

Breeding Great Billed Parrots in South Africa

By William. A. Horsfield

History of Great bills in South Africa

Having contacted the key players as far as psittacine imports to South Africa during the last two decades is concerned, it appears that only 60-70 Great Billed Parrots were imported into the country during the last 20 years. All these came in small shipments of between 5-16 birds at a time. They were generally hand-selected in Singapore when dealers flew across to the East to source birds. They were usually surgically sexed there and so the sex ration was roughly even to begin with, although today there are more females than males.

A likeable South African old-timer ex-bird/animal dealer recently told me how he used to buy Great Billed Parrots at Durban harbour when they were smuggled on boats as way back as the late sixties and early seventies costing just over 1 USD each! Ships used to



come to Durban from Hong Kong en route to South America and West Africa. Often when they docked in Durban he would get a call from his contact and make late-night trips to the docks to secretly collect birds and animals. His stories about these dealings made me shudder in amazement. "Banana birds" so called because that's all they were fed included Toucans, Toucanettes and Aracaris, were all hand-tame. Their sales gimmick was catching a tossed grape. They would come on the return trip of a ship from South America among various Amazons, Macaws including Hyacinth's and Marmosets. The Hong Kong trips occasionally included Black Palms, Philippine Red Vented, Citrons, Great Bills and tropical fish. The one from West Af-

rica would have African Grey's and sometimes baby Chimps. To see the selection of tropical fish in the hold of one of these ships, the old-timer once remembers having to squeeze to the back of a hold, past 20 double-decker busses bound for Hong Kong from England. He didn't fancy the fish but bought a chimp in a sailor outfit instead. Such are some of the boggling specifics of his illicit dealings and smuggling operations as retold from memory recall over a friendly cup of tea.

Not surprisingly none of these Great Bills are alive today and the handful of imported birds still sitting in collections originate from the later imports in the eighties and early nineties.

I remember as a youngster occasionally seeing Great Bills at bird dealers and marveling at their massive beaks and being terribly tempted to buy them but being put off because

they were rumoured to die easily, much like the wild-caught eclectus parrots. At that stage youthful frugality over-rode any desire to buy birds that would probably snuff it soon and see me out of pocket. Little did I realize that I would indeed keep and breed them many years later.

Prices have inevitably climbed steeply since those early days. In 1991 wild-caught birds cost 45 USD ea to land in SA. In 2001 I was offered them for 800 USD ea while visiting Indonesia. Today in South Africa they are not available and I have a waiting list as long as my arm for my youngsters.

My first Great Bills

Merridy Ballinger purchased a pair of Great Bills in 1993 and over the subsequent years managed through persistent advertising to obtain most of the few remaining birds scattered across South Africa. Initially her attempts to find these scattered individuals proved exceptionally frustrating. I used to see her same Wanted advert in every issue of our avicultural magazines and wondered after years of no response whether she had totally lost the plot? Thankfully for her own sanity (and for those who thought that her Wanted advert had been pre-programmed into every avicultural publication editors' PC and would continue to appear for the next 100 years) her luck changed and she suddenly sat with half a dozen unrelated birds. I was incredibly impressed with her enthusiasm and her determination to get the species established and breeding. It wasn't long before she had her first successful breeding.

Incidentally, I've successfully used Merridy's tenacious advertising ploy of subtle nagging to eventually get to the nerves & consciences of the stubborn few who had previously not wanted to part with their odd birds on a number of occasions since then!

I exchanged a young pair of *Ara rubrogenys* for my first pair of Great Bills in 1997. My client explained that the pair had bred a couple of times but that he had not managed to get a chick onto the perch and he suspected the hen of killing them. The pair settled down fast and they were soon on two eggs. I decided to give them the benefit of the doubt and they did a magnificent task of hatching and raising their chicks. This was around the same time that *The Watchbird* ran a feature on Great Bills in the XX1V March/April issue and Bill Duncan and Susie McKinney's interesting accounts fuelled my enthusiasm.

Breeding including egg/chick Data

That first pair proved to be prolific and would breed 3-4 times per year if I pulled the first clutch of eggs. I have mostly had 2 eggs per clutch from my pairs with one instance of 3 eggs, however one of these eggs was the size of a cockatiel egg and contained no yolk.

