HAND-REARING & SOCIALISING PROTOCOL

SOUTHERN GROUND-HORNBILL CHICKS
(Bucorvus leadbeateri)

For use in the 2012/2013 Breeding Season
Due to be updated mid-2013
This document is compiled by various hand-rearers from several institutions (see section 1. 8.) and is based on over 15 years of experience hand-rearing chicks harvested both from the wild and from captive-bred pairs. The document covers complete protocols for housing and feeding Southern Ground-Hornbill chicks and covers any problems that may arise. This is followed by a day-by-day table of what to expect and several hand-rearing records are included from a number of institutions that should act as a daily guideline for development and needs of the chicks from hatching to fledging.

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Section 2

A generic daily guideline based on hand-rearing records for healthy chicks for over a decade.

Section 3

Case-study chicks from several institutions to act as a guideline for what to expect in terms of the chicks development and needs from hatching to fledging.
SECTION 1: THE BASICS OF REARING SOUTHERN GROUND-HORNBIFFS CHICKS

1. REASONS FOR HAND-RAISING SOUTHERN GROUND-HORNBIFFS

You must have a clear understanding of the reasons why you’re hand-raising the birds within your institution and what their intended futures will be. They could be for:

- “Show” or Ambassador birds;
- birds intended for captive breeding either to ensure the survival of the species or as a commercial endeavour,
- to encourage “double clutching” in captive breeding pairs or;
- simply because one has been unable to get the adult birds to rear their chicks in captivity
- “second” chicks from the wild have been harvested for rearing with a view to contribute to the conservation of the species through both captive breeding and reintroduction to the wild.

If the bird is destined for reintroduction/release then the method of release will be an important factor to consider (introduction to wild group/established tame group/with a shepherd/using conditioned response to noise, etc). The future of the bird will also influence what sort of socializing is required and regardless of the destiny of the bird the aim should always be for as healthy a bird as possible. Taking short-cuts will lead to an inferior-quality chick and this reduces it chances of being a successful release or captive breeder. It is very important to be well prepared; particularly if large numbers of chicks are to be reared at the same time as they are ‘high maintenance birds to rear. It is vital to be committed to the entire process for the full three months it takes them to fledging age.

It is also important to know the natural history of the species when rearing any bird and this information is readily available. Relevant information is that the brooding female leaves the nest between day 15 – 20 and the fledging period is about 86 days. Nest cameras have captured more information and this is being analyzed to provide more insights that may enhance the rearing process.

To ensure successful rearing it is recommended to be in contact with someone who has already reared ground-hornbills successfully. It is worth a visit to several rearers to see how they set things up and to discuss any issues they have had to deal with. Prepare well in advance and do everything possible to not work with birds when you are stressed.
2. IMPRINTING, SOCIALISATION AND CONDITIONING

Natural imprinting (i.e. on the same species) results in normal/ healthy/correct behaviour and is a combination of exposure to mainly visual and auditory stimuli. Different aspects of behaviour will be affected at different ages for each species (there is extensive information for humans and dogs but very little is known of the details of “mental development” stages in ground-hornbills).

When hand-rearing it is not just a matter of avoiding malimprinting (on humans), the chick must also learn its own species’ communication and social cues to ensure it can be a successful breeder/provider/protector later in life and so the use of puppets and one-way mirrors has limited effect other than avoiding malimprinting. Birds that were reared using “ghosts” were found to respond to the silhouettes of people or even the shadows of people. A chick that is already human imprinted bird may still make an excellent parent/show bird, and could be used as a surrogate parent for chicks; this would resolve any future malimprinting problems.

It is important to note that imprinting is more marked in “hungry” chicks.

Rearing with a resident group of hornbills will expose the chicks to their own species and is certainly better than rearing in isolation. Where not possible a chick of another (but preferably similar) species might help. Where a chick must be hand-reared but “tameness” is to be avoided it will help to:

- get the chick exposed to ONLY one person to ensure that it does not approach “strange” people; or
- all rearers involved wear a specific costume.

Where the chick is going to be kept tame in captivity or used as an ambassador bird it is important to get the chick used to the stimuli it will encounter throughout its life. This should happen from as early an age as possible. Release birds will also need to learn survival skills and develop good physical fitness/flight ability and this must be kept in mind. They would also need to be taught fear of predators (and maybe of humans too, depending on the threats they would be exposed to). Degree of imprinting is variable according to the rearing that has been done.

