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NOTES ON THE IV INTERNATIONAL SYMPOSIUM ON BREEDING BIRDS IN CAPTIVITY

by Josef Lindholm

All living Guam Rails *Rallus owstoni* and Guam Micronesian Kingfishers *Halcyon c. cinnamomina* (*Todiramphus cinnamominus cinnamominus* in Clements, 2007) are descendents of birds brought into aviculture in the late 1980s, before the last wild specimens were exterminated by the invasive Brown Tree Snake *Boiga irregularis*.

In his book *And No Birds Sing*, science journalist Mark Jaffe (1994), described the beginnings of the programmes that resulted in the establishment of captive breeding populations of these two taxa. A pivotal development was the meeting of Bob Beck of the Guam Division of Aquatic and Wildlife Resources and Guy Greenwell, Larry Shelton and Don Brunning, the Curators of Birds at the National Zoological Park, Philadelphia Zoo and Bronx Zoo, respectively. The meeting took place in 1983, in Los Angeles, California, at the Jean Delacour/IFCB Symposium on Breeding Birds in Captivity.

Although, at the time, few people, if anyone, were aware that the future existence of two taxa of birds would be determined by the above meeting at this symposium, it was certainly apparent to everyone present that a remarkable assemblage of zoo people, private aviculturists, ornithologists and other research workers had been brought together - in the words of the Wizard of Oz - "to confer, converse, and otherwise hobnob."

The same could be said of the symposium that preceded it, in Seattle, in 1978 (Anon., 1978), and of the one that followed in 1987, also in Los Angeles. The proceedings of all three remain important reference points (Risser et al. 1981; IFCB, 1983; IFCB, 1987). It was hoped by all those involved that further symposiums would be held at regular intervals, but this was not to be. Mark Jaffe (1994) chronicled the sudden and unexpected downfall, in 1988, of the International Foundation for the Conservation of Birds, the organisation which had funded the second and third symposiums, as well as the publication of the proceedings of all three.

There was much excitement when it was announced that a fourth symposium, hosted by a major American zoo, would be held in 2000. Speakers were recruited and the preparation of papers began, but for reasons I am not aware of, these plans eventually came to nothing. Therefore, at the end of 2005, when I learned that there were again plans afoot for a fourth symposium, this time in Toronto, Canada, in 2007, I was somewhat skeptical. So were many others and, up until several months before the scheduled time, rumours were rife that, again, nothing would come of this.

The symposium was planned originally for October 2007, but it became necessary to move it forward to September. This was unfortunate, as it meant it coincided not only with the Annual Conference of the (American) Association of Zoos and Aquariums (AZA) but also that of the European Association of Zoos and Aquaria (EAZA). Attendance at the symposium was further affected by anxiety caused by unanticipated delays by the US Government in granting passports to its citizens, who prior to the sudden change of policy, had not had to concern themselves with such documents when travelling to southern Canada.

Nonetheless, approximately 120 delegates gathered in Toronto, from September 12th-September 16th 2007. They came from over 22 countries, including Cuba, Brazil, Sweden, Latvia, Morocco, United Arab Emirates and Saudi Arabia. Papers and poster sessions were presented by 43 speakers from 15 countries. In addition, there were spirited round table discussions on the European bird import ban and the potential for collaboration between private and institutional aviculture. A commercial exhibitors' room provided participants with the opportunity to learn about the latest publications, nursery apparatus, diets and medical procedures. The closing banquet afforded the opportunity to recognise avicultural achievements, with the Conservation Award to Jurong Bird Park, Singapore, for its Pied Hornbill reintroduction programme and the ISBBC Avicultural Award to Martine van Haverre for her work with *Threskiornithidae* (Ibises), as well as Lifetime Achievement Awards to Lynn Hall, Mike Lubbock and Robert J. Berry.

It was not immediately apparent to most of the speakers and delegates that the staging of the symposium was the achievement of two men - Myles Lamont and David Longo. Myles Lamont, Avian Manager at the Hancock Wildlife Center in British Columbia, as well as an editor at Hancock House Publishers, arranged the programme and recruited the speakers. Myles was all of three years old in 1987 when the third symposium was held. David Longo, who appeared to be not much older than Myles, is an Ontario professional aviculturist specialising in conservation significant parrots. He was responsible for logistics and finance, arranging the conference hotel and international transportation of the speakers, and a myriad of other

practical considerations. Both men were in constant motion throughout the conference and, if by the end, they appeared exhausted, it was only to be expected. It was only after all was said and done, that the scale of their endeavour could be truly appreciated.

