousand will be underway and completed in 2010, with 2,100 thousand CZK to be provided by the Operational Programme Environment (OPE), and the remainder amounting to 8,000 thousand CZK allocated by SCO. Within the project, the mud will be removed from the pond, a littoral zone set up and eroded parts of the pond banks and dykes restored. To enlarge the pond water surface area by adding littoral zones, the main drainage sewer of the pond will be extended and deepened, with the sediment removed used for setting up new islands and expanding the existing ones. The project aims to remove mud, reinforce the eroding pond sides and reconstruct the existing banks including the dyke. Additionally, creating new islets will help implement favourable measures in terms of landscape and ecosystem diversity; it will also increase retention capacity of the landscape, as well as preserve and restore natural runoff conditions. Two existing islands to accommodate lemurs will be enlarged and interconnected by three walkways as part of visitor routes, while the third island will be enlarged and separated from the remainder, as it will host a gibbon exhibit later on. Then there will be two new islands created and connected with the adjoining banks and each other by three walkways linked to the system of paths and log roads, while also placed to form a natural barrier between the sika deer enclosure and surrounding unfenced part of the pond. A total of six bridges 12 and 9.5 m long interconnecting the islands and the banks are designed as walkways made of a steel bridge deck combined with timber elements forming walking surfaces and handrails. Within the existing forest stand section, the visitor route across the two new islands will be interconnected with new path units by a log road 42.8 m long, to be also designed for direct viewing of the neighbouring sika deer enclosure to be set up, from which the log road will be separated by handrail and artificial ditch erected along the artificial retaining wall of the log road. The lengthwise gradient of the log road is designed to meet the requirements for movement of persons with reduced ability to move or sense of direction. The existing fence of the pond dyke will be removed and replaced with a new fence. The works will include new fencing for planned crane and sika deer enclosures, with a log hay-barn constructed for the latter species, a critically endangered animal.

- In the course of 2010, **a gas supply system including mains will be set up within the zoo grounds**, with a total costs of some 9,000 thousand CZK, which will be covered directly from the SCO's budget. The specific buildings and structures including the carnivore house, primate house, hippo & rhino house and education facility to a gas heating system will bring significant savings of funds in the years to come, as the existing facilities are now heated by highly expensive electric energy. In addition, alternating electricity using natural gas will reduce CO₂ emissions.

In 2009, a project development phase was launched, underway or completed for the following operations:

- Design development was finished for the Visitor Centre that will not only provide the much-needed restaurant operated all the year long, but also offer premises for conservation education, conferences and workshops. In 2009, an application was filed by the zoo to get funding for the project implementation from EU Structural Funds, more specifically, the Regional Operating Programme (ROP) Moravia Silesia. Unfortunately, the Regional Council of the Moravian-Silesian Cohesion Region did not find the application attractive enough for the development of the regional tourism. In 2010, the zoo's attempts to seek funding for the project within the next calls of the Moravian-Silesian Regional Operation Programme are to continue.

- Development of the building approval dossier for the works named **Biogas Plant Construction** was finished, with total costs amounting to 1,362 thousand CZK. The institutions participating on the funding included the Statutory City of Ostrava (333 thousand) and the Regional Office of the Moravian-Silesian Region (999 thousand), the balance of 30 thousand CZK was covered from the zoo resources. At the same time, an application for funding from the OPE was developed and filed. The biogas plant will chiefly provide a means of disposal of the biological waste produced by the animals as well as waste vegetation generated as part of operation and maintenance of the vast zoo area. The project is sure to have positive effects on improving the zoo's economy, be it the revenues from supplying green energy into the grid of CEZ (power supplier) or using the waste heat produced for heating specific facilities throughout the zoo. Potential self-sufficiency of the zoo, at least to some extent, in the case of total failure of power supply is another essential aspect to consider, as unlike other types of institutions, evacuation in the zoo situation would be largely impossible for most of the animals held, so consequences of any blackout status would be very dramatic.
- Development of the site planning documentation for the works named the **House of Evolution** was brought to completion, with the processing costs covered through the capital grant provided by SCO, which amounted to CZK 809.5 thousand including VAT. The project is to convert the old aquatic bird house to a state-of-the-art exhibit for chimpanzees and other African species designed as a combined interactive learning exhibit and animal breeding centre. During 2008, this operation was included into the Integrated Development Plan of Ostrava City (IDPOC).
- The development phase of the **Mud removal and rearrangements - pond #4** project was finished. 75% of the costs reaching CZK 116 thousand including VAT were funded from the grant successfully received from Moravian-Silesian Region and balanced from the zoo resources. Under this project, mud will be removed, eroded banks and the dyke restored and new islands and semi islands set up to serve as exhibits for primates and pelicans, the latter being a species new to the zoo. In addition, endangered local wildlife species will benefit from this project thanks to the littoral zone to be developed in the part of the pond. An application seeking funding from OPE was already submitted.
- A project development phase of the capital projects named the **Papua Aviary and Education centre: thermal insulation and energy savings** was launched. Following the Papua Exhibit (now under development), the Papua Aviary will be adjoining the existing education and training centre in the heart of the zoo next to the primate house. Designed as a walk-through exhibit, the aviary is to introduce medium-sized parrot species to the visitor, bringing the birds and humans into immediate contacts. The other project concerns the existing education and training facility of the zoo, which also serves as a place of contact with the general public. Finished and finally approved in 1979 and still heated by electricity, this building shows great loss of heat. For instance, the loss of heat through the opaque building envelope makes 33.1%, while fillings of the openings, i.e. windows, are responsible for as much as 26.9% of the entire heat loss according to the energy audit produced.

Thanks to the financial support from SCO exceeding CZK 11 million, the next project development phase could be started for each of the four projects mentioned below, this making further efforts to get funding from external sources (namely the EU funds) possible. The projects can be outlined as follows:

Ostrava Zoo – the Safari Exhibit

The development period for the project documentation funded by the SCO's grant is 2009 and 2010, with costs amounting to CZK 2,356 thousand including VAT as determined based on the public tender. The intention is to develop a safari exhibit, a vast fenced outdoor enclosure with free-ranging animals. This will be a ride-through area with visitors allowed to observe the animals, while keeping as close contact as possible with the creatures, getting the sense of moving in an open natural area amidst exotic wildlife that can be watched in its natural habitat and very close to the people. This kind of presenting the animals in zoos is something highly attractive, making the visitors able to move throughout the open grounds and eliminating the negative feelings caused by fenced exhibits. In the course of 2008, this project was included into IDPOC, while in 2009, the zone planning design documentation was developed.

Ostrava Zoo – the Penguin and Seal Exhibit

The development period for the project documentation funded by the SCO's grant is 2009 and 2010, with full-range design development costs estimated to range from CZK 3.5 to 3.8 million including VAT. The final price will be specified based on a public tender. The new exhibit is to replace the existing old bear facility, which is a huge concrete prison-like cell made in 1960, located in the middle of the zoo. The structure failed to comply with modern animal husbandry standards already a long time ago. The service life of the old bear facility as such has already expired and any investments except in terms of personal and animal safety would be ineffective. As this structure is fully outdated from ethical and technical aspects, only a demolition is something that makes sense. The planned penguin and seal exhibit will present a mixed exhibit of these spectacular animals that have always attracted zoo visitors' attention regardless of age and social background for their behaviour and activity. These animals can be seen in most of zoos, and their exhibits are amongst those much-sought.

Ostrava Zoo – the Tiger Exhibit

The development period for the project documentation funded by the SCO's grant is 2009 and 2010, with costs determined through the public tender amounting to CZK 1,216 thousand including VAT. The existing tiger enclosure is a small iron cage. Designed in the spirit of the 1960s, this facility is not only outdated and beyond any cultural standards, but even fails to comply with the recent animal housing concepts in terms of husbandry and welfare. The structure has failed to meet even basic tiger housing standards. What's more, with increasingly stricter requirements for holding animals in captivity, Ostrava Zoo is sure to finish its tiger collection within several years without developing an up-to-date breeding facility, as no established zoo institution would permit relocating its animals to any sub-standard housing conditions. Therefore, clearing this old facility and constructing a new one will be the only alternative. Compared to the existing status, the new tiger exhibit has been designed as a structure fully integrated into the natural landscape, with minimum requirements to build anything above the ground level. Such solutions provide the visitors with the possibility of viewing the animals in their normal habitat: a broad-leaved forest with fully grown trees consisting mainly of birch-trees similarly as in the tiger's range countries. In 2009, the building permit design documentation was finished for the exhibit.

Ostrava Zoo – the zoo office and main entrance

The development period for the project documentation funded by the SCO's grant is 2009 and 2010, with costs estimated to exceed CZK 3 million including VAT. The final price will be specified based on a public tender. The existing main entrance and zoo office had failed to comply with the recent needs of the zoo operations a long ago. The technical conditions and spatial arrangements of the main entrance are insufficient for handling the recent visitor numbers in a cultivated manner. The set of interconnected portable cabins looking like a construction site that forms the Ostrava Zoo's headquarters was designed to serve as a temporary facility in 1960s, and is now about to reach its service life. It is unsatisfactory in terms of space; what's worse, the energy demand of the facility is enormous. The shortage of places in the visitor car park is another critical issue. There are no facilities for holding presentations and lectures. To address not only the operational issues, but also to gain a new attractive area in the zoo grounds by clearing the existing operational building, a decision was made that both planned facilities would be constructed in place of the existing main entrance structures and interconnected in terms of operations. The project also covers a car park in front of the entrance, with 136 visitor car sites to be set up in the territory near the entrance, with some of them now already in use. The service building will be a two-storey facility containing offices, service entrance, cash offices, social facilities for the horticulture department members (i.e. gardeners) and offices for other departments of the zoo. Facilities will include a staff meeting room, presentation room including the background premises, a large zoo store and visitor toilets (including those for physically challenged) and a room for mothers with babies. In 2009, the building permit design documentation was finished.

Education and publicity

Šárka Kalousková and Jan Pluháček

Education

In 2009, the Ostrava Zoo education centre personnel performed 220 education lessons attended by 6,106 children, including 22 sessions for 720 children from kindergartens and 198 lectures for 5,386 students from diverse schools throughout Moravian-Silesian Region

In the new school year 2009/2010, five new education programmes were added to the existing menu:

- Three programmes for kindergartens and primary school grade 1 called Animals' bill of fare, Native wildlife of the Czech Republic and Zoo animals' diary.
- Two programmes for primary school grade 2 and secondary schools called Eagles in the Czech Republic and From the world of plants - trees and shrubs.

As with the year before, intense lecturer's involvement of the zoo in Czech universities continued in 2009. The *Behavioural ecology* subject was fully managed by the zoo personnel at the Natural Science Faculty of the Ostrava University, with additional full-day field class organised at Ostrava Zoo on 23 April. In 2009, the zoo staff members were active as primary supervisors within four bachelor's and master's theses of candidates studying at the natural science faculties in Ostrava and Ceske Budejovice. Outside the activities above, a number of expert assessments were developed for diverse universities throughout the country. Ostrava Zoo specialists also served as tutors within three subjects within the training course for Czech zoo keepers organised by the SVOPAP agency (12 through 14 June). Thanks to the efforts outlined above, Ostrava Zoo maintained its membership in the community of Czech zoos that proactively participate on education at universities in the country.

The series of specialist's lectures for the public named the News from the World of Zoology continued the fourth year under the management of the zoo scientific officer, with a number of experts from other institutions involved, such as Bc Ludek Culik of Dvur Kralove Zoo giving a lecture on giraffe conservation, taxonomy and husbandry, Mgr Martina Konecna of the University of South Bohemia with her paper concerning social hierarchy and its consequences in macaques and RNDr Ales Toman, Jihlava Zoo, presenting biology and conservation of the critically endangered European mink, which was a very good contribution to the pan-continental campaign of European zoos and aquaria that was underway, dedicated to the conservation of native carnivores. The lecture scheme was financially supported by the Czech Ministry of Environment. A total of 10 presentations attracted 346 attendants.

Outside the zoo grounds, lectures and presentations were also held in public libraries, senior homes and children departments of hospitals in the cities of Ostrava, Opava, Havirov and Novy Jicin. The zoo participated at the Ostrava 2009 international film festival dedicated to sustainable development, presenting a report on animal management at Ostrava Zoo. There were a total of 60 events attended by 1,104 persons.

In December, the 3rd annual conference named Involvement of Zoological Parks in Conservation Education designed for directors of schools and education institutions, conservation education coordinators, natural science teachers, managers of leisure natural science clubs and other persons interested took place at the zoo.

Again, the event was co-funded by the Ministry of Environment. In addition to the Ostrava Zoo personnel, papers were also presented by representatives of the Ostrava City Office and ZO CSOP (Czech Union for Nature Conservation) Novy Jicin - Wildlife Rescue and Conservation Education Centre in Bartosovice na Morave, as well as by Tomas Hulik, a guest from Slovakia and coordinator of the Navrat rysov (Return of the Lynx) project. 70 professionals in education attended the event.

Competitions

In April and November, two traditional learning contest for primary and grammar schools were organised in cooperation with Kruh pratel zoo (Friends of the Zoo). The spring round attended by 2,455 children was called "European carnivores", while the autumn part was titled "Ichthyofauna of the Czech Republic", with 2,385 children participants. Over 100 schools throughout Moravian-Silesian Region got involved in each of the contest.

Friends of the Zoo

The society had 48 members in 2009, with a number of them participating on the development and organisation of the events for the public held by the zoo throughout the year.