The same pair has twice laid an enormous second egg that was double-yolked. In the first instance both yolks were fertile but died at 17 days and the second time neither was fertile.

I was amazed to read of the Saint Vincent Amazon hatched at Paradise Park in the UK last year from a double-yolked egg where only one yolk was fertile. Apparently he emerged unassisted but covered in yolk!

A sample of 10 eggs and chicks from my flock revealed the following information. Egg sizes range from 38mm-43 mm in length with an average length being 40.25mm. Egg width ranges from 26mm-32mm with average being 30.5mm. Egg mass ranges from 14.7 grams -24 grams with average being 19.8. Eggs are pure white and typically oval and are laid at two day intervals. Chick hatch mass ranges from 13.3 -17.9 grams with average being 16.11 grams. Chicks are blind and deaf at hatch with a sparse covering of pale yellow down approx 3.5mm in length. The beak is pale orange and similar to that of an eclectus chick in shape. Egg tooth is prominent. Incubation period is 26 days to first external chip. From first external chip in shell to hatch is 48 hours. The chick will start to vocalize once it has been actively chipping in the airspace chamber for a number of hours.

Hand-raised chick mass averages

	Mass (grams)	# of chicks		Mass (grams)	# of chicks
Day 1	16.11	10	Day 22	242.25	8
Day 2	17.79	8	Day 23	276.18	11
Day 3	20.56	8	Day 24	274.00	7
Day 4	24.86	7	Day 25	305.20	10
Day 5	29.88	10	Day 26	315.50	4
Day 6	37.67	9	Day 27	316.55	11
Day 7	44.31	13	Day 28	354.33	3
Day 8	56.085	13	Day 29	332.10	10
Day 9	63.56	12	Day 30	385.50	2
Day 10	79.73	12	Day 31	363.38	8
Day 11	100.61	11	Day 32	367.00	3
Day 12	100.02	11	Day 33	387.33	6
Day 13	118.2	12	Day 34	401.33	3
Day 14	128.57	11	Day 35	386.20	5
Day 15	139.69	13	Day 36	396.00	4
Day 16	158.59	9	Day 37	404.00	4
Day 17	173.11	13	Day 38	421.67	3
Day 18	187.45	11	Day 39	396.67	6
Day 19	200.11	10	Day 40	450.33	3
Day 20	218.67	9	Day 41	460.00	7
Day 21	239.36	11	Day 42	478.12	8

Artificial Incubation

I have found the Great Bills to double clutch and even treble clutch easily and in order to increase the numbers of chicks bred, I pull eggs of the 1st two clutches for artificial incubation. Eggs are incubated at a default 37.5C with a RH of 55% in Grumbach incubators. In my experience the temperature gradient in most incubators from top to bottom and from back to front is unacceptable and eggs are carefully positioned as close to the centre of the egg tray as possible. Where two trays are provided by the manufacturer (as in the Grumbach) the top one is tossed out (make great drainage trays for orchids) and only the lower used. In the case of the Grumbach, this has the L-shaped mercury thermometer which is as a rule highly accurate. Unless a factory standard, the temperature probe is re-positioned to the center of the incubator at the same level as the eggs. Dummy eggs (made from dental acrylic and generally especially used for pairs that damage their eggs) are used as spacers to prevent the eggs moving either forwards or backwards. Thermometer inaccuracy and controller failure account for most incubation problems and I use at least two accurately calibrated mercury thermometers to cross-check the digital.

Germicidal ultraviolet globes in the lids of the machines and above the water tanks have proved useful in lowering pathogen counts in the machines. VIRUKILL® is used as disinfectant of choice in the incubations with it also being used in the water tanks. There are high/low alarms for temperature, humidity and turning and these are connected to our home burglar alarm so that the security company will phone me in the event that I am not at home if one is activated. Theft of birds is common in the US but a fairly new scourge in South Africa. We have however deal with potential horrific serious crime as part of our everyday lives and for that reason my breeding facility is highly secure. We are protected by electrified perimeter fencing, infra-red beams, trained guard dogs and dangerous Ostrich sentries. An armed rapid-response security company provides us with immediate backup in the event of an emergency and we have radio contact with the company in the event of telephone failure. All the farms in our area are also in radio contact with one another and we have an early morning roll-call to check that all is in order. So the incubation facility is well monitored!!