One should use the imprinting to advantage according to what one requires the bird for, however the malimprinting of SGH on humans should always be avoided as these birds are large, well armed, potentially aggressive birds. There are several cases of increased aggression leading to injury when the birds reach sexual maturity, fuelled by hormonal changes. In the wild these birds would move away from humans but in captivity humans may become a target for the aggression. There may also be a reduction in breeding success, and social adaptation (aggression or fear towards or simple “misfit’ behaviour) to other SGH, as found in other hornbill species.

It is recommended that chicks are reared only in facilities that can allow for the exposure to adult SGH throughout their development as described below.

Socialization to adults is done from the earliest possible stage. The chicks can hear the adults calling from day one (and likely even while still in the egg). When the group is calling the brooder lid should be opened to allow for this. The chicks are put in a secure cage or “puppy pen” for sunlight
and this is slowly positioned closer and closer to the adult enclosure. If there are any signs of stress the cage can be moved further away for a while and then gradually returned.¹

Once the chick’s eyes open the chick should have short visits to the adults. From day 15 they should spend the mornings and/or afternoons against the fence of the adults’ enclosure. Once the chicks are standing they are kept in an enclosure next to the adults and once they can walk they are moved to an area adjoining the camp where they can learn to perch. At about fledging (day 86) they can be placed into the adult’s aviary but must be monitored carefully for assimilation into the group, as SGH, like most social animals, will kill each other with alarming speed.

Allowing captive pairs to rear their own chicks

Allowing captive pairs to rear their own chicks allows for the ideal socialization of the chicks and is best for both rearing captive breeders and release birds. This has been achieved with much success by Mpumalanga Parks and Tourism at Loskop Reserve. A female, ‘Kruger’, was hand-reared at the National Zoological Gardens in Pretoria in the 1980’s. Prior to moving the bird to Loskop (in Aug 2004) the female had laid eggs but had broken them on every occasion. The female had hospitalized a few people in other institutions and was moved to Loskop for pairing with a wild fledged 6 year old male. This pair immediately started breeding and by the 1st December 2004 the first chick hatched and was parent reared; the second chick was not reared. This pair has reared a chick every year for eight years showing the immense productivity available from breeding captive pairs. It is important to note that food preparation for parents rearing their own chicks is the same as for hand-rearing the birds (this is very labour intensive but vital – see the feeding section below for more details).

¹ At Loskop: When the chicks are about 15 days they are put into a ‘puppy pen’ next to the aviary in which the adult birds are kept. This is done during the day from 10:00-18:00 starting at 10 minutes and gradually increasing the time, the bird gets accustomed to the outdoors (otherwise it gets intimidated by new environment). Enclose the chicks to protect them from predators. A puppy pen however does not allow the adults to feed the chick and so another plan needs to be made to allow interaction and feeding between adults and the chick. Monitor the chick if it shows stress and take it back to where it is comfortable and try again the next day. Once the birds start to stand they are transferred into a passage way/introduction camp which runs next to the aviary where they learn to walk and perch (the perches are only a few centimetres off the ground as the chick cannot fly well yet).
3. HYGIENE

HYGIENE
It is very important to keep the birds clean. After each feeding use a warm, moist piece of gauze to wipe away any food that may have collected on the beak, face, head or anywhere else on the chick. Dry them completely so they will not get chilled. Feathers will not grow in areas that are covered with dried-on food! Clean hands before each feed and place all utensils used for feeding in the sun after washing daily/ OR Milton is great for disinfecting syringes and plastic food dishes or other feeding utensils. For all metal instruments used Biocide, Virkon-S or Hibitane are good products to use. Read directions carefully when using the latter products. If instruments are left to long in disinfectant they may rust.

There is a huge difference between captive and natural situations and so general hygiene principles must apply. SGH chicks seem to be particularly susceptible to infections, particularly if there are any stress factors present. It is essential to keep the birds, bedding, feeding utensils and surroundings clean to prevent disease transmission/bacterial build up. Any food or dirt remaining on the feathers or bill can lead to an underlying bacterial/fungal growth that causes damage or discomfort for the chick. If any chemical disinfectants are used then be aware of what these are and what threats they may pose.