Promotion activities

- Media releases circulated at least weekly to over 50 regional/national media, as well as to some 2,000 subscribers to the News of Ostrava Zoo information service comprising editors of bulletins of cities and communes throughout Moravian-Silesian Region, regional celebrities and private persons
- Routine TV reports in the Good Morning show in partnership with the Czech TV (public national station)
- Routine reports in the We Like Animals show in partnership with the Czech Radio Ostrava
- Spots over the period of summer holidays in cooperation with Hitradio Orion, a regional radio station
- Media campaign in the regional media along the Polish side of border - spots in the Polish radios and TVs from June to August
- Large-area advertising by means of seven billboards installed on the main arrival routes in direction to Ostrava throughout Moravian-Silesian Region from April to July, 12 advertisement boards and 3 advertisement sheets in cities and communes of the region
- 22 April – Ostrava Zoo presented at the 5th annual conservation and environmental film festival TUR Ostrava 2009
- Posters titled Winter at the Zoo, Spring at the Zoo, Summer at the Zoo and Autumn at the Zoo placed in public transport vehicles of Dopravni podnik Ostrava plc (a city transport company) and distributed to public libraries, information centres and other organisations and institutions around Moravian-Silesian Region
- Information poster presenting a schedule of events at Ostrava Zoo in 2009
- Magazine named Ostravsky colek (Ostrava Newt)

Activities for the public

A total of 31 events for the public were organised by the zoo's public relations department alone or in collaboration with other parties in 2009, each taking place on the occasion of some important day; most of them were arranged in cooperation with the group of zoo volunteers.

Selection of the most attractive events:

- 5 April: The Day of Birdlife - competitions for children, display of eggs and bird taxidermy specimens, a guided tour of the zoo with an ornithologist, installation of nest-boxes
- 18 April: The Day with OKD Foundation - the Little Amazonia exhibit opened
- 28 June: Singing for Tigers - tiger cub naming party and musical show of the band called Charlie Straight
- 4 July: Start Your Holidays at the Zoo and Take Your Veteran Too - everybody bringing their outworn electric appliance could get a special discount on the entrance fee
- 25 July: When Animals Are at Play - a day of environmental enrichment at the zoo
- 18 August: When Llama Gets a Haircut - hairstyler's show at the zoo
- 16 August The Day of the Blue-eyed at the Zoo - celebrating 3 months of age of the Sclater's lemur
- 30 August: Musical Show for the Zoo
- 3 September: European Bat Night
- 5 September: A Day for Vultures
- 19 September: Senior's Day with playing movies for contemporaries
- 4 October: The Animals' Day - event focused on conservation of large birds of prey
- 11 October: Harvesting the Fish Pond
- 28 October: Naming party with a young vulture to be released into the wild in the French Alps
- 31 October: Halloween and a paper lantern parade at the zoo
- 5 December: Saint Nicholas at the zoo
- 12 December: Christmas time decorating activities and Advent concert at the zoo
- 19 December: Decorating Christmas trees, a live Nativity scene at the zoo - a traditional event involving hanging goodies for the free-ranging wildlife around the zoo and singing Christmas carols

From March to October, narrated selected animals feeding shows were performed for visitors, with red panda feeding and narrated elephant training being new additions. Throughout the summer holidays, evening guided tours were available for visitors after closing hours on Saturdays. Thanks to the financial support of the Czech Ministry of Environment, the zoo could buy a sound system for chimpanzee, hippo and parrot exhibits, and thus improve the quality of animal talk performance. In addition, lanterns designed for evening guided tours were purchased.

Throughout the summer holidays, three cycles of the summer school took place at the zoo, focused on top predator animals - carnivores and birds of prey. Touch-tables were available to every visitor throughout the zoo grounds. In the winter period, visitors could provide supplemental feeding to the birds ranging freely at the zoo. Ostrava Zoo presented themselves at the celebration of the Earth's Day organised by the Statutory City of Ostrava held on the street of Hlavni trida in Ostrava-Poruba and Ostrava-South (city districts).

New interactive components in the zoo grounds

New learning-by-playing structures were installed around the zoo. In the area of the botanical park, several education spots were constructed to present the native fauna species roaming freely in the zoo grounds as well as native flora; they featured the woodpecker, stork and age identification in trees. The devices made thanks to the financial support of the Czech Ministry of Environment are designed to provide means of discovery through entertaining and interactive approach, encouraging the kids and adult ones in being susceptible to the world around. Other components were funded by Severomoravska plynarenska, an RWE Group member,

and involved models of a turtle shell and above-lifesize kangaroo, allowing the children to play a role of the very animal and become a turtle or a baby kangaroo for a while. Thanks to the support of Pilsen Urquell Foundation, new play structures could be added to two children playgrounds at the zoo.

Other zoo-based events:

- 28 April: Majales v zoo - in 2009, the zoo teamed up with the Stavovska unie studentu (university student professional association) of Ostrava University. Consequently, one of the accompanying events within the Ostrava University Majales (annual student festival) - a theatre show - was held in the zoo grounds.
- 5 to 7 June: Bambiriada at the zoo - The children festival was held in partnership with Rada deti a mladeze (Children and Youth Board) of Moravian-Silesian Region (RADAMOK).
- 22 July: Dreamnight at the Zoo - third annual special night for disabled children. While taking a walk through the illuminated zoo grounds, the children could stop by touch-tables with natural specimens and items and meet live animals. 100 kids attended the programme; everyone received a small gift and zoo's promotional items.
- 14-15 October: A Day with the Donors - traditional meeting of donors including presenting new exhibits and other updates within the zoo grounds.

Displays

The zoo has set up a new area to hold various displays inside the house of African ungulates. The 2009's exhibits were as follows:

- Animals at Ostrava Zoo
- The EAZA European Carnivore Campaign
- Returning the Golden Eagle into the Czech Republic
- The house of Indian animals now contains a permanent exhibit named Coexisting with Large Carnivores, set up under a financial support provided by the Czech Ministry of Environment.

Displays outside the zoo:

- A display featuring Ostrava Zoo including animal photographs - venues: the Regional Office of Moravian-Silesian Region, the Town Library of the City of Ostrava - the departments in Fifejdy and Vyskovice districts, the Culture Centre of the City of Ostrava, the Haematology Centre of the Faculty Hospital Ostrava and the House of Culture Akord
- Diverse Beauty of Parrots: a display arranged in cooperation with the City Culture Centre of Javornik Town.

Pony riding club for children

Meetings of the pony-riding club took place bi-weekly all the year round, with 13 children members.

Rose hip autumn

A second annual competition for the public in collecting hips, rowanberries and acorns to be used for enrichment of animal diet. An unbelievable one tonne was collected by the participants!

Partnership with Czech Railways

Ostrava Zoo became a partner to the Czech Railways project named Through Moravian-Silesian Region by Train; encouraging tourism and travelling by train, the activity included a competition for material prizes and was underway from 1 June to 30 September.

Company volunteering

In 2009, Ostrava Zoo became involved in the company volunteering scheme in cooperation with Forum darcu (a Czech philanthropic organisation). A total of 119 employees of various companies were assisting the zoo namely with cleaning and gardening work throughout the year.

To conclude, the authors wish to thank every colleague, who significantly contributed to organising and performing all events. Also, they wish to thank the group of volunteers, as the most of the events would be impossible without their gratuitous help.

Activities of the Horticulture Department in 2009

Tomáš Hanzelka

In 2009, the department members significantly contributed to the development and completion of the Little Amazonia exhibit, which in particular involved finishing work indoors and installations in the tamarin enclosure.

In the spring season, additional planting was carried out within the wetland communities of the several water reservoirs restored very recently.

Maintenance of several routes through the Botanical Park was underway all the year round, namely including grass areas and recently set up beds of perennials. Following selective logging to improve health of the forest stands throughout the grounds and evaluating the existing potential, a large number of trees were planted obtained in particular from alternative outplanting areas.

In cooperation with animal husbandry department, the horticulture staff took share in furnishing and designing animal housing facilities, namely by supplying and arranging natural materials and live plants.

New planting activities also included the greenery making background in the areas of outer fencing of the zoo. In 2009, gardening and landscaping work to decorate the surroundings of the red panda outdoor enclosure was finished, which namely consisted namely in development of dry-stone flower walls and visitor trails.

Research at Ostrava Zoo in 2009

Jan Pluháček

During 2009 we continued in our two projects that started in the past (Suckling behaviour in equids and Suckling behaviour in common hippopotamus) in cooperation with the Institute of Animal Science in Prague and Dvůr Králové Zoo. The first results of these projects should be published in the following year.

In July 2009, our zoo published the third edition of the European studbook for common hippopotamus (*Hippopotamus amphibius*). We improved data in the studbook dealing with current population as well as data concerning the individuals living in Europe in the past. To the end of the 2008 the current common hippo population consists of 198 specimens kept in 73 institutions. During 2008, 13 births occurred, 5 of these died within the same year. A further 8 animals died during the year. Important changes occurred also with the herd of hippos kept in our zoo, however these changes are summarised in the other text of this annual report.

During 2009 we attended 2 international and 1 national congresses where we presented several talks and/or posters (see Table 1).

Table 1. List of abstracts and presence of the Zoo employees at the scientific congresses in 2009.

Congress	Place and date of the congress	Title of abstract
30 th International Ethological Conference	Rennes, France, August 19 th -24 th	Mother-offspring conflict in captive plains zebra: the suckling bout duration.
26 th EAZA Annual Conference	Copenhagen, Denmark, September 15 th -20 th	Common hippopotamus <i>Hippopotamus amphibius</i> European studbook 2009; Effect of external stimuli on enrichment in captive chimpanzees (<i>Pan troglodytes</i>): a case study.
36 th Czech and Slovak Ethological Conference	Kostelec nad Černými lesy November 12 th -15 th	Mother-offspring conflict in captive plains zebra: the suckling bout duration.

Table 2 summarises the species kept in our zoo and involved in research projects during the year of 2009 by researchers either from Ostrava Zoo or from other institutions. The amount of research projects carried out in our zoo during 2009 was higher than those recorded per year from 2006 to 2008. Some of the projects listed in the Table 2 are long-term projects collecting data from our zoo in several consecutive years. One of the projects collecting data in our zoo resulted in the publication of scientific during the year 2009 (Pomajbíková et al. 2010). This project was focused on the entodiniomorphid ciliates in captive chimpanzees and bonobos

and it was carried out by the scientific team from the Department of Parasitology, University of Veterinary and Pharmaceutical Sciences at Brno, Czech Republic.

As in the past, the employees of Ostrava Zoo continued to coordinate six specialist group within the Union of Czech and Slovak Zoos (apes, old world monkeys, small cats, parrots, fish, and deer). Thus, Ostrava Zoo coordinates the highest number of these specialist group compared to all other zoos in the Czech Republic. Besides this activity, the employees of Ostrava Zoo published several papers in Czech and German popular journals like *Živa* or *Fauna* (see the list of selected papers below).

Table 2. All projects (involving those of other institutions as well as our own) dealing with animals kept at the Ostrava Zoo in 2009.

Person(s)	Institution	Name of the project	Species involved
Barbora Kamitzová	Czech University of Life Sciences, Prague	Holding of black lemures in zoos	<i>Eulemur macaco macaco</i>
Ewa Polańska	Adam Mickiewicz University in Poznań, Poland	Unsocial behaviour of Diana monkeys	<i>Cercopithecus diana</i>
Martyna Paczkowska	Adam Mickiewicz University in Poznań, Poland	Social behaviour of Diana monkeys	<i>Cercopithecus diana</i>
Hanna Napierała	Adam Mickiewicz University in Poznań, Poland	Social and unsocial behaviour of <i>Panthera tigris altaica</i>	<i>Panthera tigris altaica</i>
Monika Nováková	South Bohemian University	Vliv magnetismu na zvířata v zoo	
Jitka Stehlíková	South Bohemian University	Dominance hierarchy among ruffed lemur	<i>Varecia variegata</i>
Klára Petrželková a David Modrý	Institute of Vertebrate Biology Academy of Sciences of the Czech Republic, and University of Veterinary and Pharmaceutical Sciences Brno	Infusoria of the genus <i>Trogloidyella</i> : pathogens or symbiots	<i>Pan troglodytes</i>
Hanka Janoušková Radim Kotrba	Czech University of Life Sciences, Prague	Thermoregulation in eland	<i>Taurotragus oryx</i>
Jan Pluháček	Ostrava Zoo, and Institute of Animal Science, Prague	Suckling in common hippopotamus	<i>Hippopotamus amphibius</i>
Radim Kotrba	Institute of Animal Science, Prague, and Czech University of Life Sciences, Prague	Morphometrical analysis of new born antelopes as a predictor of an adult body size	<i>Taurotragus oryx</i>

As a conclusion I would like to thank to all who helped to improve the important goal of modern Zoological garden, the research. My thanks go to Jana Kanichová, Monika Ondrušová, and Jana Pluháčková for valuable comments and improving English of this text. Publishing of the European studbook for common hippopotamus was financially supported by the Ministry of the Environment of the Czech Republic.

Research paper in journal with impact factor using data collected in our zoo published in 2009:

Pomajbíková, K., Petrželková, K. J., Ilona Profousová, I., Petrášová, J., Kišidayová, S., Varádyová, Z., Modrý, D. 2009: A survey of entodiniomorphid ciliates in chimpanzees and bonobos. American Journal of Physical Anthropology, in press.