During the symposium heavy emphasis was placed on aviculture as a means of preventing the extinction of critically endangered taxa. In some cases, the outcome remains uncertain. Although a robust self-sustaining captive population of Northern Bald Ibis or Waldrapp *Geronticus eremita* has existed for several year, the establishment of reintroduced wild populations has so far met with only limited success. In his paper entitled - Why is reintroduction of the Northern Bald Ibis so complicated? - Chris Bowden, International Species Recovery Officer for the UK-based Royal Society for the Protection of Birds (RSPB), presented an overview of the challenges involved. A similar situation exists with Attwater's Prairie Chicken *Tympanuchus cupido attwateri*. Molly Coym of Houston Zoo discussed the methods by which a captive population has been maintained for over a decade. Despite the frequent release of captive-bred birds, however, the wild population barely persists in two small Texas preserves. Thus, the captive flocks, distributed among six institutions, represent the most certain likelihood of the continued existence of this subspecies.

A paper on the plight of a species that exists now only in captivity and is clearly exhibiting the effects of a very small founder population, was presented by Richard Switzer who, in May 2007, in his capacity as the new Curator of Birds at Al Wabra Preservation, Qatar, assumed responsibility for the majority of living specimens of Spix's Macaw *Cyanopsitta spixii*. Among this population are birds exhibiting "almost all the known diseases which affect parrots." Furthermore, the lack of genetic diversity has resulted in "infertility, late maturing, embryonic mortality and chick deformities." In the face of these challenges, staff at Al Wabra developed "what is arguably the most thorough and extensive health management programme for any bird species in the world." At the time the manuscript of his paper was submitted, there were 47 Spix's Macaws in Qatar. The number had, through the successful rearing of chicks, risen to 51 by the end of 2007.

Genetic swamping of one species by another, due to habitat degradation, is an increasing problem. A species that may in the future cease to exist in its pure form is the Madagascar Pond-Heron *Ardeola idae*, threatened by the recent invasion of the Squacco Heron or African Pond-Heron *A. ralloides*. Simon Bruslund Jensen, now (2008) Zoological Director of Walsrode Birdpark, discussed his institution's work with the Madagascar Pond-Heron, both in establishing a captive population and in preserving its remaining habitat, and presented a general overview of Walsrode's extensive

programmes in Madagascar.

Taxonomic revisions can complicate conservation programmes. The total population of the Northern Brown Kiwi *Apteryx mantelli* has declined by more than a third in the past decade, due to habitat loss and predation by alien predators, with the situation rendered even more drastic by recent molecular research which indicates that this species - only recently 'split' from the other 'Brown Kiwis' - is itself comprised of distinct 'races', yet to be given scientific names. Martin Bell of the Kiwi and Birdlife Park at Queenstown, discussed Auckland Zoo's attempts to augment the much reduced population of the Northland 'race' by collecting eggs from the wild and releasing the resulting offspring into, hopefully, safe habitats. As the founders of the current captive population of the North Island Brown Kiwi outside of New Zealand were imported before any of the 'races' were recognised, their taxonomic situation appears unclear. Kathleen Brader, Senior Bird Keeper at the Smithsonian National Zoological Park, presented a poster session discussing the history of kiwis in the UK, continental European, Asian and American collections, and the implications for the future. The first kiwi hatched outside of New Zealand was hatched at the National Zoo in 1975 and is still alive and well. The overall survival of captive-bred offspring has, however, been disappointing. Only five of the 22 hatched at San Diego Zoo between 1983-1999 were still alive in 2007. Somewhat better results have been achieved at Frankfurt Zoo, with 16 of the 32 hatched there since 1986 still alive in 2007. Kathleen told me she hopes that kiwis of unclear provenance, rescued following dog attacks, may eventually find their way into the overseas zoo population.