If the SGHs come from various sources or have been housed with different species there is a risk of disease. Prey/food species may also host disease; particularly if you are the origin is uncertified. Be aware of these in terms of the risk they may pose to the chicks. Prepare all food hygienically. There is usually a lot of food wastage that may attract flies so ensure waste is removed from the site and disposed of regularly.

The system used at Loskop is to wash everything well. All utensils used to feed the chicks are put out in the sunlight to dry/disinfect. NO disinfectants/sterilizers/antiseptics are used for cleaning, but hygienic practices are followed with everything being kept clean at all times. To date no chicks have been lost to disease and no chicks have ever received antibiotics.
4. **FOOD**

**Food quality and quantity**
These are probably the most critical factors for rearing SGH chicks. One needs exceptional quality food, and *lots* of it! If you’re planning to rear a few chicks you will need to plan well in advance to ensure an adequate supply of fresh, good quality food is available at the required time. SGH food must not be bought at the supermarket as this may be less fresh, full of hormones or worse salmonella and other potentially harmful bacteria. A common problem is running out of a proper selection of fresh healthy food and trying to get by with “shortcuts” or with only one type of food for several days. Give the greatest possible variety of food types to ensure the most balanced diet possible, as one food type will compensate for any nutritional deficiencies in another. Although the species is carnivorous it does not eat JUST meat; do not remove the organ and beware of over supplementing. **No supplements** were used in the past and no bone problems were experienced (some rearers now use Beefee, Calsup and Protexin). If the diet is comprised of healthy fresh varied food supplements are not required and can lead to other nutritional imbalances.

*Years of experience have shown that regardless of what other food items are chosen from the list below it is highly recommended that mice (pinkies/fuzzies etc – depending on age of chick) MUST be included in every feed or the birds will lose condition.*

**Food items used:**
- Adult and baby mice (“pinkies” and “fuzzies”, *skinned* and feet, tails and muzzles removed for the first week as it makes skinning easier);
- Rats and rat pups (convenient once the chick is a bit larger);
- Rabbits, use white meat and internal organs;
- Doves and pigeons (check carcass for any sign of disease!);
- Chicks, day old and reared for a few days to a few weeks (at around 7 days these are calcium-rich);
- Game birds;
- Snake/Reptiles (remove heads if venomous);
- Mealworms, giant mealworms, crickets and flying ants;
- Aviplus or Pronutro
- Yolk of boiled egg;
- Assorted commercial meat is used as a last resort, in combination with the above;
- Red meat is best kept to an minimum.
- Dog food (or low iron pellets?) – these must be soaked and of good quality; and
- A variety of fruit such as grapes and paw paw/ papaya can also be given.

The quality of any animals raised to feed the chicks on **cannot** be compromised. They must be kept in good hygienic conditions and fed optimally to ensure the best possible quality feed. If they are nutritionally deficient this will be passed on to the chicks. Stress must be kept to a minimum as this will make them susceptible to disease which may be transmitted to the SGH. You need to keep both
a mouse colony and rear chicks and probably mealworms too to ensure there is no drop in the quality of the food.

Food preparation
Fresh or defrosted frozen food may be used for feeding the SGH chicks, although the freezing and thawing process may affect the nutrient quality of the food. This also has hygiene implications if not carried out properly. For very young chicks freshly killed food is preferable.

Food must be freshly killed before each feed, especially for young chicks and reused for no more than one feed. Day old chicks must be quickly frozen after slaughter (lay the chicks out on a flat surface to ensure quick cooling down of the carcasses as a bag of chicks is insulated by the down and carcasses will start decomposing). Defrost chicks on a tray overnight on newspaper, preferably in a refrigerator. Sometimes you may need to place the chicks in sun to warm them. Some may have started decomposing so select the food carefully! The food should be room temperature at feeding.

When captive adults have a chick in the nest all food must be prepared for them in the same way as you would prepare food for hand-rearing. This is a tremendously laborious process but remember in captivity these birds have no other way of accessing the correct food for their chicks and if you do not provide it they will respond to the chick’s begging reflex by feeding whatever is available in the enclosure – like twigs or leaves – and this is dangerous for the chick.