List of the other papers or books which have been published by zoo employees in 2009:

Čolas, P. 2009: Proceedings from the second meeting of the Old World Monkeys Specialist Group within UCSZ, April 2008. Zoo Ostrava, Ostrava. [in Czech]

Kanichová J. 2009: Breeding of ring-tailed lemur in Ostrava Zoo. In: Vokurková, J. Prosimians within UCSZ, 10/2008, April 2008. Zoo Olomouc, Olomouc. [in Czech]

Novák, J. 2009: Proceedings n. 7. from the meeting of the Small Cats Specialist Group within UCSZ, duben 2009. Zoo Ostrava, Ostrava. [in Czech]

Pluháček, J. 2009: European studbook for common hippopotamus (*Hippopotamus amphibius*). 3rd Edition. Zoo Ostrava, Ostrava.

Pluháček, J. 2009: Proceedings from the second meeting of the Deer Specialist Group within UCSZ, January 2009. Zoo Ostrava, Ostrava. [in Czech]

Pluháček, J. 2009: Proceedings from the third meeting of the Deer Specialist Group within UCSZ, January 2009. Zoo Ostrava, Ostrava. [in Czech]

Pluháček, J. – Bartoš, L. – Čulík, L. 2009: On the advantage of a mare being high-ranking. The story of the plains zebra. Živa 5/2009, pp. 232-233. [in Czech]

Svobodová, Y. 2009: *Ara macao* – History of its breeding in Ostrava Zoo. Fauna 15/2009, pp. 12-13. [in Czech]

Svobodová, Y. 2009: Grey parrot and its rearing. Fauna 4/2009, pp. 12-14. [in Czech]

Svobodová, Y. 2009: *Gubernatrix cristata* in Ostrava Zoo Fauna 23/2009, pp. 14-15. [in Czech]

Svobodová, Y. 2009: Taubenhals – amazonen. Haltung und Zucht im ZOO von Ostrau. Gefiederte Welt 11/2009, pp. 20-21. [in German]

A year of carnivores at Ostrava Zoo

Monika Ondrušová

The last year's EAZA campaign devoted to European carnivores was the opportunity for the zoo to focus on these predators as well. A number of visitor competitions and activities were arranged to make sure that everyone could get involved. Our aim was not only to make people more familiar with the endangered nature throughout Europe, but also raising funds to support European carnivore conservation projects as part of the EAZA campaign. Every visitor had the opportunity of financial support by purchasing promotional merchandise produced specifically for the campaign, like badges with wolf, lynx and bear design, pencils with a bear picture or carnivore folding picture-booklet, and by leaving money in a money collector box placed in the zoo grounds. Total net proceeds from the public collection amounting to 19,700 CZK were forwarded into the account of the European Association of Zoos and Aquaria.

European carnivores were central to many events designed for the public:

- 4 March: Large European Carnivores - a lecture given by Miroslav Kutal, Hnutí Duha (nature protection NGO), Olomouc
- 19 April: The Earth's Day - A European Carnivores Day
- 1 May: May-Day: Carnivores Howl to Warn
- 29 May: Children's Day - Playing with Carnivores
- 21 June: Take Your Teddy Bear to the Zoo & Celebrate Panda's Birthday

Beast Stories

The zoo published a subtle book of stories called "Beast stories or Fairy tales and rumours on carnivores ... a little bit different" written by Moravian-Silesian primary school students who participated in the literary contest launched by Ostrava Zoo under the campaign. The task was to create a fairy tale that would present a carnivore positively to the public; everyone could write their own story or retell a traditional one. The book was then circulated to kindergartens, family centres, children departments of hospitals and other institutions designed to work with children throughout Moravian-Silesian Region. The book was published under the financial support of the Czech Ministry of Environment.

Singing for Tigers

A musical contest was launched for the first time, designed for young non-commercial artists under 18, be it singers or bands. The aim was to compose and sing the best and novel song for female tigers born at Ostrava Zoo. The Singing for Tigers contest was arranged under the umbrella of a band from the town of Trinec named Charlie Straight and the winner's prize was more than attractive: the most innovative young musician was to become a supporting act of the Trinec band at their gig at the zoo and at the same time a godfather to one of the tiger girls. The winner of the two-month long contest became a female singer Anicka Cervenkova and the tiger females were officially named Duffy and Darja on the day of the performance.

The best carnivore cup

The objective of another creative competition was making a hand-made cup with a carnivore design. In this case, the main prize was highly attractive as well - a tour to Croatia for two persons donated by VITKOVICE TOURS (travel agency), which eventually came to Veronika Kristkova for her cup with a wolf muzzle design that was winning for its smart context; however, selecting a single winner from the number of nice and original designs was not that easy. Each of the contest cups was designated for sale to zoo visitors for a symbolical price of 100 CZK, with proceeds forwarded to support the EAZA campaign.

To conclude, I would like to thank all those supporting the scheme - VITKOVICE TOURS for providing the tour to Croatia, the Charlie Straight members performing without claiming a royalty, Hitradio ORION for their media promotion and partnership, all contestants and everyone supporting carnivores in terms of funding. Last but not least, I thank to all colleagues who took part in the preparation of the Year of Carnivores at Ostrava Zoo.

Historical increase in the number of animals at Ostrava Zoo

Jiří Novák

Throughout its history, every zoo will experience better and harder times. Current visitors of the Moravian-Silesian metropolis can, dare I say, enjoy the positive-toned years right now. The more and the longer Ostrava Zoo lagged behind their companion zoos in the Czech and Slovak Republics as well as European and global trends, the greater effort has been developed by Ostrava Zoo personnel very recently - of course this being backed by the necessary support of the zoo's founder.

The development (with regard to animals) paradoxically began with rather unpopular measures in terms of visitors. Throughout the long history, selection of only a small number of groups (orders) of birds and mammals was kept and presented to the public, with felines, bears and anseriform birds being the most famous taxa, and popularity among the audience being won through several large mammals kept and bred. However, holding the latter is something that must meet many pre-requisites, including extraordinary amounts of capital invested in breeding facilities and exhibits, to name a few. As no funding like that was available, species like the polar bear (*Ursus maritimus*), Kodiak bear (*Ursus arctos middendorffi*) and Indian elephant (*Elephas maximus*) were housed under conditions that will not survive as things stand. And as finding enough money to remedy was not possible within a short time following the zoo's self-reflection, the zoo management opted for the only sensible way - slight reduction of the large mammal stock held in sub-standard situations. For these reasons, the bear species above were stopped, as well as jaguars (*Panthera onca*) and cougars (*Puma concolor*). Nonetheless, most large mammals have remained, such as the Indian elephant (*Elephas maximus*), hippopotamus (*Hippopotamus amphibius*), Indian lion (*Panthera leo persica*), Siberian tiger (*Panthera tigris altaica*), Rothschild giraffe (*Giraffa camelopardalis rothschildii*), Grevy's zebra (*Equus grevyi*), Asiatic black bear (*Ursus thibetanus*) and many others, and Ostrava Zoo is still amongst the largest zoos in the Czech Republic even in this regard.

Such a short-term cut in the numbers of species, which generally was still a moderate one, allowed for significant improvement of conditions for other creatures that remained on the list. Simply, the zoo team was quickly able to provide a number of animals with larger enclosures by combining several smaller paddocks, as well as light up the zoo grounds with plants and eliminate a lot of ugly iron barriers or cages. The structure of stock was however generally maintained in the beginnings, and certainly, the number of breeding species or individuals could not increase.

In 2008 and 2009, a break occurred. These two years would be difficult to separate because the zoo team's work on the acquisition of a number of new species covered both periods. This involved not just a few new large or "famous" animals, such as three Indian elephants, red pandas, white-naped cranes, etc.; indeed, the tendency towards creating the best level of housing for animals and luxuriously spacious aviaries and enclosures, whether real or still in the designs, as well as investments not only in exhibits, but also the much needed facilities behind the scenes, allowed the zoo personnel to work hard on getting new species, often recruiting from completely new taxa not held at the zoo so far. All of the above resulted in an annual increase in the number of animals that is unprecedented in the modern history of Ostrava Zoo.

Most of the animals listed below are temporarily placed out of scenes, waiting for the new exhibits to open in 2010. In 2009, for example, the zoo imported the Asian small-clawed otter (*Aonyx cinerea*) for the Chitwan exhibit - so far the only mustelid within the stock, a Red List species managed as vulnerable. The Chitwan complex, where the zoo wishes to present animals of the well-known Nepalese national park, and which is to provide some already established stock members like bears and langurs with better conditions, will include two aquaria. They will be the first freshwater exhibit tanks at Ostrava Zoo, with the freshwater garfish (*Xenentodon cancila*) being one of very intriguing species. Other fish taxa are to range in the aquaria of the exhibit called Papua, where visitors can admire magnificent members of New Guinea fish life, for example the northern saratoga (*Scleropages jardinii*) and Atlantic mudskipper (*Periophthalmus barbarus*), but also reptiles - the blue-spotted monitor (*Varanus macraei*) - the first monitor lizard at Ostrava Zoo, as well as the Siebenrock's or northern long-necked turtle (*Chelodina siebenrocki*) and New Guinea snapping turtle (*Eseya novaeguineae*), the zoo's first snake-necked turtle species. In the aviary adjoining the Papua display, the blue-winged kookaburra (*Dacelo leachii*) is to be a new species. Ready to settle in the future nocturnal exhibit is the first representative of the hyrax order - the southern tree hyrax (*Dendrohyrax arboreus*), husbandry of this species kept behind the scenes being now one of the tasks of animal managers. Other creatures held currently out of scenes include wonders, as is the critically endangered Siberian crane (*Grus leucogeranus*), the northern bald ibis or waldrapp (*Geronticus eremita*), endangered Baer's pochard (*Aythya baeri*) or white neck-laced partridge (*Arborophila gingica*), a vulnerable species in the wild. These species are coming soon on display. On the other hand, some creatures were out to please the visitors, whether laymen or experts, already in 2009, be it the Dalmatian pelican (*Pelecanus crispus*) on the pond, the Chinese merganser (*Mergus squamatus*) in the Chinese fauna exhibit, the Madagascar or common fody (*Foudia madagascariensis*) in the Madagascar exhibit, the silver shark (*Balantiocheilos melanopterus*) inside the Elephant Jungle or many others. In the **Little Amazonia** exhibit, there is another number of new species to admire, among them being the first Ostrava's member of primates called clawed monkeys, the cotton-top tamarin (*Saguinus oedipus*). Held very frequently in zoos elsewhere, this primate is however a critically endangered species in the wild.

Selecting species that could be placed on the top of the list as seen by an expert in zoology would be a hard job - all of them are the best. So to conclude, let me try to summarise the results of the joint efforts of the zoo team: at the end of 2008, Ostrava held 305 animal species and 1,535 individuals. A year later, the list included as much as 2,919 animals of 354 species, meaning the number of species has increased by 16%, while the number of individuals has almost doubled and it is my strong belief that there are even more new and interesting animals coming in 2010 to which we all can look with expectations.

Keeping a new primate species at Ostrava Zoo

Karin Tančiboková

Since the mid-year 2008, building alterations in the entrance part of the parrot house commenced to provide for a new exhibit named "Little Amazonia". The rebuilding process cost the zoo 1.9 million CZK, with 1.5 million extended by OKD Foundation and the remainder co-funded from the allocation of the Statutory City of Ostrava. Formally opened on 18 April, this exhibit became home to new dwellers, including primates that were never held in Ostrava before.

The cotton-top tamarin (*Saguinus oedipus*), a critically endangered member of the callitrichid family, primates that feature nails converted into little claws on each of the digits except the big toes. Their rather long body, limbs and tail as well as their claws make callitrichids very well adapted for climbing thick tree trunks. The cotton-top tamarin measures 210-250 cm and its weight ranges from 400 to 500 g. The back is brown with light marble pattern, while the underparts including limbs are white. They feature heavy-looking white hairs on their nape, so are sometimes dubbed Liszt monkeys as they are said to resemble the famous composer. Pregnancy takes 140 days; the female will mostly bear twins or even triplets, but the latter is rare. Tamarins live in small family clans, with both parents caring for the infants. The young ones are carried by the male and older siblings on their back and delivered to the female only for feeding. This tamarin can live for up to 15 years. The cotton-top tamarin is a diurnal creature that will spend most of its time in trees, searching for food almost all day long, feeding on fruits, young leaves and buds, but also insects and nectar. When threatened, the tamarin will stand up on its hind limbs, erecting the prolonged hairs on the nape. When vocalising, cotton-top tamarin's voice sounds like bird singing.

At the moment, there are more cotton-top tamarins in zoos and private holders than in the wild, which probably is due to the use of this primate in pharmacy throughout Europe, being the reason for their imports. The species' range is limited only to northern Columbia, a region where biodiversity is relatively high, but conservation rather poor, with converting forests into the farming land and development of water power plants posing the main threats not only to tamarins.

For the new exhibit, a family group was imported to the zoo from Dresden, which involved a breeding pair and four juveniles. In the latter half of May, the female Isabel gave birth to twins. The family was really a good example of a breeding group. In September 2009, the young but already sexually mature males tried to chase the dominant male Leopold away from the group, with Isabel eventually joining these efforts. Three young males had to be separated from the group and placed behind the scenes. Leopold was separated as well due to its injuries, with subsequent treatment lasting one month; then this animal could be reunited with the group.