Martin Bell also presented a paper on recent promising developments regarding the aviculture and reintroduction of the spectacular Takahe *Porphyrio mantelli*. For years results appeared tenuous, but recently birds reared using hand-puppets have been confirmed to be breeding in the wild at several locations. (A Takahe hatched from the first clutch of eggs collected from the wild is still alive 25 years later.)

Chris Bowden's second paper concerned the plight of three species of south Asian vultures - the White-rumped or Oriental White-backed *Gyps bengalensis*, Indian *G. indicus* and Slender-billed *G. tenuirostris* - which were once abundant but are now near extinction, due to secondary ingestion of the cattle analgesic diclofenac. Along with efforts to remove diclofenac from the environment, a captive breeding programme is in its early stages. As of early 2007, 165 vultures representing all three species in roughly equal numbers, had been brought into captivity in India. Within the next two years it is hoped that the breeding programme will have at least 75 pairs of each species. A similar programme planned for the White-rumped or Oriental

White-backed Vulture in Pakistan's Punjab Province was presented in poster form, authored by Campbell Murn and Uzma Khan.

Papers were presented on two South African projects which are likewise at early stages of development. William Horsfield, who has achieved remarkable breeding results with parrots and toucans at his Amazona breeding facility in KwaZulu-Natal, discussed the deteriorating status of the Cape Parrot *Poicephalus robustus* and the attempts to establish a stable captive population. There are at present fewer than 100 specimens listed in the International Studbook. The only registered birds outside of South Africa are at Mulhouse Zoo in France. They are descendents of the famous breeding pair at Basel, augmented with birds from an importation in the 1980s. Jeanne Marie Pittman, Hospital Supervisor at Johannesburg Zoo, dealt primarily with the medical aspects of the Wattled Crane Recovery Programme. Recent research has shown that the South African population of the Wattled Crane *Bugeranus carunculatus* is genetically unique and is best managed separately from birds descended from founders from the Botswana population. It is hoped that a captive population may eventually be used to augment wild populations.

Africam Safari at Puebla, Mexico, has in recent years worked on propagating a number of conservation significant birds endemic to Mexico and Meso-America (Central America). Curator of Birds Juan Cornejo, spoke briefly on its projects with the Maroon-fronted Parrot *Rhynchopsitta terrisi*, Socorro Conure *Aratinga brevipes*, Tuxtla Quail-Dove *Geotrygon carrikeri* and Bearded Wood-Partridge *Dendrortyx barbatus*. His main focus though was on the Horned Guan *Oreophasis derbianus*. Always rare, the Endangered Horned Guan appears not to have been brought into captivity until the 1970s. As far as is documented, a successful full captive breeding did not occur until 1994. Africam Safari acquired seven wild-caught specimens and six captive-bred birds in 2000 and has achieved the best captive breeding results. Juan is the International Studbook Keeper for this species and is Mexican coordinator of the International Committee for the Conservation of *Oreophasis derbianus* and its Habitat. He presented a detailed account of the aviculture of this species of which he hopes a self-sustaining captive population will be established. The first Horned Guans kept alive outside of Mexico were those sent from Africam Safari to St Louis Zoo in 2006.

A memorable feature of the second symposium was the showing of slides documenting the development of Horned Guan chicks hatched from eggs collected from the wild in 1982. The slides were included in a presentation by Dr Jesus Estudillo Lopez (1983). Dr Estudillo has for well over 30 years been renowned for his magnificent aviaries and particularly for his

work with cracids. In the *Avicultural Magazine* Vol.83, No.1, pp. 50-53 (1977), the then 86 year old Jean Delacour, wrote an enthusiastic account of his first visit to Dr Estudillo's collection. With approximately 500 taxa of birds, it may now be the largest collection in the Western Hemisphere. Dr Estudillo's presentation in Toronto focused on his unique success propagating the Northern Resplendent Quetzal *Pharomachrus m. moccino* and the conservation status of this glorious bird, but was also an elegiac summary of his years of field work in the Neotropics.

As might be expected, with the emphasis being on threatened birds, the conservation of island endemics occupied a substantial part of the programme. Dylan Kesler of the University of Missouri presented his research on Pacific island kingfishers. This focused on the beginnings of conservation projects for the Critically Endangered Niau Kingfisher *Halcyon gambieri gertrudae*, as well as a study of the Pohnpei Kingfisher *H. cinnamomina reichenbachii* (*Todiramphus gambieri gertrudae* & *T. cinnamominus reichenbachii* in Clements, 2007), to help better understand the needs of the Guam Micronesian Kingfisher.