Feeding
The following equipment is required for feeding hand-reared chicks.

- Tweezers (blunt end)
- Scissors - to cut the food
- Syringes - for administration of fluids
- Stainless steel bowl - to warm food
- Plates - for bird to self feed

All must be cleaned immediately after use and placed in the sun to dry.

Hold food items with blunt tweezers above the chicks head and allow it to grasp the food firmly. Feeding is only done when the chick is actively begging (lifting its head up and vocalizing) and has defecated since the last feed. This gives an indication that the bird is both strong and hungry and able to eat. If there is no active begging reflex then there is a possibility of aspiration or that the bird is in some way unable to deal with food, or is not ready for the next feed. If the chick is stressed due to being too hot or cool, “fright” factors, disease, etc., give it fluids until stabilized and then feed. If the ambient temperature is too hot/cold then do not feed. Correct the temperature, allow the chick to stabilize and then feed it. Always ensure it has defecated and monitor the quality

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2 It has been discussed, due to adult birds macerating the chicks food by banging it in the soil, that soil might be considered for incorporation into the diet. Possible termite mound soil (gut pH) or vermicompost that would include probiotics, possibly diatomaceous earth would help with mineral supply.
and quantity of the faeces before feeding. It can happen that the chick is defecating but insufficient amounts caused by a lack of fluids, which may be problematic later.

Feeding frequency should be done according to the daily recommendations (see Section 2 and 3). However each bird exhibits individual needs, particularly if it has been through a “stress period”. It is best to adjust to the individual. If the chick does not respond with a good feeding response it should be left and tried again in an hour. Sometimes chicks will skip a meal but it is no reason for concern. It is beneficial to give the gut a break to empty out overnight (it also helps if the person rearing has had some sleep!).

If in crisis or rushed (meetings, family needs etc) give Ringer’s Lactate for a feed and go back to feed the chick later. It is always better to skip a meal and have a slightly hungry bird than to make some other mistake (burn it /drop it/overfeed it/choke it) due to trying to feed in haste. However do not let this become the norm or the bird will become underweight and will develop behavioural and immunity problems.

How? The first time a newly hatched chick is fed should be in the evening to allow the gut adjustment time before the next feed and allow defecation. Chicks should then be fed from 5am (an early start allows for time crises during the day) or at least give Ringer’s Lactate after weighing, if time is an issue.

The chick is taken out of brooder in a bowl for feeds and placed at a comfortable height to work with. Paper is changed after each feed to allow monitoring of faecal output (and to avoid heart failure in the rearers when mistaking blood from previous feed for something from the chicks!)

**Pinkies:** when feeding pinkies, remove feet/tail/muzzle (to facilitate skinning and ensure no small pieces of skin are left), leave guts and milk bag (stomach). If fresh pinkies are being used they should be freshly removed from their mothers and not stressed or starved or dehydrated before use! Frozen pinkies are difficult to skin as the skin breaks up when pressure is applied. Frozen pinkies are useful once skin and fur have been introduced into their diet.

**Day old chicks:** Remove skin, yolk, wings, all feather-down, the feet and head. Use the liver and heart and chop/crush the chicks into smaller sections a meat cleaver is optimal. Cockerels that have been reared for a few days or a few weeks can provide bigger parcels of food and are therefore less laborious (they also don’t have the yolk sac that needs to be removed). They can also be fed freshly killed (and fresh is critical for chicks in their first week). Ground Hornbill chicks are able to digest cartilage from a very early age, but impact on bone.
5. HOUSING OF GROUND HORNBILL CHICKS

Brooders
Brooders should be secure and temperature and humidity controlled. Whatever housing is used be sure you are familiar with it before the chicks arrive!

Temperature and Humidity
Controlling the temperature of their environment is important as SGH chicks remain featherless for an extended period. Temperature should be above 36°C for first week and not lower than 32°C. As the chick gets older it can tolerate greater temperature changes. Chicks must not be housed at high temperatures after days 15 – 20 as this is when the female leaves the nest for longer periods and chicks can regulate own temperature. She only returns to the nest at night.