Attractiveness is added to the Little Amazonia through several components, like the vivarium containing tiny frog species - the three-striped poison frog (*Ameerega trivittata*) and the golden poison frog (*Phyllobates terribilis*), the naturalistic display showing peculiar invertebrates - death's head cockroaches (*Blaberus craniifer*) and the white-banded tarantula (*Acanthoscurria geniculata*), and the artificial waterfall with a water tank for freshwater creatures, with the ocellate river stingray (*Potamotrygon motoro*) - the first member of cartilaginous fishes at Ostrava Zoo, black band myleus or disk tetra (*Myleus schomburgkii*) and banded leporinus (*Leporinus fasciatus*) being certainly the worth-mentioning species.

Breeding the rarest lemur at Ostrava Zoo

Jana Kanichová

Ostrava Zoo has been devoted to breeding the Sclater's lemur (*Eulemur macaco flavifrons*) since 2004, when an 8-year-old female Melanie and a three-year-old male Micha were acquired from Mulhouse and Cologne, respectively. The animals could be obtained through AEECL membership (Association Européenne pour l'Étude et la Conservation des Lémuriens, the lemur conservation association), which is determined by annual financial contribution for this organisation, where the money are subsequently forwarded directly to Madagascar, Sahamalaza Peninsula, where research dedicated to this beautiful blue-eyed lemur is underway. A new nature reserve was established in Sahamalaza over time with support of the Madagascar government, giving the endangered lemurs the chance to survive. Burning vegetation, meaning total elimination of places where the animals could dwell, presents the biggest conservation issue on the island. Only estimates exist for numbers in the wild, with a maximum of 3,000 individuals reported. Unfortunately, chances of the species for survival shrink due to continued burning, which takes place even in reserves. Greatly reduced opportunities for the Madagascar's nature as such based on the recent political instability of the country are also the reason why captive breeding is so important for the Sclater's lemur. Sadly, the situation in zoological parks is catastrophic, giving only a little hope for sustaining a healthy and reproductive population in future.

Europe started captive breeding in the Sclater's lemur in 1984, followed by the USA in 1985. A total of 20 founder animals (9 males and 11 females) were imported from the wild, with eight founders (4,4) based in Europe, seven (2,5) in the USA and five (3,2) in Madagascar. However, not all animals reproduced and if they did, the majority of their descendants failed to become involved in breeding. From 1984 until the end of 2009, 195 animals (93,85,17) came and left captive breeding institutions, of which 111 were live-born and 64 stillborn animals. There were five cases of twins, including three cases of the young reared successfully by the parents. Over the breeding history, live offspring was produced by 51 animals (27,24), of which 21 were based in the USA (12,9), 20 in Europe (10,10) and 10 in Madagascar (5,5). Only dead young occurred in 13 individuals (5,8), from which four were held in the USA (1,3), nine in Europe (4,5) and none in Madagascar.

Currently, the Sclater's lemur is kept in 25 institutions throughout the world, with the captive stock comprising 71 animals. The European stock contains 29 Sclater's lemurs (15,14), with only three females that deliver live animals, of which, however, one female has not been able to care of the young so far. There is another small hope with three females that have already bore, but stillborn animals were the only results. In addition, three of those six females that have already given birth are old. The oldest female of this lemur species that ever gave birth in the captive situation was 16 years old. The current USA stock counts 30 animals (21,9), with only a single female breeder and four females that are rather old and bore only stillborn animals. The situation in Madagascar zoos does not provide very good overview. Nonetheless, eleven animals (3,8) are reported.

At Ostrava Zoo, the "blue-eyed" did very well early in 2009. Following five years, when the breeding pair Melanie and Micha produced just a single stillborn infant in 2006, offspring was born to the female Melanie on 10 May 2009 and reared by the mother despite the initial nervousness. A few days after, the infant was found to be a male. As everybody was feeling really good seeing that Melanie and Micha made it, the young one was named Ravu, which in the Malagasy language means "happy". A new island exhibit was constructed

for the lemurs, where the family of the "blue-eyed" stayed until the middle of September 2009. Sadly, the health of the breeder Micha, who in terms of genetics was the most valuable lemur of the species in Europe, started getting worse at that time and became paralysed with time. Because of the rareness of this lemur species, we had the male examined at a special clinic in Brno, unfortunately with fatal findings - two spinal vertebrae had been attacked by cancer causing the animal's spinal cord to depress with subsequent paralyse. As such state was impossible to treat, Micha had to be euthanised, leaving only the breeding female Melanie and the young Ravu at Ostrava Zoo. Due to the urgent reproductive situation in these lemurs, we could not afford leaving Melanie without a male during the oestrus period, which takes place only once a year, from December to February. Upon agreement with the programme coordinator and having undergone a slow paperwork process, Ostrava Zoo successfully imported another Sclater's lemur pair from Poznan Zoo. Even though both animals had reached 10 years, the pair never reproduced, despite lemurs can start to reproduce once two years old. Factors affecting this failure might have included the dietary status, as both animals suffer obesity, weighing 3.5 kg, while normal weight is 2 kg approximately. Now, the transfer mentioned above has brought new perspectives for everyone involved. The new female Fuoro was paired with the young male Ravu and chances are they will breed successfully in the subsequent season. The female Melanie and the new male Saroh even already mated, giving everyone the hope of another happy year for Ostrava Zoo and their rare lemurs in particular.

Note: the figures in brackets stand for numbers of animals, where the first digit gives a number of males, the second that of females and the third digit means a number of animals with sex not yet determined, where applicable.

Beira, the chimpanzee offspring

Dagmar Marková

In 2008, there was an exchange of males within the chimpanzee group, with an unrelated male Sebastian brought from Krakow Zoo to join the zoo's four females Hope, Maji, Zira and Bambari. Hope became Sebastian's favourite female, giving birth on 10 May 2009. This second birth in the female's life - the first took place eight and a half years ago, with the female Bambari born as a result - was underway at night. In the morning, the infant was already dry and cleaned, holding her mom's belly with all four limbs. The baby chimp was all black, with a little tuft of white hair on its rump and was seen to suck milk.

Month 1 The little chimp has slept through the first days of its life, making only gentle sounds from time to time. Subsequently, periodical training started by the mother with the young one, consisting of stretching the infant's upper and lower limbs. Hope refusing to give the offspring away, except for her first-born daughter Bambari, who is allowed to touch the baby. In addition, Bambari is also active in hair cleaning. The mother is even so particular about the cleaning that she plucks some infant's hair. The father Sebastian is proud of the young one, often sitting next to Hope just to watch the baby. The sex identified - the chimp is a female. The little one starts looking around curiously and is laid on its belly by the mother. Bambari permitted by Hope to play with the small chimp by stretching the young one's upper limb. The other females are curious and spend their time around Hope.

Month 2 A symbolic naming party held in the ring enclosure on 11 July, the young female named Beira. Hope starting to sit Beira into the wooden wool and continue the training, which sometimes looks drastic, but the little chimp does not mind. Beira is much more responsive, starting to reach out for food and taste. In week 8, the young chimp starts to stand on its feet with the mother's help.

Month 3 The first teeth have appeared in the lower jaw, Beira starting to take solid food in addition to milk. She can also stand on its feet a little bit longer, but is still assisted by the mother. Sebastian handling the young one very gently, touching the chimp with care. The other females trying not to stay behind, with namely Zira being the one who is allowed to play with the chimp.

Month 4 Everyone could finally see teeth in the chimp's upper jaw as well. Beira first managed to run away from the mom, but only a metre away; the young female would like to move freely, but the mother does not seem to be happy with that. Sebastian playing with the young female with a real delicacy, caressing and tapping the baby. The females cannot let the opportunity go, coming around to enjoy the young.

Month 5 The situation still the same - the young female needs to get away from Hope, who still holds her by the hand. The group becomes restless, with Sebastian mating Zira.

Month 6 Hope starts quitting the need for holding Beira off. The young female shows an interest in ropes and fire hoses. Bambari playing with the young chimp, holding it on the female's belly. Beira tasting fruits and vegetables, of course still breast-fed by the mother.

Month 7 First jumps and climbing. Beira moving by herself with no help from the mother! The young female has spots with plucked hairs on her body, with Maja responsible for this as well. Hope permitting Maja to carry Beira on her belly around the cage.

Month 8 Beira's climbing the ropes and arms travelling using the top bars in the cage.

Month 9 Beira staying alone on the platforms more often, joining the group in feeding. Beira to get another half-sibling, as Zira became pregnant, so the group is to enlarge.

Rearing the cinereous vulture at Ostrava Zoo

Renáta Halfarová

The cinereous vulture (*Aegypius monachus*) resides in the mountain ranges of Asia, more rarely those of Europe, up to 4,000 metres above sea level. This vulture is listed as Near Threatened under the IUCN Red List of Threatened Species. The fact that the reared bird could be released into the wild in the French Alps, thus reinforcing the restoring wild population in Europe is seen as the most important contribution.

In the most recent period, Ostrava Zoo has kept cinereous vultures since 2002, with however setting up a breeding pair being the issue in the beginning. This was made with success in 2006, when the zoo obtained a young pair as an exchange for an adult female within the breeding cooperation, i.e. European conservation breeding programme - EEP. The birds had been successfully put together in Planckendael. Soon after the import, the birds could be seen getting along very well. The male originates from Arnhem Zoo, where he hatched on 19 May 2003, while the female hatched in Mulhouse on 10 May 2002. The birds were directly placed in a shared aviary sized 11.9 by 6.9 m, with the minimum and maximum height of 2.8 m and 4 m, respectively. As the aviary is located in a common block of aviaries, it was visually separated from the others using a reed mat installed on its side up to the 1/3 of its height. In the rear highest part, there is a wooden platform.

During their first nesting season (2007), the birds were showing no special activities; nonetheless, they were apparently harmonising, grooming and sitting close to each other all the time. The following season (2008), we supplied softwood and hardwood twigs of varied size, sheep, llama and camel hairs and other nesting materials into the aviary. The birds were first lacking any interest in this, but in early March, mating was observed. This time the birds started showing interest finally in the nesting matter as well, which however took a few days and the nesting activity ended as of mid March. The aviary was checked, with found twigs collected on the platform, but the nest remained unfinished.

Considering the fact that the birds had reached maturity, the 2009 nesting season was the one with first serious attempts at nesting expected. Therefore, nothing was left to fortune and the base of the nest was built by the staff, still retaining the opportunity of finishing by birds. The nest base consisted of birch twigs arranged on the wooden platform so that they were forming the nest, with conifer twigs added on the top to make the nest soft. The very top was covered with sheep wool. Nesting materials were thrown around the nest as well. In late January, the diet was enriched with a higher rate of live food and 1 ml of PROMOTOR per bird plus PLASTIN added.

At the end of February, both birds became interested in the materials supplied and actively involved in finishing the nest, so everything looked very promising. Nonetheless, everybody was much surprised seeing that the female sat down on the nest on 7 March 2009, taking turns with the male in sitting on the eggs in the beginning. However, seeing a keeper, the birds became too nervous, trying to lift up, so any entry was restrained to supplies of food and fresh water. The nest was inspected only on 26 April using only a slot in the rear wooden wall of the aviary; the time was good as both birds were out of the nest. The date of clutch was derived from the date when the female first sat on the nest, which was 7 March 2009. A thin voice was heard

as the birds changed over on 28 April, this assumed to be the day of hatching, meaning that the incubation period lasted 53 days.

Over the next days, birds were observed to move as if feeding, but as the vultures were still nervous seeing a keeper, there was no chance to look at the chick and the keeping staff was more and more anxious. At that time, small chicken and beef meat was eliminated from the diet, with only whole rabbits and rats including internal parts and hair retained, fed with torn skin. Neither vitamins nor minerals were added to the diet. Within a few days, the demand for food was apparently higher! The quantity of food was regulated as necessary.

On 12 May, a head of the chick could be finally clearly identified using a field-glass. On the nest, there was at least one of the parents at all times. On day 46 of the chick's life, branches were pruned pretty far from the aviaries, causing the birds significantly disturbed. As a result, both vultures spent the whole day outside the nest, refusing food over the next two days, meaning they did not feed the chick either. Once calmed down, the birds returned to their daily routine.

As from 26 June, the parents kept the young bird alone on the nest, while the adults were sitting by on perches. Once feeding was finished, the little vulture 'marched' up and down the nest. This case showed very well the importance of keeping the birds fully undisturbed throughout the nesting time. As from 16 August, the young bird was already walking all over the perch and on 17 August, which was day 112 of its life, it was even seen to leave the perch very frequently, moving all around the aviary.

Upon consultations and agreement of Ostrava Zoo personnel with EEP Coordinator, the young vulture was transferred to France to help restore the local population, which took place on 9 September 2009. All along the travelling period, which took about 20 hours, the vulture stayed calm. Prior the transfer, blood was sampled to determine sex, and the vulture, who turned out to be a male, was microchipped. In France, the male was subsequently ringed and placed in a pre-release aviary, where he was kept around a month to get adapted to the new habitat.

Before the definitive release, a transmitter was implanted in the young bird and its flight feathers discoloured. The young cinereous vulture bred at Ostrava Zoo was released into the wild in the territory of Verdon canyon on 18 October 2009, which crowned the zoo personnel efforts with success, fulfilling one of the key objectives of modern zoological parks.