In the event of a power failure there is a generator back-up for the incubation facility. I have hatched eggs with no assistance with greatly varying degrees of density-loss and no longer use standard weight-loss techniques for this species. I found that by trying to manipulate the weight-loss of eggs off target I was unexplainably losing some of them and when I gave up and let them do their own thing they hatched fine. I was frustrated with admitting partial defeat but delighted being faced with unexpected success as a result thereof.

Moving-carpet turning seems to hasten vein growth across the yolk in the initial period of incubation and I prefer this method to rollers or tilting trays. Great Bill eggs are automatically turned every 15-30 minutes.

I continue turning during the diagonal draw-down process of the airspace, and do so

until the chick has entered this chamber upon which turning is discontinued. When the chick makes the first external chip that is visible on the outside of the shell, it is moved to the hatcher and placed with the chip facing upwards. The RH in the hatcher is increased to 70% until the chick hatches. Upon hatching the chick is weighed and fed one feed with Ringers Lactate then placed into a brooder at 37.2C. The temperature is lowered by approx 0.2C per day so that by the start of pin feathering the chicks are kept at 30 degrees Celsius.

Handraising

If the hatch has been normal then apart from the 1st feed of Ringer's , the chick is immediately fed on the Kaytee macaw handraising ration.

I use the softest toilet tissue to cushion the chicks and place them in round Tupperware® tubs, feeding at an interval of 2 hours. If the chicks are less than 15 grams I feed throughout the night but otherwise last feed is 23h00 and 1st feed is 06h00. At peak weight (460-480 grams) the maximum volume of formula fed is 35ml per feed. Larger volumes will overstretch the crop and cause crop slowdown. We find that as soon as the chicks are more or less fully feathered and are accommodated in pairs or trio's in small wire-bottomed weaning cages (40 x 60 x 60cm's), they will begin to sample foodstuffs. The later food is offered to them the longer they take to wean. Ours wean at approximately 13 weeks. The young birds will sample anything and are very adaptable when it comes to diet changes.

Serious bacterial infections I have encountered with young Great bills have been limited to enteritis type infections, with either frank or digested blood in the droppings depending on where the infection site is in the alimentary canal. All these have interestingly shown an antibiogram sensitivity to Baytril. Bacteria are often resistant to this drug these days and it is not usually my first line of attack but in this species it has proved to be highly effective. Despite careful precautionary measures, we find it hard to ascertain and guarantee the source of our fresh produce purchased at the markets and what contamination may have occurred. Whether this be from herbicides, pesticides or other contaminants is obviously a hidden risk factor and although they are all carefully selected and thoroughly washed, it remains a problem. I am contemplating feeding an organic pelleted diet to certain species as a dietary main at present.

If there is any suspicion of a chick not thriving then a cloacal and choanal swab is immediately taken and sent for bacterial/fungal culture. Entero-Plus (Medpet) or Protexin (Kyron labs) are the probiotics I use and are added to the handraising formula.

Great bills are straightforward to handraise but have given me a few problems which need to be kept in mind. They seem to be particularly susceptible to *Candida* infection and with many other chicks of various species in the nursery, have been the only ones to show symptoms of a fungal overgrowth. This is first noted as tiny filaments that cling in the mouth almost like small threads when the beak is opened. They are sticky to the touch and don't wipe off easily. If left untreated these tacky strands multiply and typical white *Candida* lesions appear on and around the tongue and adjacent areas. The