SGHs breed in fairly warm/humid areas and so humidity must be kept high (65 – 88% seems to be optimal). Any loss in humidity must be compensated for; this is particularly critical in SGH as they normally only breed after the first rains. A dramatic improvement has been observed in the bird’s skin after the first rains as they do not flake/peel. Whatever water is lost through the skin needs to be replaced in the diet. In addition a dish with water should be supplied to ensure the humidity remains high but this must be out of reach or have paper towel/sponges in it. A plastic container filled with wet cotton wool/ sponges (as used at Johannesburg Zoo) with a perforated lid will provide a safe source of humidity.

It is important to not neglect airflow. This is important (as the brooders air can become very foul) but should not be extreme (fans can desiccate the chick and the noise may not be ideal).

Safety and stress
One should look at all possible aspects of safety:

- burns from heating lamps/coils being within reach of the bird;
- drowning/overheating;
- eating junk;
- attacking each other;
- predators, particularly once the chick is larger and is being housed outdoors - the enclosure should be predator proof.

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3 At Loskop the position of the brooder is not moved once the chicks are in it. Passed experianc has shown that it is not ideal to travel with the chicks.

A water bath system is used with an aquarium heater. Temperature control can be a bit tricky and they have to be checked for leaks and functional thermostats at beginning of each season but they are silent, there is no light clicking on and off, there is no constant buzz of a fan and there is no constant flow of air leading to dehydration of the chick. A second thermometer is kept in the brooder to check the temperature and this is monitored at each feed in addition to observing the bird’s comfort level. The humidity stops the skin peeling. Even in the brooders the effect of environmental humidity (arrival of rains) cannot be ignored and there is a noticeable difference with their eyes opening earlier and easier if the chick hatches once the rains have arrived.
Noise may play a role in stressing the chicks and so do not house with other noisy species and rearers should avoid making any noises. Some background noise however may help to get them adjusted to their captive situation and disguise other noises. If they’ve been kept in total silence and there is suddenly an unexpected noise they may be stressed.

It is unquestionable that chronic stress will influence the chick metabolism, through the presence of cortisol, which influences bone formation and lowers their resistance to bacterial and other infections.

Keep only ONE chick per brooder as they show aggression towards each other and even if they cannot grab each other the other chick’s presence may be stressful. These chicks exhibit a phenomenon known as passive siblicide as opposed to active siblicide in which the younger bird would have been actively attacked and killed.

The chicks will need to be kept warm with an infra-red lamp at one end of the tub once they have outgrown the brooder. The tub should be positioned so that the bird can adjust its distance to the lamp to maintain a comfortable temperature.

Sunshine and exercise
These are both critical for good physical and mental development. It is important to build their exposure to the sun up steadily. Put the birds in the sun briefly from day 2 (weather permitting) in dappled shade or early morning/late afternoon sunlight. Monitor the chick continually for comfort/stress/overheating. Birds show an appreciation for being put out in the sun. Chicks that have NOT been exposed to sunlight will spread out their wings and sunbathe immediately when given the chance and there’s no good reason NOT to put the birds out in the sun.

From day one the chick must be encouraged to exercise as much as possible. It is a mistake to make life easy for the chick and plenty of movement must be part of what’s expected from the chick. Remember to make the chick work for its food by moving around the bowl if facing the wrong way. There is no harm in deliberately facing the chick in the wrong direction and asking it to turn around for food.

Substrate
It is not normal for a chick to be on a flat surface; it can cause pressure sores and due to the birds feet slipping can cause splayed legs and retard the bird’s development as it cannot support itself. The substrate must be kept clean and changed regularly. Ensure that it cannot or will not be eaten (this should not happen if chick is well fed and not excessively bored) and cannot entangle the birds feet or neck. When the bird gets bigger it is moved onto fresh, green leaves (these also assist in raising the humidity) and eventually twigs. Initially house the chick in a bowl, into which it fits.