The extinction in the wild of the Guam Micronesian Kingfisher and the Guam Rail occurred in the 1980s, whereas the Aga or Mariana Crow *Corvus kubaryi* did not die out on that island until 2002 or 2003. At present there are fewer than 200 on the nearby island of Rota and a few were reintroduced from there to Guam. A few birds were sent to US zoos in the 1990s, but a captive population was not established. At Toronto there was a poster session on the efforts to stabilise the Rota population and re-establish this crow back on the island of Guam. Despite the continued presence of the Brown Tree Snake, chicks have in recent years been reared by birds translocated there from Rota.

Other poster sessions dealt with two of the myriad of bird species restricted to the Philippines. Three authors discussed the first captive breeding of the Philippine Eagle-Owl *Bubo p. philippensis* and eight authors presented a report on the first survey of the Critically Endangered Negros Bleeding-heart *Gallicolumba keayi*. It was observed at multiple locations and it is reassuring to learn that populations may tolerate low-level agriculture. An avicultural programme has begun at the S. Y. Reyes Zoological and Botanical Garden.

Gary Ward, responsible for the softbills and pigeons at the Durrell Wildlife Conservation Trust, discussed the logistics of the so far successful project to establish a captive population of the Critically Endangered Montserrat Oriole *Icterus obei*. The initial decline of this species was due to much of its mid-elevation forest habitat on the West Indian island of Monserrat being cleared for agricultural use. The main threat to the

remaining population is from volcanic activity and hurricanes. It is entirely possible that a future natural disaster could wipe out the remaining wild population. Therefore, it is reassuring to know that this species has proved “relatively easy to breed and seems well suited to life in captivity, so long as certain requirements are met.” Plans are afoot to establish further captive populations.

A further encouraging report came from Richard Switzer, regarding the *in situ* project to boost the population of the Mauritius Fody *Foudia rubra* by “rescuing and harvesting” eggs and chicks from nests in the wild. After having been hand-reared, the birds are released on an offshore island, on which they are closely monitored. The overall population is estimated to have grown by 60% since 2002.

Especially encouraging was the presentation by Peter McClelland, Programme Manager for Outlying Islands for the New Zealand Department of Conservation. The flightless Campbell Island Teal *Anas aucklandica nesiotis* was feared extinct, but was then rediscovered in 1975 on tiny Dent Island. At the time there was estimated to be no more than 50 birds. Eleven were collected between 1984-1990, but captive propagation did not commence until 1994. A population was successfully established on a ‘holding island’, while far grander plans were afoot. In 2001, the largest rat eradication programme ever attempted, began on Campbell Island, on which rats had been resident since 1812. It involved “four helicopters and 120 tonnes of bait” and was declared a success in 2003, when during an exhaustive survey no remaining rats were discovered. After an absence of more than a century, this teal is again living on Campbell Island, following the introduction of 158 birds from breeding facilities and the ‘holding island,’ that were introduced in phases, from 2004-2006. An expedition in 2006 discovered not only that the teal was breeding freely, but the ‘Campbell Island Snipe’ (listed in Clements (2007) as an undescribed form of the Subantarctic Snipe *Coenocorypha aucklandica* ssp.) had recolonised the island and petrels were nesting there for the first time in decades. Peter presented a second paper, which outlined the general principals of island translocations, based on more than 20 years’ experience of such endeavours.

Alan Lieberman, who in various capacities has been employed for more than 30 years by the Zoological Society of San Diego, gave an overview of the Hawaii Endangered Bird Conservation Programme, administered by the zoological society in collaboration with state and government agencies and private corporations. Working with 22 endangered species, of course, entails mixed results. On one hand, Alan described the depressing experience of caring for the last Po’o-Uli *Melamprosops phaeosoma*, a species only

discovered in 1973, which “dying, and yet in Death alive” - in the words of P. D. Q. Bach - has, in part, become an inmate of the ‘Frozen Zoo’ maintained at the society’s Center for the Reproduction of Endangered Species (CRES). On the other hand, in eight years, 113 Critically Endangered Puaiohi *Myadestes palmeri*, the smallest of Kaua’i’s two thrushes and perhaps the only extant one, have been reintroduced and, 10 other species of Hawaiian passerines, some on the edge of extinction, have also been bred at the programme’s breeding centers.