problem is easily solved by treating with Nystacid. For this treatment to be effective the drops need to be applied directly into the mouth 3 times per day at least 20-30 minutes before feeding. It is no use mixing the medication with the handraising formula as it is not absorbed and is merely functional as a coating to the gut tissues. However the root cause is probably diet and although the chicks gain weight and appear healthy an underlying stress factor must surely be responsible in these cases. I use the mentioned Kaytee Macaw handraising formula to raise the chicks from day one. In some instances we have observed the chicks to develop a strange behavior where they seem to lose the ability to lift their heads normally and rather keep them lowered between the legs. At the same time the chick lifts its legs and moves them in a circular motion as if peddling a bicycle. If this is ignored the condition worsens until the bird is moving both legs at the same time. Due to the head being lowered the nails scrape against the side of the neck and head and the repeated nature of this behavior soon causes scratches and raw bleeding lesions. The wingtips also become damaged because the bird is using them to try to balance itself the whole time. At this point there is no option but to tape soft gauze to the feet to reduce the scraping of the skin on the head. In desperation I have tied the feet loosely together so that the chick cannot lift one without the other and in doing this have stopped the self inflicted trauma to the head. I am sure that a dietary deficiency causes this strange condition. A dramatic decrease in brooder temperature and simultaneous change of handraising formula quickly solves the problem. Chicks that have developed this problem have all been between 2-3 weeks of age. If they are placed under foster parents the behavior stops within a day of being fed by the foster parents. Another condition, for want of a better word, has also been observed where the small chick will arch its head backwards so that the top of the head almost touches the lower back. The colour of these chicks appears to be dark and congested and while once again with no evidence, I tend to think of a dietary deficiency or inadequacy, a temperature drop and change of diet works like a dream in solving the problem.

Viokase® is a tablet containing pancreatic enzymes I have found useful should there be any digestion slowdown. It can be used to assist in the digestion process while this is being undermined and until the body balance can be regained.

Management including Galvanized wire dangers

All my Great Bills are housed in suspended aviaries 3.6m x 1.2m x 1.2m with 2.6 meters of the flight being fully outdoors and the remainder indoors.

Aviaries are separated by a 600mm gap in which a dense shrubbery of evergreen, flowering shrubs is planted. Overhead misting systems allow the birds to bathe in the hot weather and irrigate the gardens between the cages at the same time.

I have had considerable problems with my own youngsters chewing the clips traditionally used to hold these cages together. This has progressed in many of the stronger male birds to chewing and breaking of welded mesh as strong as 2.5mm thickness. This destructive tendency has always only started when they are over 2 years of age and has not been seen in our younger birds. They seem to be very inquisitive and will explore every nook and cranny of their aviary and chew on anything that catches their eye. In

the case of the clips and the wire, this ultimately proved to be fatal. Initially I removed all the clips and threaded a single strand of wire to hold the cages together. The blighters used their beaks like side-cutters and had this in pieces in no time. Round about the same time a number of the birds started to look scruffy and to pluck, yet foolishly it did not occur to me that this had anything to do with the welded mesh and I instead focused on their diet. Only after a number of these birds died did I discover that their zinc levels were sky high. They had actually been chronically poisoned from the gradual build-up in their systems from chewing all the galvanized cage clips and the welded mesh. No galvanized wire is ever used to secure anything in their aviaries and perches are slotted into V-shaped holding brackets that are pop riveted onto the cage with the rivet concealed by the perch itself.

I have since built a row of suspended aviaries specifically for the Great Bills using 3.2mm diameter stainless-steel welded mesh, so thankfully that problem will no recur.

Veterinary Examinations

It has been my observation in injecting Great Bills that their skin is much tougher than those of many other species of parrots. The area on the side of the neck above the clavicular airspace where one can normally easily blow the plumage away in most parrots is more densely feathered in Great Bills. I use this area to locate the jugular vein for venopuncture and their thick down seems to make this task a little harder in this species. Non-migratory microchip transponders are inserted into the left side of the neck and not into the pectoral muscles, of all my breeding stock. Many opinions have been aired and published on this topic. I personally feel that the pectoral insertion route is too traumatic. Why stab a massive needle into the biggest and most important muscle on the bird when it can simply be popped under the skin? I was the first aviculturist to use microchips as an identification tool in my birds in South Africa and in 12 years have never had any problems whatsoever with the neck insertion site. Unlike the pectoral route that requires the bird to be anaesthetized and sutured, the bird is simply immobilized by firmly holding and the chip being inserted into the extended neck. On a few occasions during annual veterinary examinations, I have experienced malfunction of the transponder itself and after confirming, using a radiograph that the chip is in fact still there, have simply inserted another one.