Rehabilitation of the cinereous vulture and bearded vulture

Jiří Novák

Restoring parts of Mother Nature damaged by humanity is many times associated with satisfaction over the well done job and related gratification. In addition, seeing the wildlife returning to places of original range brings along intense excitement to people working in zoos. Even though the professional as well as laymen community is very well aware of the fact that Ostrava Zoo has long been involved in projects returning specific animal species into the wild in the Czech Republic or also Slovakia, 2009 became a real historical milestone, as not only two large and rare members of birds of prey were bred and reared for the first time at Ostrava Zoo, but even helped repopulate the native range of both species - the cinereous vulture and the bearded vulture - placed outside the Czech border, in French mountains.

Both species are especially spectacular birds and their biology makes them highly attractive. They do not compete with humans in terms of food or anything else, being neither hunters nor source of threat to domestic animals - indeed, eliminating carcasses of death vertebrates by eating is something through which these birds deliver an invaluable service to nature and in fact to man. The less we understand today why these birds were hunted by humans, driven to extinction in most places in Europe over time.

The bearded vulture (*Gypaetus barbatus*) inhabits patchy areas in mountain and alpine ranges of Africa, Central Asia and Southern Europe and has now returned to the Alps, which is the region where this majestic bird of prey was exterminated by man - the last shot dates back to 1913. In 1978, an international project named Returning the bearded vulture into the Alps was launched, with stakeholders being not only zoological parks throughout Europe including Ostrava, but also boards of national parks in the Alps, World Wildlife Fund (WWF) and specialist breeding centres. First birds were released into the wild within the Austrian territory after 8 years of preparation in 1986; however, it took as much as 11 years before any first successful fledging could take place, which very well reflects how much time and struggling it takes to recover the previous actions of man. Nowadays, there are about 120 to 130 birds ranging freely in the Alps. The bearded vulture now already nests regularly in the territory of Austria, Switzerland, France and Italy, with as many as 40 young birds successfully fledged to date.

The cinereous vulture (*Aegypius monachus*) resides in Asian mountain ranges up to the level of 4,000 m, while in Europe this bird have survived only in the mountains of the Pyrenean Peninsula, with rare vagrant birds seen in Central Europe. As with a number of other birds of prey, the cinereous vulture population has suffered a drastic decline in the wild, being now listed as Near Threatened in the IUCN's Red List of Threatened Species. A successfully running project of returning these imperial birds of prey into the specific localities of Europe, particularly those in France and in the Island of Mallorca, exists also for the cinereous vulture, with the zoo in Ostrava contributing their offspring produced in 2009. The Mallorca population consisted of last remaining 20 vultures back in 1980, which thanks to the recruitment by captive-bred individuals increased to current 70 birds. In France, where the cinereous vulture was extirpated, the reintroduction scheme was launched in 1992, with subsequent first nesting of the birds released taking place in 1997.

Rearing a young vulture or bearded vulture is nothing easy, which is supported by the fact that in 2009, only two cinereous vulture chicks were successfully reared in Europe. Pitfalls do exist, and include the following:

- Birds of prey are rather slow in reaching maturity - cases are this is not achieved before year 10, meaning the breeder has to wait a long time, to maybe find out that partners do not get along with each other, one bird of the pair is not reliable in sitting on the eggs or even kills the young, etc. etc. During that long time, one of the pair members may even die.
- Birds of prey often lay a single egg, with the annual maximum of two or three eggs per clutch; what's more, cannibalism is very frequent in some eagles and also in the bearded vulture, meaning that eventually only a single chick is reared, provided everything goes well.
- Any hatching and rearing is predetermined by the act of building a nest on a suitable site by the birds of prey breeding stock, which in captivity needs a large and satisfactory aviary; then the birds have to sit on the egg quite a long time (up to 2 months), this comprising the natural risk of loss of the egg by for instance crushing if the egg is handled carelessly, attacking by free-ranging carnivores, and the like.
- Once the chick has hatched, there follows the period of care, which takes about a half of year. Not every chick is successfully reared, with pair's experience and skills playing a great role; in addition, the nesting birds must be kept undisturbed over the entire nesting period.

Now, with corresponding professionalism and skills, conditions provided for the birds as necessary and also a good portion of fortune, the keeping personnel may enjoy the success, as was the case of Ostrava Zoo personnel with their achievements in form of a male cinereous vulture and female bearded vulture reared. In both cases, the chicks were solely kept in care of their parents from the very start, which enormously raised the chance of future involvement of the young birds in breeding or even successful release into the wild to boost the wild numbers of the species, the latter being eventually the case of both young birds, where the Bearded vulture EEP Coordinator Hans Frey (Vienna Breeding Unit) as well as the Cinereous vulture EEP Coordinator Marleen Huyghe (Wild Animal Park Planckendael) recommended, upon consultations with Ostrava Zoo animal managers, the release of the vultures into the wild in French mountains. The bearded vulture female named Condamine was released in Mercantour National Park, while the cinereous vulture Franc was set free in the territory of the Verdon canyon.

Both birds were transferred to France crated and placed in a passenger car. In each case, the crew consisted of Ostrava personnel, which for departure of the bearded vulture on 3 June 2009 comprised the zoo director and the chief curator, alternated on 9 September 2009 by the financial manager, deputy director and girl keeper from the birds of prey section, who travelled with the cinereous vulture. This made sure the birds would be accompanied by top zoo representatives and experts, clearly underlining the special nature of both events. The Ostrava's bearded vulture was awaited at the point of destination by an honourable delegation headed by French Minister for Environment, as well as H.S.H. Prince Albert II of Monaco, as the entire operation was underway under the sponsorship of Prince Albert II of Monaco Foundation. The Prince in person named the young vulture Condamine. The name for the cinereous vulture - Franc, meaning free in French language - was selected based on the public survey that Ostrava Zoo had launched on the occasion of planned release of the Ostrava vulture from the pre-release aviary.

The release crew transferred the bearded vulture juvenile to Mercantour NP, then carrying it on their back in a special crate with straps to a rock shelf placed 1,800 metres above sea level and hard to access to protect the bird from predators. The last steep section of several hundred metres was reserved for Ostrava Zoo Director. Once the shelf was reached, the Ostrava young vulture was installed into a nest covered with sheep wool,

together with another bearded vulture of the same age bred at a conservation centre in the department of Upper Savoy. In most cases, two young birds are put in nests, although only a single chick is reared in the bearded vulture, where cannibalism is quite common, as the young birds feel less abandoned, motivate each other and stay together some time even upon they leave the nest. The juveniles are fed, monitored and tracked on such place, but in other aspects, they are left as they are. After some fourteen days, the young birds fix such place as their own nest and imprint on the surrounding area as their new home. Once the birds leave the nest, they still get additional feeding from humans for several months, but subsequently are able to find their own food. Condamine first fled out of the nest on 25 June when she was 116 days old; the flight took 10 seconds and the bird fled away upon having stayed 21 days in the park, getting adapted to its new habitat. It had to be forced to fly out by interrupting the on-the-nest feeding regime; following six days of non-feeding period, the bird fled off the nest to search for food. **To conclude, the release technique above consists in taking usually two different juveniles from their parental nests before they leave the nest, placing the birds jointly on a temporary nest in the native range of the species.**

The young cinereous vulture was transported into the territory of Verdon canyon and released into the pre-release aviary together with another young vulture bred at Bochum Zoo. As with the bearded vultures, the birds were fed and monitored, getting familiar with their new settings. As they were undergoing the pre-release process, they imprinted on their new home. In the Verdon canyon region, there is a promising population of the griffon vulture, as well as a new cinereous vulture stock, the latter now reinforced by the Ostrava's young bird. However, all the birds have survived there only with support of conservationists who provide feeding to the vultures on a permanent basis. On the other hand, this has worked well in terms of socialisation of the newly released birds from the very start - the young ones can watch numerous free-ranging vultures fed at a close distance from the aviary even prior the release as while bearded vultures are territorial birds in their nesting season, cinereous vulture lead semi-colonial and the griffon vultures even colonial life. Both cinereous vultures were released from the aviary on 18 October 2009, i.e. after having spent over a month there, getting familiar to each other and undergoing the pre-release period. **In this case, the release technique consists in taking usually multiple different juveniles from their parents only after the young have left the nest, placing the birds jointly in a pre-release aviary and releasing the birds from this aviary after an adaptation period.**

Once the birds have flown out, they continue to be monitored. To make it possible, each bird is carefully ringed and microchipped to provide for identification from close; in addition, specific flight or tail feathers are bleached, which is very well visible from below when the bird is flying. Implanted transmitters work also very well, as they allow for receiving signals from a distance of many kilometres, plus transmitters are now ultralight and miniature devices posing no restraints on the bird.

In its consequences, this success of Ostrava Zoo in terms of breeding as well as management was an extraordinary event for the country and entire cultural world, as it was a clear example of the fact that if man stops preventing nature to exist normally and human faults from the past have been redressed, wildlife and habitats recover locally and continue to be natural and cultural heritage for our children and future generations. And may it be that our children's approach will be more friendly than that of their parents and grandparents. Let us believe that zoological parks will be amongst the ones to take a lead.

Monitoring nests of endangered birds of prey species

Jana Pluháčková

The cinereous vulture (*Aegypius monachus*), the griffon vulture (*Gyps fulvus*) and the bearded vulture (*Gypaetus barbatus*) - all these three birds of prey species are endangered in the wild and included in European conservation breeding programmes (EEP) and European Studbooks (ESB). For the cinereous vulture, Ostrava Zoo is even one of two breeders throughout Europe that successfully produced offspring of this species over the last year. The offspring was released into the wild in the territory of the French Alps within the reintroduction scheme coordinated by the European Endangered Species Breeding Programme (EEP). Similarly, a young bird of another species - the bearded vulture - was released from Ostrava Zoo into the wild in Europe in 2009.

Although both rearing events were finished with success and without complications, the zoo personnel had to inspect each of the nests several times, checking if everything runs smoothly. However, any such check poses some risks - the parents may get frightened, break the egg, trample the chick or refuse to get back to the nest.

Considering this, the zoo decided to acquire a CCTV system to allow nest monitoring in the species above by the personnel without having to disturb the birds alone. As those systems are not very cheap, an application for funding was submitted to the Czech Ministry of Environment and subsequently satisfied, so the zoo could buy and install three cameras in 2009, one per species.

Each device is placed out of reach of the birds above the nest and records every movement in the neighbourhood of the nest. All data are stored in a computer and evaluated. The systems provide keepers with a good overview in that they can check if the birds have already laid the egg and incubate it properly or how often they take turn in sitting on the nest; in rare cases, they can even see the young one hatch - shortly, they can check everything that could be earlier only estimated from the distance upon the birds' behaviour. Nonetheless, this is not all what CCTV systems can do for bird breeding; indeed, they enable the personnel watching if the hatched chick is fed properly and prospers or not. If the latter is true and the parental care is poor, the young one can be taken away in time or even hand-raised where necessary.

Thanks to the systems purchased through the MoE grant, the zoo can now monitor nesting behaviour using a non-invasive technique, which is going to have positive effects on the reproductive success in the three species of endangered birds of prey in Ostrava, whilst leading to ultimate sustaining and boosting *ex situ* and *in situ* populations owing to the intense cooperation with other European zoos, which may represent a significant contribution to conservation of those ecologically important species.

Offspring produced in threatened parrot species

Jana Pluháčková and Yveta Svobodová

Ostrava Zoo is a holder of several rare avifauna species, amongst them being four endangered species of parrots (the military macaw - *Ara militaris mexicana*, the golden conure - *Guarouba guarouba*, the red-fronted macaw - *Ara rubrogenys* and the scarlet macaw - *Ara macao*). Within the projects undertaken in 2008 and 2009 and supported by the Czech Ministry of Environment (MoE), four CCTV systems including recorders, two incubators, one brooder, one candling lamp and weight for precise chick weighing were procured.

All four species mentioned above are endangered in the wild and included in European conservation breeding programmes (EEP) and European Studbooks (ESB). For the golden conure, Ostrava Zoo is even a sole holder of the species within the Czech zoo community.

Thanks to the CCTV system installed in nest-boxes, the zoo personnel can now monitor nesting and hatching behaviour in breeding pairs of parrots, and the entire parent-rearing process. The camera system allows for evaluating exact egg incubation periods including cooling intervals, feeding frequency, mutual feeding in parents and total length of development period from hatching to flying out of the nest-box. Last but not least, health of chicks and parents can be tracked.

Incubators and brooders are also highly important in chick rearing, as they address instability of the breeding pair if the birds break eggs early upon laying, interrupted sitting in the natural incubation period, failure to rear the chicks normally or death of a partner within the breeding pair, i.e. inability to continue in feeding the chicks or incubating the eggs.

Thanks to the CCTV systems acquired through the MoE grant and the new equipment obtained within the same project, three young golden conures are now in the process of successful rearing, this being the first historical success in this species in the Czech Republic.

The yellow cardinal at Ostrava Zoo

Yveta Svobodová

Yellow cardinals (*Gubernatrix cristata*) are small and lovely perching birds currently rather low in wild numbers (1,500 to 3,000 birds), with continued decrease. This is namely caused by illegal hunting and loss of habitat. Capture for keeping in cages poses the main threat for this lovely-singing, nice and vivid bird listed as Endangered in the IUCN's Red List of Threatened Species. This is a CITES-protected species, listed under Appendix II.