Another island project launched by San Diego’s Center for the Reproduction of Endangered Species (CRES) and also administered by Alan Lieberman, though funded by the US Navy, involves the San Clemente Loggerhead Shrike *Lanius ludovicianus mearnsi*. Two posters were presented by Susan Farabaugh, who co-authored them with seven colleagues. One considered changes in the release protocol which has resulted in a much improved survival rate among captive-bred birds over a period of several years. None of the birds liberated between 1992-1999 survived to breed, whereas since then some of the birds released each year have joined the breeding population and the number of birds has increased substantially. As one might expect, parent-reared juveniles fare better than hand-reared birds. The other poster dealt with the logistics involved in the annual production of captive-bred birds for release, working with a captive flock of approximately 60 birds.

The Loggerhead Shrike was also the subject of a paper presented by Jessica Steiner, who coordinates the recovery effort for the eastern subspecies *L. l. migrans* in Ontario. By 1995 only 30 breeding pairs were estimated to remain in Canada. Since 2001, however, 221 captive-bred shrikes have been released, 129 of them in 2006. Reproduction by released birds has now begun to be documented. There are at present 24 propagation and release enclosures, located at field sites in southern Ontario.

Programmes for a number of other North American birds were also profiled. Paul Williams, Animal Care Supervisor at the British Columbia Wildlife Park, discussed the reintroduction of the Burrowing Owl *Athene cunicularia* in British Columbia, from which this charming owl had almost disappeared by the 1970s. Since 1989, roughly 600 of these owls have been hatched at the park and others have been bred at Burrowing Owl Conservation of BC, enabling more than 800 to have been released so far. In addition, 700 artificial burrows have been installed.

By the close of the twentieth century, the population of the Light-footed Clapper Rail *Rallus longirostris levipes* - a subspecies found only in southern California - had declined to fewer than 600 individuals. Its decline was almost entirely due to the extensive commercial development of its wetland

habitat, now fragmented into 23 disjunct locations. Laurie Conrad, Assistant Curator of Birds at Sea World California, San Diego, discussed a programme to augment these fragmented populations with captive-bred birds, to prevent the effects of inbreeding. Pairs of wild-caught adults have been set up and commenced breeding in 2001 and, 146 offspring, both parent-reared and artificially incubated and the chicks hand-reared, have been released in five areas. In the most recent census, 408 pairs were counted on 18 marshes, the highest number of pairs for many years.

Steller's Eider *Polysticta stelleri* has proved the most difficult of the eiders to establish and maintain in aviculture over long periods. A poster session by Heidi Cline, who co-authored it with Tuula Hollmen and Nora Rojek, explained the Alaskan Sea Life Center's experiments with the use of artificial incubation to produce a captive flock at the centre and its role in enhancing productivity in wild populations by safeguarding eggs from predators.

An inspiration to all concerned, were the papers presented on two famous species, the populations of which had plummeted to fewer than 30 living specimens of each and now number in the hundreds, thanks to successful reintroduction programmes. Michael Wallace gave an overview of his 28 years work with the California Condor *Gymnogyps californianus* at Los Angeles Zoo and San Diego Wild Animal Park, describing the challenges and disappointments that have attended efforts to re-establish wild populations. Lead poisoning from bullet-ridden carcasses remains a major source of mortality and now that chicks are being parent-reared in the wild, the ingestion of 'micro trash' proffered to them by their parents is a serious cause of neonatal deaths. On the other hand, it was satisfying to hear Dr Wallace's account (with pictures) of condors feasting on beached Grey Whales *Eschrichtius robustus* - some of which had been dead for a year! Joseph Duff's account of his innovative use of ultralight aircraft to track the migratory routes of new populations of Whooping Cranes *Grus americana* had a broad general appeal.

In the UK, several populations of the once extirpated Red Kite *Milvus milvus* have been established in the past decade. Campbell Murn of the Hawk Conservancy presented a poster, co-authored with three other researchers, detailing the set backs and eventual successes in Hampshire, with birds of various ages and backgrounds.