All my birds are routinely treated with anthelmintics twice yearly. The Great Bills are housed in aviaries suspended off the ground and so do not recontaminate themselves with eggs from the aviary floor. However they do seem to often become infested with tapeworms and I can only assume that the vectors are some or other tiny insect that the birds are accidentally eating with their food. I need to send a faecal sample to the entomologists to see if they can identify the specific parasite and in that way determine the likely intermediate host. I suspect tiny ants/flies/cockroaches et al as vectors but have yet to prove this.

Diet

Great Bills are avian gourmants and the highlights of their day are feeding times. They are particularly fond of nectar-rich flowers and blossoms and I provide these freshly

picked every day when available in my garden. Bottle-brush, Honey-suckle (*Tecomaria*), Coral Tree (*Erythrina sp*), Hibiscus and Pentas are favorites. Berries like *Cotoneaster* & *Pyracantha* (hawthorn) and all Palm dates are totally relished. They discard the fleshy covering to the Palm dates and crack the actual nuts open. Branches of fruit trees like peach, mulberry, guava etc are stripped of their bark and shredded. Sugar cane is also a favorite. I also provide pine cones and coconut shells for extra distraction and amusement.

The diet itself consists of soaked sunflower, oats, barley, wheat, white and red sorghum, boiled peas and beans, especially mung beans with whole boiled maize. I have seen birds that have been on diets too high in protein developing kidney problems and even gout and the protein-rich peas and beans may need to be rationed. Large varieties of fresh vegetables and fruits are also fed with the most likely combination being apple, pear, carrots, green beans, spinach, broccoli, pumpkin, squash, beetroot, sweet potato, tomato, kiwi, melons, papaya, mango, peppers and chillies to name a few. Spirulina and Barley Grass extracts are added to the diet in a rotation with commercial vitamin and mineral supplements.

Behavior

The adult Great Bills do not have a strong pair bond as seen in many parrots and are much like the Eclectus parrots in terms of behavior. The female is dominant and although slighter in size and with a noticeably smaller mandible than the male, she wears the pants. The birds are usually seen sitting at opposite ends of the same perch and the female often keeps the male away from the area close to the nest. If he should land on the same perch, she blazes her eyes at him and simply has to make a small move towards him and he is off to the next perch.

In the young hand-raised individuals I have seen the males standing their ground to a greater extent, but am sure that with time the girls will gain the upper hand in the house.

Being a rather pugnacious gal the female Great Bill has to be somewhat charmed by the male before there is any likelihood of sex being on the cards. She also needs to be in the mood for his gallant efforts to be noticed otherwise she pays no attention and may even chase him off with a mock lunge. However if she is in her active breeding cycle his elaborate courtship display will likely seduce her. He begins by stretching himself upright with sudden and almost jerk-like sideways motions of his head and accompanied by a loud double-syllable call he plays for her attention. The first part of the call is deeper and slightly extended and the second part is much higher pitched and very quick. The male paces up and down the perch during this first part of the courtship while the female sits still and blazes her iris at him. This encourages him and he then begins to sway his upper body and in particular his head in a figure-of-eight motion with his beak pointing upwards and his head backwards. She usually makes quiet gargling sounds at this point that he seems to either interpret as "piss-off I'm not in the mood" or "ok hurry up, this better not take long" If it is the former he quickly loses his momentum and goes back to being the hen-pecked husband. The latter encourages him to sidle up closer to his Harridan wife and then to begin coiling his head in the classic regurgitation movement. Mrs. Greedy-guts can't resist a free meal and moves across to him with her