A young uncoloured pair of these birds was acquired in the late 2008. The choice turned out to be good as the birds were getting along very well, which they were showing by following each other, sharing the same perch and feeding together. In the quarantine period, both individuals were housed in a cage with dimensions 1.5 by 1.20 by 0.40 m (width x height x depth) fitted with perches and thin branches. Subsequently, they were relocated into a larger facility sized 1.80 by 2.20 by 2.30 m (width x length x height), with the possibility to fly out into the outdoor aviary 3.00 by 3.60 by 3.20 (m), which the birds share with a pair of green-winged macaws (*Ara chloroptera*).

In their indoor exhibit, the birds have available many branches of varied thickness and length and plenty of small twigs, the bottom of the display being covered with fine sand and tufts of grass. There are two baskets available for nesting with a lesser and greater diameter, and a single budgerigar nest-box; there are also diverse nesting materials, like tufts of fine grass, fine grass cut to provide longer locks (about 10 cm), cut birch twigs and soft coconut fibres. The nest-box was installed on the highest spot within the cage (2.10 m), while the two baskets were placed some 1.50 / 1.80 m above the ground. The fine grass as well as the coconut fibre was scattered around the floor; some grass was tied to the branches in form of tufts. Approximately in the mid of May, the female started to sit in the larger basket (diameter 15 cm), which she had littered with soft grass and coconut fibre, while the male preferred the nest-box, to which he was supplying the nesting material. All this time the birds seemed to be in disagreement as to which should be their nesting site. The male eventually succumbed, starting to assist the female in littering the basket. Subsequently, the birds kept on carrying the materials offered into the basket, where namely coconut fibre was preferred. The pair developed a nice-looking nest littered to form a ring.

On 21 May 2009, three pale blue eggs with brown spots were discovered in the basket, which the females duly incubated for some 14 days. On 31 May, the first chick hatched; it had dark red plumage sparsely covered with black hair-like feathers. The remainder of the chicks hatched on 1 and 2 June. The chicks were kept warm by the female. The birds were fed with scraped carrots mixed with boiled egg and bread-crumbs plus boiled shelled oats, boiled rice, loose mixture for insectivorous birds, small mealworms, fly larvae, UNI Nutribird pellets, apple, orange, red pepper, salad, Chinese cabbage, millet spikes and the Agapornis parrot mixture blended with pigeon mixture.

On 3 June in the morning, the basket was found to be empty and the chicks were scattered around the cage. One of them was still alive, but the others were dead and bruised. The chick that survived was partly bruised as well; it was put into the incubator and hand-fed using a syringe and tweezers. The incubator indoor

temperature was 36 °C and the chick weighed 6.8 g. Fed every hour, the young one gathered some strength after the third feeding session, starting begging and opening its beak. The last feeding time was 9 pm, while the first feeding session was timed for around 5 am. On 6 June, the chick died, weighing 9.6 grams.

Assuming the basket was too shallow and the chicks could have fallen out very easily, both nesting baskets were removed and only the budgerigar nest-box retained, with 1/3 of its top covered. On 4 June, both cardinals accepted the box. Again, they created a ring nest littered with plenty of grass-blades and coconut fibre. The diet offered was the same as before, only calcium was increased in form of grit, cuttlebone and ground eggshells. It was observed that each time the cardinals got inside the macaw indoor aviary, the bowl containing the concentrated calcium source was something to which the birds rushed immensely.

On 13 June, two eggs were found in the nest-box. In the morning, the female was often flying outdoors and in the afternoon seen sitting on the eggs. The male guarded the female and the clutch with patience, sitting around the box. On 25 June, two chicks were found inside the nest-box, with the parents exercising good care. At that time, insects were the chief diet. The first three days, the female almost did not leave the box and the male was providing the food; as of the day 4, the female started flying outdoors as well, assisting the male in feeding the young. After day 10, the parent birds were visiting the nest-box much less than before.

On 5 July, both chicks left the box. The parents were flying to the young, but did not feed. The lesser chick was put back into the nest-box, while the male kept on attacking the other one that stayed on the floor, which might be to make the young bird fly up and get back to the box or at least on the branches placed higher above the ground to gain safety. Unfortunately, the aviary did not provide such opportunities, so it was decided to take both chicks away and finish rearing by hand. What's more, the older chick had already bruises on its head and was exhausted.

Once separated, the young birds got their first food in form of small UNI Nutribird pellets soaked in water. The very first day the birds were force-fed, but on the second day their response to the syringe as a feeding instrument was much better, with feeding movements and begging coming up as well. The cardinals were placed in an incubator with temperature of 29 °C. They were fed 7 to 8 times per day based upon behaviour, with the last feeding time at 9 pm and the first session around 6 am. As of day 3, squeezed out zophobas worms without their chitin shells poured with crushed cuttlebone and Nutrimix for exotic animals were added as well. During the day, the young birds were put into a little cage, with room temperature about 25 °C.

From day 17, the juveniles started showing more courage, trying to fly around the cage. They found the highest perch for themselves, which they preferred for sitting. They were retained in the cage night and day, with temperature being 24 °C. Inside the cage, feed items - apple, orange, salad and Chinese cabbage - were hung and a bowl was offered, filled with small mealworms, boiled carrot, rice and shelled oats and soaked millet spike. During the first days, the young cardinals tried pecking the fruits and vegetables, but as begging still occurred, food was added using the tweezers. The birds were getting small pellets and pre-arranged zophobas worms with crushed cuttlebone and vitamins. Over the subsequent week, they already learned how to take the food by themselves, so became fully independent starting with 25 July or so, when they were one month old. They preferred small mealworms to all of those fruits, vegetables and grain offered. Offering

a bowl with fresh water multiple times a day is essential as these birds love bathing and the water becomes dirty very quickly.

Currently, the young cardinals enjoy superior care of keepers at Pilsen Zoo, to which the birds were loaned on 23 August 2009.

Baby boom in red-crested seriemas

Sylva Firlová

Seriemas - distinctive and intriguing alike their name. Derived from native words *seri* - "the small", and *ema* - "nandu", which is the rhea in Spanish, this means a small rhea if both words are combined. The scientific name of the genus, *Cariama*, is also of native origin, meaning "the one who features a crest".

The red-crested seriema (*Cariama cristata*) is one of two members of the Cariamidae family placed in the Gruiformes order, with bustards being the closest relatives. They are slender-bodied birds that stand 75-90 cm. Brown in colour, with lightish underparts, they feature a long and banded tail and a striking erectile crest on the head. The skin around their eyes is naked and bluish, beaks and legs are red. Both sexes are of the same colour. Fossils of seriema predecessors were found in the American continent as well as in Europe. The ancestors of the seriema were 1 to 3 metres tall. Nowadays, the seriema ranges across vast areas in South America from central and eastern Brazil through eastern Bolivia and Paraguay as far as Uruguay and central Argentina. They dwell in open grasslands and sparse bush areas, known to live mostly as single birds, but also in pairs and families. They call very often, featuring a high-pitched voice that can be heard over a long distance. Despite being omnivorous creatures, they prefer insects - locusts and beetles, also hunting for small rodents, slugs, snails and lizards; occasionally, they take snakes. Tree-nesting birds, they place their nest one to five metres high. It is built by both partners, with materials used including branches, grass, leaves and sods. Normally, the female will lay two eggs. Following 27-28 days of incubation, chicks hatch and are attended by both parents.

Ostrava Zoo has been keeping seriemas since 2007, when a male yearling was imported, followed by a young female in October 2008, both originating from Pilsen Zoo. In the main season, seriemas could be seen by visitors in large birds of prey aviaries in a mixed exhibit with king vultures. Prior the winter, the birds were relocated to the wintering facility, where they were placed in a room 6 by 5 metres large furnished with dead trees, perches, elevated platforms and a parapet 40 cm wide in the window height. Further, they could access a 10x4m outdoor aviary adjoining the room during the day. This facility was shared with two male king vultures and two female American black vultures. After a month, one of the king vultures started chasing the seriema male, so all king vultures were moved away.

In mid March 2009, the seriema pair began calling, often together. A change in behaviour indicated a nearing mating season. In early April, the black vultures were relocated as well and several nesting opportunities prepared: a 1x1m elevated platform in the height of 2.5 metres, a 1x1m box elevated 0.5 m and a vegetable carrier box placed 1.5 m high. Each nesting item was equipped with straw and hay, with additional nesting materials like straw, hay, twigs, sods and grass made available on the floor. Holding the birds only indoors at night was stopped and the outdoor enclosure was available night and day. In early May, seriemas often stayed on the upper platform. Due to a small quantity of nesting materials brought by the birds (just little pieces of grass and twigs), straw and hay was added every other day. Mating was not observed, with just one mating attempt on 30 April. The birds sat on the nest on 18 May, taking turns in brooding. A check made day later assured the team there was one egg on the nest, with another laid by the female on 20 May. On 12 June, the team managed to find seriemas out of the nest, seeing there were already four eggs. Using a lamp

it was found that one egg was impregnated, with live embryo inside, while two were clean and one probably addled. All the eggs were put back into the nest. As of 20 June, a change in birds' behaviour was noted, with seriemas often seen to sit just on their heels. On 23 June, a chick could be seen through an inspection window. The quantity of mice and zophobas worms in the diet was increased and pinkie mice added. Food was offered three times a day, with pinkie mice preferred by the birds. Whole mice that the adults ate before were now torn by the parent and offered to the chick. After a week, the parents could be often seen leaving the nest. On 2 July, the clean eggs were taken away. When the young one was 14 days old, the parents stayed mostly outside, going indoors just to feed the juvenile, who was already able to stand or hop around. On 9 July (day 16), the young bird started calls similar to those of adults, being however still able to make only 3-4 whistles of the seriema song. On 12 July (day 19), the juvenile was out in the enclosure in the morning, without going back during the day, and was not found indoors before 20 July. Still fed by the parents, the young bird was already able to pick food alone on 25 July; in addition, it also could jump on a log 80 cm high. Two days later, it could fly up to the perch placed 2 metres high.

The adults started staying frequently on the nest again; on 29 July, the female laid the first egg, with subsequently a total of four laid once again as confirmed by checking later on. On 22 August, the sitting birds were often getting up and arranging the nest. On 28 August, all birds stayed outdoors, so the eggs could be checked by a candle lamp. In three eggs, hatching had already started - there was a hole 1 cm large in each of them and chick call could be heard. One egg was addled. On 29 August, three chicks were seen. The birds were supplied with enough food 3-4 times a day. The three juveniles were reared by the parents alike the previous one, with parents' efforts now tripled. As the adults preferred mice tails in feeding the young, the tails from the mice to be fed to owls were added as well (15-20 pieces per day). No competition was observed amidst the young birds, with all of them being equal in size and any suspected cainism unconfirmed. As there was no chance to separate the older juvenile, the bird remained with the parents. In the beginning, the young bird was chased away by the adults when ranging near the nest - sometimes even prevented to access the food. Fortunately, this situation settled over time, with the adults restarting to feed the older chick that now could even stay on the nest. The three smaller chicks left the nest on 22 September. The older juvenile became distressed; it started jumping and attacked the younger chicks for several minutes after the first contact. As mornings started to be cold and the juveniles were chilly if staying outside, the birds were put indoors at night. The floor was covered with straw in the corners, where the young stayed at night until they learned to jump on the logs and to the perches later on. On 15 October, the young were sampled for blood to determine sex. The birds turned out to be two males and two females. A month later, on 19 November, all four young seriemas were transferred to Parc Monde Sauvage, Belgium. Nesting in the 2009 season was special, with surprising number of eggs in the first clutch (seriemas usually lay two eggs rather than four), but the second clutch with the same number of eggs while the birds were still rearing the young bird from the first clutch was even a bigger amazement. The fact that seriemas are attractive and favourite birds for visitors as well could be evidenced by the frequent asking where the seriemas had disappeared and when they would be on display again.

Double offspring in the southern ground hornbill reared at Ostrava Zoo

Ivo Firla

Southern ground hornbills (*Bucorvus leadbeateri*) have been successfully bred since 2007 at Ostrava Zoo. Following the failure to hand-rear the juvenile hatched in 2006, the bird hatched a year later was successfully reared by parents. Seeing that the female laid each time two fertile eggs, the team was considering possible use of the other egg, as they wanted to avoid any artificial rearing. Options included placing one egg under a different female in a different zoo provided one was available with unfertilised eggs or attempting at natural rearing of both chicks.

In early December 2008, the birds started visiting their nest-box as with the previous years, first the female with the male following. Some 14 days later, on 16 December, the female laid the first egg and then another four days after, on 20 December. The eggs were removed one by one, put into the incubator and replaced with artificial eggs, but as they turned out to be unfertilised, the artificial eggs were removed and everyone believed the female would lay another clutch. This did happen and the female laid her third egg on 18 January, with another following four days after (on 22 January) as with the previous clutch. Again, these eggs were put into the incubator one by one and replaced with artificial eggs.