Two papers dealt with aviculture related to the ancient art of Arabic falconry. In both cases French veterinarians are responsible for taxa of bustards once regarded as forms of a single species, but each now considered a separate (full) species in its own right. Since 1999, Frederic Lacroix has been Manager of the Emirates Center for Wildlife Propagation in Missouri, eastern

Morocco, where more than 19,000 North African Houbara *Chlamydotis u. undulata* have been produced since 1997; of which 8,146 were produced in 2007. It was anticipated that nearly 6,000 would be released between September 2007-March 2008. Previous releases have totalled 5,454 birds, "with a survival rate of about 70% one year after release." In the near future they hope to be rearing 5,000 Houbara a year. At the same time, efforts are being made to conserve existing populations of Moroccan Houbara by the creation of non-hunting zones.

Similar efforts are underway with the Asian Houbara or Macqueen's Bustard *C. macqueenii* at the National Avian Research Centre in the United Arab Emirates (UAE), where Olivier Leon is Manager of the Captive Breeding Department. Dr Leon explained that unlike other bustard species, the Houbara does not breed well under normal captive conditions and is very sensitive to stress. Consequently, successful captive breeding of the Houbara not only has to use and adapt techniques developed by the poultry industry, such as artificial insemination and artificial incubation, but it is also necessary to keep the birds "tamed from hatch to death," which is extremely demanding in terms of manpower. While this may seem to lead in the direction of some new sort of domestic fowl, careful attention is paid to "maintaining the original genetic diversity of the founders."

The establishment of a population of American Kestrels *Falco sparverius* as laboratory animals was examined by Dr David Bird, Director of the Avian Science and Conservation Centre at McGill University. For 35 years he has managed a research colony that has numbered as many as 500 birds at a time. Propagation has been achieved through many generations and is now formulaic. Emphasis has been placed on toxicology studies, but these birds have also been the subject of research into "reproduction, physiology, morphology, behaviour, veterinary medicine, nutrition and parasitology."

Several of the presentations were of a highly technical nature. The paper entitled - A Medical Approach to the Atrial Chick - by Dr Michael Taylor, Service Chief in Avian and Exotic Animal Medicine at Ontario Veterinary College, was based primarily on work with parrots and placed heavy emphasis on the development of the cloacal bursa. Coleen Lynch of the Association of Zoos and Aquariums' Population Management Center in Chicago discussed the principals of population biology, especially as they apply to recovery plans for animals which have gone through genetic bottlenecks. In a poster session, Austin and May Ann Hughes revealed their hypothesis that many US migratory birds have comparatively little genetic diversity, as a result of habitat restriction during the Ice Age.

Phillip Seddon, Director of the Wildlife Management Programme at the University of Otago, New Zealand, spoke of the risks imposed on birds

stemming from their having been maintained in captivity. He said, candidates for release programmes must be evaluated taking into account these potential risks. "Each risk factor will have an associated risk function, the cumulative probability of a deleterious effect with time spent in captivity, and each will necessitate specific mitigation measures." Kate McInnes presented a poster session, co-authored with three fellow New Zealanders, addressing the disease issues faced by three New Zealand captive breeding and release programmes and the strategies to deal with them. DNA-based tests for psittacine beak and feather disease, Pacheco's virus, avian polyomavirus, avian tuberculosis and other such afflictions have been developed by the HealthGene Laboratory.

More traditional aviculture was not ignored. There were two papers on traditionally difficult cockatoos. First, William Horsfield went into great detail on the husbandry of the Palm Cockatoo *Probosciger a. aterrimus*, which he has consistently been successful with in South Africa; then Australian aviculturist Neville Connors dispelled some longstanding "avicultural myths" regarding cockatoos of the genus *Calyptorhynchus*, all four members of which are thriving in private collections in Australia.