A non-slip layer is placed with a layer of tissue/kitchen roll and another non-slip layer of so that the bird’s legs do not splay out (and the paper does not slip out from under bird). Paper has a rough (indented) pattern and it is further scrunched into a ball before being used and extra paper balls are placed to use up extra space in bowl when necessary. Keep a second bowl in the brooder, after each feed place bird in clean bowl; this way it is already warmed up and one can monitor faecal output at each meal.
snugly, within the brooder. Sometimes chicks fall out of their bowls, get their heads stuck over the bowl or between the bowl and brooder, move up into a corner and may eventually tip themselves over, this is where it is necessary to be within earshot to hear the distress calls and be able to correct the situation. From the small bowls the chick progresses to a 2 lt plastic tub and then onto a larger area of the brooder. Increase the amount of space given to the chick gradually. Should the chick show signs of stress return it to what it is used to and try again in a few days. They should be kept on an absorbent and non-slip substrate. The chick eventually progresses to being kept on leaves in a thick layer.

According to the temperature and comfort level of the chick the brooder lid is gradually lifted allowing it to adjust to environmental temperature. Then the chick is moved into an open tub, which allows better ventilation, with a heating/Infra-Red lamp. The lamp should not be able to come in contact with the chick when in a standing position.
6. OBSERVATION AND DATA

It is important to spend time observing the chick daily; preferably at each feed (see appendix 1 for a sample data sheet). The chick’s behavior will give some indication of its state of health. Accurate records should be kept at each feed of appetite, habitus e.g. vocal, getting up to be fed, shivering etc., and faeces.

This is important as you will need a reference as:
- you may run into problems and can then refer back to see what changes may have occurred;
- a handover from one person to the next doing the rearing;
- this is of great value to others in the future who may need to refer to this information.

- **Posture** will indicate if the chick is hot (lying flat with legs stretched out behind it) or cold (huddled up with wings and legs tucked in tightly).
- **Vocalization** may indicate that it is hungry, in pain or fearful, but might also be due to mal-imprinting which may cause the bird to vocalize excessively.
- **Weight** is one of the most critical indicators of the chick’s progress. Weighing should be done every morning before the first feed. This should be recorded and compared to the “normal” growth curve (See appendix 2). If the chick falls behind the “normal” curve (due to disease or underfeeding) it should not be forced up to the normal growth curve, but allowed to follow a similar growth curve from present weight. In the case of extreme problem chicks they have simply been allowed to dictate their own food requirements (with an experienced rearer).
- **Body condition** should also be noted. This can be recorded by taking regular photographs of the chick, preferably against an object to give an idea of scale. The development growth and stages can be compared with other chicks.

The **feather development** of chicks is important as it affects not only flight but also temperature insulation, waterproofing, synthesis of Vitamin D and predator avoidance. It is vital to ensure feathers remain in peak condition - the chick should be able to preen and damage to feathers should be avoided. “Fret marks” (weak sections along the feather) are caused by stress factors at the time that section of feather was growing out. These marks make the feather susceptible to breakage and as each feather is supported by those alongside it if there is a weakness this may lead to a permanent situation of the new feathers breaking off. As SGH take a long time to moult this could have a negative effect, especially relevant in a bird intended for release.
7. TROUBLESHOOTING

**Dehydration:** SGH chicks are extremely susceptible to dehydration, as they would normally breed after the rains begin (hence the name ‘rain birds’). Environmental humidity plays a role and chicks hatched after the first rains tend to develop better and without the problems of delayed opening of the eyes and peeling skin, which inhibits the eruption of the feathers. Clearly visible, puffed up **subcutaneous airbags or neck pouches** indicate good hydration. If these are deflated against the throat it indicates a problem. Dehydration may lead to constipation/impaction and even kidney damage and gout and brooders must be set up to minimize water loss. To correct for dehydration give oral fluids and increase the environmental humidity. If the chick appears dehydrated then **REHYDRATE THE BIRD BEFORE FEEDING!** Injections are to be avoided in dehydrated chicks as they cause extensive bruising and fluids should rather be replaced orally.

**Impaction:** This will be recognized if faecal output is monitored at all times. The faeces should be well formed not watery or pasty. There should be a different distinction between the uric acid and the faeces. The uric acid should be white while the faeces is dark in colour. The faecal may be green just after hatching but will change after a day or two. The colour of the faecal content may change depending on the diet. Some chicks are very active and it may happen that they smear the faeces around the bowl which may give the impression that the chick has diarrhea. Most chicks will defecate just after a feed or during the feed. Time spent waiting for the chick to defecate is not wasted.