Following a week of incubation, the eggs were checked using a candle lamp and both found to have been impregnated. Then they were undergoing successful development. On 25 February, when the chick was ready to hatch and started to call, the egg was placed under the female and one artificial egg removed at the same time. A day later, the egg was pre-hatched, with the chick intensely calling. On 27 February, the chick hatched, weighing 64 grams. Three days after, on 2 March, the chick from the fourth egg still left inside the incubator hatched as well. As no suitable female under which the second chick could be placed was available in other zoos at the moment, the team opted for the second alternative of attempting at rearing both chicks by a single female, based upon experience transferred from the colleagues at Prague Zoo. Placing both chicks immediately upon hatching is not possible, with the different size of the chicks being the issue, where the older bird will eat the food offered by the mother, leaving the younger chick starving. Thus, the younger birds need to be trained by hand-feeding to make sure they will be able to take food properly. Once this was done, the chicks were exchanged on 4 March - five days after the first chick was hatched - where the chick brooded by the female was replaced by the other chick and moved into the incubator, where it was fed by hand another five days. Subsequently, there was another exchange and all was repeated. It resulted from routine checks and weighing that the parents were taking good care of each young bird and in fact did not matter the chick exchanges at all. As of 16 March, when the chicks were 15 and 18 days old, they were both left under the mother. As there was no option of visual check if the younger and lesser chick would take enough food or not, both birds were weighed on a periodical basis, which made the team assured the parents' care of both young hornbills was excellent. The older chick attacked its younger sibling from time to time, namely in feeding.

The inspection by weighing was carried out until about middle of May. Somewhere between day 82 and 84, the young birds left the nest-box for the first time. Although already able to take food by themselves, the birds still begged from time to time, keeping themselves being fed by their parents. After blood was sampled for DNA testing, both juveniles were found to be females. Any critical periods occur namely in the

beginnings when the young are fed by the mother and the stronger of the two is distinctively more active than the younger one. The female turned out to be an excellent mother, devoting her attention to both young hornbills.

The elephant updates

Pavel Zvolánek

The previous year was filled with new developments not only for elephant friends and supporters, but also for the team of keepers.

Jumbo the female transported

The elephant team was not fortunate enough to include the female Jumbo into the female group in 2008. After Johti attacked Jumbo in summer 2008 (which could have yielded tragic consequences), it was decided that any further attempts to put the two females together should be given up and Jumbo placed in another zoo due to space issues. An interest was shown by Givskud Zoo, where they had kept elephant cows only in a display situation, which was an ideal option for Jumbo.

As the female was never used to tying with chains, training started immediately upon the decision to transfer Jumbo. Within some three months of daily exercise, the female was able to withstand carrying the chains on all four legs even over longer periods almost without showing unhappy feelings. The transport took place on 13 and 14 May 2009, when the elephant was loaded in the morning; unfortunately, Jumbo fell twice on the ground during the loading operation. The situation was handled namely thanks to the professionalism of Ernst Jan Kip of EKIPA – the transport company, as well as Jurgen Kruse and Christopher Wollner, elephant keepers of Hannover Zoo, who had accompanied the male Calvin transported to Ostrava from Leipzig Zoo. All those persons have a long-term experience with transports like this and were essential for this one to succeed. Jumbo is now a member of Givskud herd of four Indian elephant cows with no troubles reported.

Calvin arrived, managing the elephant bull

The Indian elephant bull Calvin was born at Calgary Zoo, Canada, in 1986. By the time of recommending Calvin by the breeding programme coordinator as a suitable male to join the Ostrava cows Johti and Vishesh, this elephant had become father to 11 calves. In addition, Calvin is a bull from whom semen had been collected on a routine basis, and the high rate of sperm motility, nearing 90%, was another factor contributing to the decision. As the elephant house needed some arrangements before the bull could arrive, like erecting a restraint box and converting the gate connecting the outside enclosures from hand-operated to a power-controlled mechanism, Calvin stayed in Leipzig from September 2008 to May 2009 to attempt to mate females from their prospective breeding group, and the date of transfer was eventually set to 12 May 2009. Spending ten days prior the operation as an intern at Leipzig Zoo, I had the opportunity of becoming familiar with the way Calvin works and experiencing what this involved, as managing this male is different than with Ostrava females – Calvin is responsive to verbal commands without a need for a device called target.

A single keeper working with an elephant bull is a common practice in other zoos; however, there are by default two trainers in Ostrava to avoid any failure to ensure Calvin's daily routine in the case of day-off, holiday or sick leave in a single person situation, although this is more complicated and the training progress is rather slow unlike with the standard one employing a single keeper. Nonetheless, this approach is believed to be the right one in terms of multi-year perspective.

The way the bull was handled within three months upon male's arrival enabled the elephant team getting Calvin into the restraint box and caring for the bull's skin by showering, as well as foot treatment. In addition, the elephant was able to exercise both outdoors and indoors (in the front male stall), even when visitors were present inside the house, although having been kept in special houses for elephant bulls behind the scenes before he arrived at Ostrava Zoo.

Calvin introduced to the females, mating

Calvin was uncrated at the zoo around mid-day on 13 May 2009. Following loading the female Jumbo, which took two hours, the bull walked out of his crate smoothly within some ten minutes, this being something for which thanks should go to no one but Calvin's long-term keeper Jurgen Kruse of Hannover, who had accompanied the transported male.

Until 23 May, experience with Calvin and lessons learned could be shared with head keeper Michael Tempelhoff and his colleague Peter Kokisch from Leipzig Zoo. Thanks to their warning about several insufficiencies, namely in terms of gate security, which were handled very briefly, the elephant team could continue their work with Calvin very smoothly. Even though some lacks still existed and had to be resolved later, the current management of the elephant bull in Ostrava is safe for both the animal and the keepers.

Calvin was first introduced to females Suseela and Vishesh in outdoor enclosures on 17 June. Johti was left inside the house, as conflicts with the male were expected for reputed dominance of this female, so it was desired that Calvin first gets the opportunity to establish contacts with the females who were not assumed to make difficulties, which was eventually confirmed. Everything went all right so as early as the next day, i.e. 18 June, Calvin was reunited with the group. This time it involved all the females, which was still handled by the bull showing high experience and subsequently even mating Johti several times following ten minutes after joining the female group. In the afternoon, the bull could not be separated from the females, so the whole group was left outdoors without allowing the animals to enter the house.

On the second day, Calvin continued mating Johti several times. This time the bull could be separated, so making the indoor facilities available to the animals at night was now possible. From that day on, the male stayed out with the females each morning; in the afternoon the elephants were separated. All that time the animals were undergoing their daily routine without any problems.

On 30 June, Vishesh was mated by Calvin as well. After 16 weeks of waiting for test results, pregnancy was confirmed in both females based on testing urine samples collected on a routine basis, so there are good chances that following the long gestation period, which in elephants takes almost two years, Ostrava Zoo can see their elephant offspring - the first live-born calves in the history of elephant keeping in Czech zoos that now has exceeded 50 years.

Sperm collection

As not every zoo has the opportunity of keeping an elephant male, which applies to those in the country, but also in Europe, the elephant sperm is used for artificial insemination, with Ostrava bull Calvin being one of the few animals trained for such procedures. Included in the insemination scheme has also been one of Usti Zoo

females - Delhi. This cow was first inseminated in 2002, with bull Emet of Whipsnade Zoo serving as donor of semen, with offspring - a male - subsequently born to Delhi in 2004. Unfortunately, this animal was born dead, as it suffocated when passing through the birth canal due to the fact that Delhi's delivery was a long and troublesome process.

Following some years of health issues this female suffered, the specialists of the Institute for Zoo and Wildlife Research Berlin decided that Delhi could repeat the attempt at artificial insemination. The date of semen collection was updated several times, as the terminal phase of female's oestrous cycle was not ideal. Semen was finally collected on 28 October 2009, which is a country's bank holiday, this adding some importance to the act of collection, which was carried out by IZW Berlin experts and keepers Kruse and Wollner of Hannover Zoo, where Calvin had been kept for 10 years.

The result of the procedure lasting almost two hours, where the bull was fixed in the box using chains, was however not satisfactory, as the majority of sperms was necrotic, this being most probably a result of the fact that Calvin had not mated since June, so Calvin's frozen sperm had to be used for the attempt to impregnate Delhi. This alternative was considered the best with respect to the given situation, but was far from being ideal. Unfortunately, the insemination of Delhi using frozen semen was not successful, which however did not prevent the Usti Zoo colleagues from trying to make their dreams real in future. Plans exist to repeat the insemination the year after, of course if health of the female permits, with Calvin to act as sperm donor again. It is a strong belief of everyone involved that the next attempt will meet with success.

That is all what should be mentioned concerning the 2009 elephant news by Ostrava elephant keepers. I thank everybody for their attention while reading the lines above, wishing them many nice moments spent at Ostrava Zoo.

**Keeping the common hippopotamus (*Hippopotamus amphibius*)
at Ostrava Zoo
Jan Pluháček**

***Dedicated to the memory of the longest-living dweller of Ostrava Zoo,
Roza the hippo female***

On 7 October 2009 in the morning, the common hippo female Roza died at Ostrava Zoo after having suffered a difficult but very short disease. This animal was the longest-living inhabitant ever held in Ostrava. What's more, this female was a founder of zoo's common hippo stock. Not only the facts mentioned above, but also other events that concerned the Ostrava hippo stock in 2009 lead me to make a summary of the breeding history of this Ostrava Zoo flagship species from the very beginning, which dates back to 16 November 1967, when it was this very hippo, female Roza, who arrived at the then elephant house from the zoo in Dvur Kralove. Roza was six, as she was born to a female Tanga and Tanga's son Lutz II in Munich on 20 June 1961. Tanga had come from Leipzig and later became the longest-living hippo in the world - she died in Munich on 12 July 1995 when she was 61 years old. Lutz II was fathered by Lutz I of Berlin origin. In 1966, Roza left Munich for Dvur Kralove Zoo together with her siblings, a female Dora and a male Heini, to subsequently continue to Ostrava on her own a year later.

The first male to follow Roza, named Honza, arrived at Ostrava on 13 July 1968. This hippo was born to a female Aenne II and a male Toni at Cologne Zoo on 20 July 1967. The fact that Toni's parents were caught in the wild and Aenne II was imported from the wild as well places Honza amongst a few European hippos with fully known pedigree.

An important milestone for the hippo stock at Ostrava Zoo arrived on 30 January 1972 for it was the date of birth for a first calf of Honza and Roza. This animal turned out to be a female and was named Dita. Reared with success, Dita was the very first common hippo born in the then Czechoslovakia, by which Ostrava Zoo got several months ahead of Prague and Dvur Kralove parks, with Prague having held hippos as early as in 1933 and Dvur Kralove having been a hippo holder since 1966. In Dvur Kralove, they bred their first hippo in August 1972, while Prague was not successful in this before May 1974. On 24 May 1975, Dita was sold to Dutch animal dealer Van den Brink and her fate is unfortunately unknown.

In 1975, hippos were moved to a new annex to the house that has remained in service until today, in fact in unchanged form. Here the animals have available a relatively large pool (108 m²) that can be divided when necessary. The dry area (51 m²) can be split in two as well, with both sections providing access to the pool by means of stairs. There is an outdoor enclosure of 387 m² adjoining the house, to which the animals can access from the indoor pool, as there is no pool outdoors.

From the many more calves produced by the hippo pair, a female Katka born on 31 August 1977 is worth to mention, as it was the only young hippo that ever stayed in Ostrava until full maturity. Katka was and still is mated by her father Honza. Her first calf was born on 22 October 1982, meaning that she was then 5; the young one was a female Alenka, who was subsequently sold to an animal dealer as well, this time Muller Company, thus being another animal without any additional details of life history.

Roza had her last calf on 19 December 1991. From that time on, this female never gave birth until she died; nonetheless, she still helped her daughter Katka in rearing offspring. A total of the young born to Roza was 10 (six males and four females) in 1972-1991. Unfortunately, two males survived only several days, while eight remainder animals were reared with success.

Katka's total number of calves born was 20 (12 males and 8 females) in 1982-2009, with however only eight animals reared, including 5 males and 3 females, this meaning a grand total of 30 young hippos born at Ostrava Zoo, of which 16 were successfully reared. All animals reared left Ostrava Zoo, except for the female Katka. For detailed overview of hippo offspring, see Table 1.