Peter Karsten, who following a long and distinguished career at Calgary Zoo, has put much effort into establishing an aviary-bred strain of Pekin Robins *Leiothrix lutea*, presented two talks, as well as a poster session. His paper on breeding livefood will be a valuable source of reference for others wishing to do likewise. Each day Peter's softbills consume live insects, of four species, worth roughly US\$100 (£50) if he had to rely on purchasing them from commercial suppliers. Instead, not counting an hour or so a day of his own labour and the capital investment, Peter estimates that it costs him just US\$5 (approx. £2.50) to produce the 4,200 insects he feeds to his birds each day. His poster session laid out the aviary conditions necessary to successfully breed Pekin Robins and his key note speech, at the closing banquet, emphasised the continued importance of collaboration between private and institutional aviculturists.

A poster by Nebraska aviculturist Jason Beck, detailed his experiences setting up six pairs of Piping Hornbills *Bycanistes fistulator*, a species which US zoos, already committed to programmes for other African hornbills, have little capacity for.

Kathy King, Chair of the Ciconiiformes and Phoenicopteriformes Taxon Advisory Group of the EAZA, reviewed the status of the 6,700 flamingos in European zoos and discussed the challenges of maintaining the various species into the future.

Mike Lubbock, with more than 40 years of work in major collections of ducks, geese and swans, discussed the results of two 2004 surveys of the

status of anatids in American aviculture. He foresees a rather depressing outlook for the future of many of these species, as zoos follow the general trend of reducing the number of taxon they exhibit and the number of private waterfowl breeders appear to be on the decline. On a brighter note, Mike elaborated on the transition of his Sylvian Heights Waterfowl Center from a private facility to a public exhibit, that will continue to be a major and reliable source of waterfowl for collections around the world.

Another master waterfowl breeder, Peter Kooij, who continues the business his father started in the Netherlands many years ago, was a lively participant in the above mentioned round table discussions, along with Peter Karsten, Simon Bruslund Jensen and John Azua, Curator of Birds at Denver Zoo, taking some thought provoking stands during discussions on the future of European aviculture, and the realities involved in private and institutional partnerships.

One hears practically nothing about birds in African zoos outside of South Africa. Therefore, a poster presented by Jonathan Fayomi and Olugbenga Eniola Bada of the zoo which is part of the University of Ibandan, Nigeria, was of particular interest. After 30 years of benign neglect, the aviary, once a proud feature of the zoo, had fallen into disrepair and housed only the remnants of a collection. It has now though been renovated and restocked and its inhabitants are "expected to breed and multiply in number so that they can replenish the Earth."

My paper on the avicultural history of hummingbirds, ended up as a more than 90 page manuscript, a development I had not anticipated, but one gracefully received by Myles Lamont. My primary source of information was the *Avicultural Magazine*. Jean Delacour, remembered most for his achievements with pheasants and waterfowl, worked with hummingbirds for at least seven of his nine-and-half decades, and I cited 42 of his publications from 1922-1973. I found it appropriate, in that Dr Delacour was invoked as a sort of 'Patron Saint' of this symposium and was very much a presence at the first two. (A poster session on his achievements at Bronx Zoo in the 1940s, which I presented at the 1983 symposium, eventually became an article in the *Avicultural Magazine* (Lindholm, 1988)).

Although, for reasons noted earlier, the number of delegates was fewer than had been hoped for, there was, as at previous symposiums, a wonderful mix of people. I was especially delighted to meet Juan Soy, Head of Conservation Programs for Cuba's Empresa Nacional para la Protección de la Flora y la Fauna. Dr Soy, who is also on the faculty of the University of Havana and has served as an Assistant Director of Havana Zoo, has worked closely with researchers from other countries and has been featured in such publications as the *National Geographic*. He has conducted field work on

the Critically Endangered Cuban Solenodon *Solenodon cubanus* (a large, long-tailed, shrew-like, insectivore) and is presently working to establish a captive population of the Endangered Blue-headed Quail-Dove *Starnoenas cyanocephala*, the sole member of the genus found only in Cuba. The proceeds of the symposium banquet auction were earmarked for the project with the Blue-headed Quail-Dove.