head tucked low into her shoulders pretending to be submissive and soliciting food. He then feeds her for quite a while and just when you think that he can't possibly have any more food left in his crop, she goes into the acceptance squat and if he has any nerves left at this point he climbs onto her back and they have sex. He treads from both sides, often balancing with one or both wings drooped and the act itself may last for many minutes. Once they are done he jumps off and she regains her upright composure and seems to pretend nothing has happened. In fact if he doesn't move off she is likely to blaze her eyes at him in a display of post-coital dominance. Mating is followed by egg laying within 2-3 weeks, during which time the female spends increasing amounts of time in the nest. The male seems curious to see where she has disappeared to but does not venture into the nest as a rule until the chicks have hatched and the Ogre needs a hand with feeding the family. The female broods the chicks until they are starting to get their thick white down at which point she starts to leave them unattended. Cold weather at this point may necessitate pulling the chicks to prevent them getting chilled at night. I use 12mm Seamless stainless steel bands for ringing when the pic feathers are about to appear on the wings.

I use vertically positioned wooden nesting boxes placed on the outside of the aviary in the undercover section on the adjacent side to the food bowls. Both birds initially chew the area around the entrance hole but don't do much further damage. I provide eucalyptus chips mixed with some building sand as nesting substrate which the female shuffles around and chews into small pieces. She also does some chewing to the inside of the box while she is preparing the nest but stops rearranging the nest just prior to actual laying. At this point she can easily be seen to be carrying an egg by the swelling in her lower belly and vent area.

The male is fairly attentive while his mate is incubating, which she does alone and is quick to alarm call if something perturbs him. They are also vocal at night if they are disturbed and will alarm call. The Great Bill alarm call is a repetitive, amplified sun-conure type vocalization. The defensive female guarding her nest will utter a warning growl if disturbed by nest inspections and blasé her pupils in warning.

I have found the Great Bills females to be similar to the more dominant individuals seen often in eclectic females.

For this reason I attempted to use the eclectic as foster parents and this has been a resounding success. The orange beak of the young Great bills does not agitate the female eclectic, and I can only presume she associates them with the males of her own species. Certain eclectic females in my collection turn nasty on their newly-fledged daughters when they want to lay again and may even seriously damage them in unprovoked attacks. This is a real nuisance when the parent-raised chicks are fledged but not yet weaned. This behavior has never been seen when they have raised female Great bills and I can only assume the orange beak colour pacifies the broody & moody eclectic hen.

In the markets in Indonesia I noticed the Great Bills being kept individually and was told that it was because they fought. An importer in SA mentioned that he had attempted to

ship some 10 birds together from Singapore but had to hastily unpack them when they started climbing into one another shortly after having been packed into their travel crate.

Once the youngsters are weaned whether parent raised or handraised, I like to put them into small socializing groups for a few months in aviaries adjacent to adult pairs. After a few months in these groups a social hierarchy develops and care must be taken to ensure that no-one is getting bullied in the group. A dominant bird in the group often becomes a food-hog and prevents the others from eating at leisure and this causes subtle stress. It's common knowledge that stress in any form suppresses the immune system and any compromise of this natural protection mechanism may lead to the proliferation of opportunistic pathogens resulting in disease conditions. Once 12 months of age, I place the young birds in pairs with their future mates and breeding can be expected from 3-4 years of age.

Conclusion

I have one pair of Great Bills belonging to friends who had them for 10 years without success. They bred here in 2001 for the first time.

My friend Merridy Ballinger lost half her Great Bills last year when a virulent bacterial infection spread through her aviaries. Demotivated and despairing she generously offered the 5 survivors to me on a breeding loan, which have finally been incorporated into my flock after an intensive period of disease tests and quarantine. Our combined 23 individuals with 6 other non-breeding birds that we are aware of scattered across the country, bring the total number in South Africa to a measly 29.

I need to seriously focus on increasing our productivity, keeping back more youngsters in order to build up the breeding stock to at least 15 pairs. I continue to attempt to incorporate the 6 birds outside of my collection into some sort of breeding programme but unfortunately still meet with resistance. Having the largest number of the striking *Tanygnathus megalorynchos* places a firm responsibility on my shoulders and I will endeavour to do my utmost to secure the future of this striking and independent bird on our continent.

Finally, I would be most grateful to hear from and to correspond with other breeders of the species and to hear of their own trials and tribulations. ☺

This article was submitted by William Horsfield and given permission of usage is granted to The Tanygnathus Society only. For further information or questions please use the follow contact information:

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