Table 1: Summary of common hippos born at Ostrava Zoo

Studbook # / name	Sex	Date of birth	Dam/Sire	Date of departure/ death	Place of destination/death
T449 - Dita	♀	30.1.1972	Roza / Honza	24.5.1975	Van den Brink
T503 - Asmar	♂	15.12.1973	Roza / Honza	10.2.1975	Ostrava
T540 - Ostep	♂	7.4.1975	Roza / Honza	5.10.1976	Van den Brink
T588 - Katka	♀	31.8.1977	Roza / Honza		
T640	♂	19.9.1979	Roza / Honza	27.9.1981	Van den Brink
T675	♂	21.10.1981	Roza / Honza	21.10.1981	Ostrava
T694 - Alenka	♀	22.10.1982	Katka / Honza	9.8.1988	Müller (dealer)
T738	♂	7.9.1984	Roza / Honza	16.9.1984	Ostrava
T741 - Benda	♂	29.9.1984	Katka / Honza	9.8.1988	Müller (dealer)
T781	♂	22.7.1986	Katka / Honza	30.7.1986	Ostrava
T809	♂	3.8.1987	Katka / Honza	3.8.1987	Ostrava
T815	♂	23.10.1987	Roza / Honza	24.11.1988	Slotta (dealer)
T824	♀	30.5.1988	Katka / Honza	30.5.1988	Ostrava
T846	♀	23.3.1989	Katka / Honza	23.3.1989	Ostrava
T862 - Rambo	♂	24.11.1989	Katka / Honza	22.11.1990	Amougies (France)
T865 - Snehurka	♀	9.12.1989	Roza / Honza	22.11.1990	Amougies (France)
T905	♂	5.8.1991	Katka / Honza	5.8.1991	Ostrava
T913	♀	19.12.1991	Roza / Honza	13.4.1994	Circus
T927 - Arnold	♂	14.4.1992	Katka / Honza	13.4.1994	Circus
T989 - Arka	♀	14.8.1994	Katka / Honza	7.9.1995	Vienna Zoo

Studbook # / name	Sex	Date of birth	Dam/Sire	Date of departure/ death	Place of destination/death
T1021	♂	30.4.1996	Katka / Honza	1.5.1996	Ostrava
T1039 - Jitous	♂	5.1.1997	Katka / Honza	5.8.1997	Circus
T1060	♂	16.5.1998	Katka / Honza	17.5.1998	Ostrava
T1073	♀	29.1.1999	Katka / Honza	11.2.1999	Ostrava
T1094 - Maruska	♀	29.12.1999	Katka / Honza	15.11.2002	Prague Zoo
T1162	♂	13.9.2001	Katka / Honza	23.9.2001	Ostrava
T1163 - Adelka	♀	8.8.2003	Katka / Honza	9.7.2006	Lahore Zoo (Pakistan)
T1195	♀	16.8.2005	Katka / Honza	16.9.2005	Ostrava
T1232 - Hugo	♂	29.5.2007	Katka / Honza	3.11.2009	Warsaw Zoo
T1332	♂	3.8.2009	Katka / Honza	3.8.2009	Ostrava

In 2005, Ostrava Zoo changed its logo, with the hippo serving as a flagship species from this year on. Ostrava Zoo team's efforts were greatly awarded in 2006, when the zoo was tasked to keep and compile the European Studbook (ESB) for the common hippo, which has been published on a regular basis as of 2007. Parallel to this was changing the zoo's animal acquisition and disposal policy so that Ostrava is now aware of not only the final destination, but also even conditions of the location when sending hippo out of the zoo, and once there are any substandard conditions, the transfer is cancelled.

Another major change in hippo breeding in Ostrava happened in July 2007, when the neighbouring outdoor enclosure of 347 m², the former tapir exhibit, was made available to hippos as well over the period of the main season, meaning that the total area of outdoor enclosures accessible to hippos at Ostrava Zoo is now 733 m². While ranging in the new enclosure, the animals can graze over the summer period.

In 2009, there were three updates in the hippo collection. This started with the female Katka that gave birth to its most recent calf. The birth, which began on 3 August and ended as late as the next day, was very difficult, and the calf (male) was born dead to our regret. Two months later, on 7 October, the death of the stock founder Roza followed, caused by intense inflammation of lower jaw and related complications. Finally, the most recent calf produced - a male Hugo - left for the zoo in Warsaw, who had built their new hippo house. The events above left Ostrava Zoo with just a breeding pair, Honza and Katka.

In a near future, the hippo collection is about to enter another major development - grand rebuilding of the hippo house is planned, to produce in particular a rebuilt roof and constructed filtering plant. The zoo team hopes this will be the outset of another remarkable era of common hippo breeding in the zoological park of Ostrava.

Returning the Golden Eagle (*Aquila chrysaetos*) to the Mountains of Moravskoslezské Beskydy: project year 4

Jana Kovářová

For three years, the Returning the Golden Eagle (*Aquila chrysaetos*) to the Mountains of Moravskoslezské Beskydy Project has been running without any dead bird within the young eagles released. The most recent year, 2009, was marked with two cases of death at a time; nonetheless, the project as such is still underway with success. The birds released are able of independent subsistence; what's more, some first pre-stage of future reproduction has even been observed - some of the young eagles released have already started to develop their own territory.

Developments in 2009

Only two young golden eagles, a male and a female, could be acquired for the project due to especially low numbers of eagle pairs nesting with success in Slovakia. The female Lia was reared at Bartosovice Wildlife Rescue Centre, brooded by an adoptive female Dina, while the male Miko spent a major part of the rearing period brooded by his adoptive mother at the wildlife rescue centre based in Zazriva, Slovakia. Both eagles were released into the wild on 10 August together with an older female, who had arrived at Bartosovice to finish recovery following an injury by electricity earlier in March. Additionally, a female already released earlier in 2008, who subsequently suffered fracture of her left wing in August 2008, was re-released on 3 September. Unfortunately, the bird was found to be unable of well-balanced flight as a result of the injury and assumed to fail survive in the wild. Therefore, this eagle was caught to be kept in captivity in future on a permanent basis.

Additional feeding of the young birds released was and still is practiced by the project staff as with the previous years. Thanks to the co-funding by the Czech Ministry of Environment, satellite tracking of the male Jakub has been underway since 2008; in 2009, additional satellite transmitters were implanted into the newly released eagles (Miko and Lia).

Summary of project activities to date

2006 – Release activities launched with four young eagles released (1 male, 3 females)

2007 – Project year 2: three young released (3 females)

2008 - Project year 3: four young released (2 males and 2 females)

2009 – Project year 4: two young released (1 male and 1 female), the male Miko died in December.

In September, the female Gabca released in 2007 was found dead due to intentional poisoning.

Losses: In 2008, the male Evzen released in the same year as a one-year-old bird died. This was an individual included in the programme additionally and *ex post*. Having fallen from the nest in Slovakia in 2007, this bird was treated for multiple fractures of both wings and probably died of a bite by a common viper.

In September 2009, the female Gabca released earlier in 2007 was found death in the territory of Sedlcany, Central Bohemia. This eagle died as a result of eating bait poisoned using a chemical substance (carbofuran).

In December 2009, the male Miko was found in Bruntal District; this eagle was released in 2009. This individual could probably die of congenital heart disease.

General summary

Thanks to the project, there are now a total of 11 young golden eagles in the wild, of which three birds have been recorded and confirmed to hold an own territory, this being a key step to future successful reproduction within the wild stock, in addition to the demonstrated ability of the birds to survive in the wild situation. Of course, natural reproduction of the golden eagle in the habitats of the Czech Republic is the ultimate goal of the project. The female Isabela released in 2008 have even likely established a very strong pair bond with a male golden eagle, who had also been released as part of the project.

Thanks to the grant awarded by the Czech Ministry of Environment (MoU) and their support, satellite tracking was again possible in 2009, with one male (Jakub) monitored over the entire period and two birds (Miko and Lia) tracked from the date of release. Thanks to the support, aerial monitoring was possible as well, which is very important, as well as the release of informational posters titled Four Years of the Golden Eagle Project and fact sheets named Eagles of the Czech Republic. Both posters and leaflets are distributed to all relevant institutions, informational centres and schools free of any charge and also used as prizes within learning competitions organised by Ostrava Zoo.

An awareness-raising project is underway as of 2009 thanks to the financial support of the European Union and a joint cross-border funding scheme of Slovakia and the Czech Republic. A project home page was developed and is available on www.orelskalni.cz. Publicity activities concerning the project were underway at Ostrava Zoo (see below).

Project outlook

Involvement of Ostrava Zoo in the project named Returning the Golden Eagle to the Mountains of Moravskoslezske Beskydy is planned in future as well. Thanks to the migration of the birds, the Czech Republic should rather be considered the target region. By means of MoE grants, we would like to extend and significantly enhance monitoring and tracking of birds released via satellite, if only to record any first nest-building attempts that may appear namely in the birds released in 2006. In addition, we would like to make use of aerial monitoring to increase coverage and verify reports on the occurrence of golden eagles, which very probably will be those released within the project.

Promoting the project at Ostrava Zoo in 2009

Thanks to the financial support of the European Union and a joint cross-border funding scheme of Slovakia and the Czech Republic awarded in 2009, Ostrava Zoo could expand their activities concerning the project publicity. An educational programme named Eagles in the Czech Republic was developed for primary school students, but awareness-raising activities were included in other specific educational schemes as well, making the number of students informed on the project as high as 805 in 2009. Both the zoo and the project are routinely promoted as part of visits of the zoo personnel to public libraries, children departments at hospitals and senior homes in the city of Ostrava. During the 2009 period, publicity activities were incorporated in several events organised for the public, such as Animal Day, Summer Zoo School 2009, Day for Donors, Senior Day, etc. The awareness-raising activities above helped spread the word to a total of 1,876 people in 2009.

In the late 2009, two large aviaries for the golden eagle and white-tailed eagle were finished in the zoo grounds as a result of financial support received as part of the project.

The list of employees of the Ostrava Zoo (as of December 31, 2009)

	Name	Position	Number of years in the organisation
1	Adámek Vladimír	Worker at Public Relations	18
2	Beníček Rostislav	Driver	23
3	Benko Vladimír	Gardener	3
4	Berger Zdeněk, Mgr.	Worker at Public Relations	5
5	Černohorská Jana	Zookeeper	22
6	Čolas Petr, Ing.	Director	20
7	Derlich Stanislav, JUDr.	Vice Director and Spokesman	8
8	Deniševský Milan	Worker at Zoo-kitchen	9 months
9	Dubská Dagmar, DiS.	Accountant	2
10	Fiala Jaromír	Zookeeper	6
11	Fiala Dušan	Zookeeper	1
12	Filipová Ivana	Zookeeper	25
13	Firla Ivo, Ing.	Head of Zoological Department II.	17
14	Firlová Sylva	Zookeeper	32
15	Galvasová Jarmila	Gardener	9 months
16	Gorčáková Pavla	Zookeeper	32
17	Guryča Pavel	Gardener	2
18	Hájková Liběna	Zookeeper	11
19	Halfarová Renáta	Zookeeper	16
20	Hanzelka Tomáš, Ing.	Head of Horticulture	17
21	Hoňková Petra	Zookeeper	3 months
22	Hruška Ondřej	Zookeeper	9
23	Hruška Roman	Gardener	14
24	Hruška Rudolf	Zookeeper	17
25	Janečka Radomír	Driver	9
26	Jankovičová Zuzana	Zookeeper	11
27	Janošťáková Věra	Zookeeper	31
28	Juříková Lenka, Bc.	Zookeeper	2
29	Juřina Petr	Gardener	10 months
30	Justová Liana	Zookeeper	16

	Name	Position	Number of years in the organisation
31	Kalousková Šárka, Mgr.	Head of Public Relations	5
32	Kalužová Petra	Zookeeper	8
33	Kanichová Jana	Zookeeper	17
34	Konečná Pavlína, Ing.	Head of Finance	4
35	Kopia Robert	Zookeeper	9
36	Kopřiva Richard	Warehouse Keeper	7
37	Košťál Emil	Locksmith	10
38	Kötelešová Andrea	Zookeeper	1
39	Kovářová Jana, Bc.	Worker at Public Relations	2
40	Kratochvílová Milada	Gardener	3
41	Kubala David	Gardener	9
42	Krejčík Tomáš	Gardener	8 months
43	Legierský Jiří	Gardener	11
44	Leštinská Anna	Zookeeper	2
45	Lindovská Lenka	Animal Feeding and Nutrition	19
46	Lindovský Josef	Operations & Maintenance	9
47	Marková Dagmar	Zookeeper	29
48	Maršálková Pavlína	Worker at Zoo-kitchen	9
49	Mikulský Rudolf, Ing.	Head of Operations & Maintenance	30
50	Mílek Bohuslav	Bricklayer	17
51	Moravcová Martina	Gardener	16
52	Moldrzyková Andrea	Payroll Clerk	1
53	Niesnerová Kateřina, Ing.	Projekt Manager	4 months
54	Nová Drahomíra	Gatekeeper	11 months
55	Novák Jiří, Mgr.	Head of Zoological Department I.	12
56	Ondrušová Monika, Bc.	Director's Office	5
57	Orlík Ladislav	Painter/Decorator	29
58	Orságová Alena	Zookeeper	32
59	Papiorek Jaroslav	Driver	9 months
60	Pastyrniak Roman	Zookeeper	6
61	Pecháček Jiří	Electrician	6
62	Pluháček Jan, RNDr., Ph.D.	Researcher	3

	Name	Position	Number of years in the organisation
63	Pluháčková Jana, Mgr.	Animal Registrar	5
64	Poluda Roman	Locksmith	11
65	Sahajová Iva	Gardener	9 months
66	Serbusová Lenka	Zookeeper	16
67	Skupník Rostislav	Safety and Fire Technician	8
68	Skýbová Karin	Zookeeper	17
69	Střížík Rostislav	Zookeeper	17
70	Svobodová Yveta	Zookeeper	28
71	Šafrán Michal	Zookeeper	10
72	Šarišková Nataša	Worker at Zoo-kitchen	2
73	Šešulková Hana	Gardener	5 months
74	Ševčíková Pavlína	Zookeeper	19
75	Švacho Zdeněk	Gardener	2
76	Švihálek Igor	Zookeeper	11
77	Tančiboková Karin	Zookeeper	5
78	Tomčal Zdeněk	Gardener	17
79	Tomek Jaroslav	Locksmith	21
80	Tomková Hana	Zookeeper	27
81	Ulivelliiová Věra	Personnel Manager	5
82	Ullmannová Anna	Gatekeeper	13
83	Velčovská Adéla	Zookeeper	2
84	Vlček Pavel	Gardener	6
85	Vrhelová Jiřina	Zookeeper	20
86	Výkruta Luboš	Worker	15
87	Zajíc Karel	Driver	2
88	Zajoncová Eva	Zookeeper	10
89	Zemanová Jindřicha	Worker at Public Relations	37
90	Zlámal Ivo	Zookeeper	11
91	Zvolánek Daniel	Zookeeper	11
92	Zvolánek Pavel	Zookeeper	13
93	Žižka Marcel	Power Engineer	19