I met people from several other countries, including Brazil and Saudi Arabia, and two staff members from Jurong Bird Park, Singapore. Harald Schmidt, Curator of Birds at Rotterdam Zoo, told me about the zoo's breeding colony of European Bee-eaters *Merops apiaster*. It was a pleasure to meet for the first time Jo Gregson, Senior Head Keeper of Birds at Paignton Zoo, a long-time contributor to the *Avicultural Magazine*. It is always a delight spend time with John Ellis, Senior Curator of Higher Vertebrates at the Zoological Society of London (ZSL), who had taken time off from the busy preparations for the re-opening of the renovated Bird House - renamed the Blackburn Pavilion. Nancy Clum, Assistant Curator of Ornithology at Bronx Zoo, my old friend Grenville Roles, in charge of the bird collection at Disney's Animal Zoo Kingdom in Florida, John and I, served as the Awards Committee for the symposium. Peter Kooij supplied us with much needed advice.

Quite a number of American zoos were represented by delegates. There was also a good turnout of those involved in one way or another with US private aviculture, including a number well-known for their services to the avicultural community: Walter Sturgeon, Lynn Hall, Ivo Lazzeroni (who made an impassioned plea, during poster sessions, for private aviculturists to focus greater attention on native birds), Natasha Schischakin, Dick Schroeder, Luke Thirkill and John Del Rio, among others.

I, and quite a few others, were indebted to Tom Mason, Curator of Birds & Invertebrates at Toronto Zoo, who was a wonderful host to those of us who were able to visit the zoo, providing transport (not just to the zoo, but also to other places of interest) and spending much time showing us around the exhibits and explaining the zoo's extensive programs.

The general consensus was that the fourth symposium was a great success and, the primary question was, when will the next one be?

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SNIPPETS OF INFORMATION

Among "snippets of information" reported by a "correspondent" in Seattle at the first symposium (*Avicultural Magazine* Vol.84, No.2, pp.114-116 (1978)), was that the Bali Starling *Leucopsar rothschildi* (at the time called Rothschild's Myna or Grackle) can be sexed by the length of the crest - that of the male being over 60cm (2½in) long whereas that of the female is under 55mm (2¼in) long.

The first item in News & Views in the above issue of the magazine (p.116), noted that Jersey Zoo had imported eight of these birds in 1971, and from them some 70 young had been reared, 47 of which had been sent to six different countries.

THE NESTING BEHAVIOUR OF THE MUSOPHAGIDAE

(continued from Vol. 114, No.1, pp.2-12)

Part 2

Further notes on the White-cheeked Turaco

Tauraco l. leucotis

by Myles Lamont

In the summer of 2005 and again in 2006 one of the female White-cheeked Turacos *Tauraco l. leucotis* at the Hancock Wildlife Research Center constructed a nest of her own, on both occasions in a dense tangle of English Ivy *Hedera helix*. In summer 2005, she was seen carrying nesting material throughout a large mixed aviary (3.6m x 3.6m x 60m (approx. 12ft x 12ft x 196ft)) whose occupants included some 10 other White-cheeked Turacos, three Ross's *Musophaga rossae*, two Guinea *T. persa* and two Red-crested Turacos *T. erythrolophus*. Despite the apparent competition and potential rivals, she constructed a very secure nest and there were three eggs, one of which was fertile; but she abandoned the nest approximately a week after it was discovered.

In 2006, the same female constructed her nest in a different location, again in the same mixed aviary shared with three other species of turaco and some additional White-cheeked Turacos. Also present in the flight were a female Red-billed Hornbill *Tockus erythrorhynchus* and some Erckel's Francolins *Francolinus erckelii*. Both nests were sheltered from the rain by a thick mat of ivy growing on the top of the aviary and extending about 0.5m (approx. 1ft 8in) above the nests; it is unknown whether or not this had any bearing on her choice of nest sites. The thickest clumps of ivy were growing on the west facing aviary wall, which was where she nested, although there was probably the potential for her to have nested on the east facing side. The nest consisted of approximately 87 items of nest material, ranging from large sticks to smaller twigs, rootlets and leaves.

It should be noted that the female was only two years old at the time of her first nesting attempt and it is possible that one of the eggs in her first nest was laid by another female in the aviary.

In her second nest, the chick was first observed on July 7th, when it was two or three days old. It began the fledging process on July 28th, but returned to the nest for several days thereafter. It would spend the majority of the day only 1m (3ft 3in) or so away from the nest and returned to it at various times throughout the day and, almost always, returned to it for the night. About the fourth week, the chick left the nest and spent most of the fifth week in a Red Alder *Alnus rubra* some 4m (approx. 13ft) from the



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