Impaction may be caused by the wrong type of roughage/food consistency, gut stasis due to stress/temperature or may indicate general disease and dehydration. Giving fluids (Ringers Lactate Solution) to help clear the obstruction should be done first. If this does not work then administer **Duphalac.**

**Metabolic Bone Problems:** This can occur due to the rapid rate of development of these birds. Combinations of diet/exercise/exposure to sunshine play a critical role in correct bone development. Problems seen include bent or fractured bones or complete lack of development of various skeletal structures. In some cases the birds seem healthy until a critical point is reached after which they rapidly develop multiple fractures and become unable to stand or experience difficulty breathing. Chronic stress, with accompanying high cortisol levels, will also affect bone density/metabolism and may have played a role in some chicks that developed bone problems but were fed the correct diet.

**Aspiration of food** may happen due to careless/hurried feeding or a bird that is not in a state to eat due to incorrect environmental temperature, weakness or disease. In addition if a chick is left to get too hungry then it eats too fast, which may also cause this problem. If giving fluids bird must be able to swallow and a chick must **ONLY BE FED WHEN IT SHOWS AN ACTIVE BEGGING REFLEX.**

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5 Duphalac dehydrates the bird further (by drawing fluid out of the body into the gut to help voiding of the gut) so it is advised to ensure the bird is well hydrated before treatment and fluid intake is increased to replace the loss. Duphalac syrup contains lactulose (4-O-β-D-galactopyranosyl-D-fructofuranose) 3,3g/ 5ml. 1-2ml given orally repeat after 2 hrs if no faeces seen.
**Growth problems**: Growing too slowly or too fast can lead to problems and the growth chart really helps to give a guideline to what is normal. Underweight chicks may become excessively vocal and will eat inappropriate objects. An underweight chick has no reserves to fall back on should it be compromised through stress, cold or disease. If a chick goes quiet simply check its growth curve; it may simply be contented, not sick. Sandoz

**Deformities**: These may be congenital or environmental. Be aware of how you feed as holding the bird, especially during feeding, even gently, may physically damage the beak or head. Cases have been seen of chicks unable to stand or if able to stand and walk have deformed toe structures. This has been corrected if seen early enough by placing the legs in braces. The general thought is that if the chicks don’t have enough space to move around in as they are growing the lack of exercise causes the toes to be deformed. It is important that from a very young age the chicks are given the space and opportunity to move around as much as possible. Chicks should not be “cared for” too well and not over crowded at any stage.

**Quality of chicks**: One needs to be aware that chances of success are affected by the actual quality of the egg/chick that you are start off with. Factors that influence the health of the chick to start with include: the diet of parents and early care and incubation; and for wild harvested chicks careful monitoring (keeping the egg warm and still if handled), a timely harvest (within two days) and careful transportation (monitoring for dehydration, temperature and humidity).
This protocol was compiled from over a decade of hand-rearing experience of ground-hornbill chicks.

If you would like to contact any of the rearers please find their contacts below*:

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<th>Name</th>
<th>Institution</th>
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</tr>
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<tbody>
<tr>
<td>Delecia Gunn*</td>
<td>Mpumalanga Tourism &amp; Parks Agency</td>
<td>R.S.A.</td>
<td><a href="mailto:mark@loskop.co.za">mark@loskop.co.za</a></td>
</tr>
<tr>
<td>Shaun Wilkinson*</td>
<td>Montecasino Bird Gardens</td>
<td>R.S.A.</td>
<td><a href="mailto:shaun@montebg.co.za">shaun@montebg.co.za</a></td>
</tr>
<tr>
<td>Lara Jordan*</td>
<td>Johannesburg Zoo</td>
<td>R.S.A.</td>
<td><a href="mailto:lara.jordan@jhbzoo.org.za">lara.jordan@jhbzoo.org.za</a></td>
</tr>
<tr>
<td>Christine Giannone*</td>
<td>Seaworld</td>
<td>U.S.A.</td>
<td><a href="mailto:christineg0831@yahoo.com">christineg0831@yahoo.com</a></td>
</tr>
<tr>
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<td>Montecasino Bird Gardens</td>
<td>R.S.A.</td>
<td><a href="mailto:joanne@montebg.co.za">joanne@montebg.co.za</a></td>
</tr>
<tr>
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<td>Montecasino Bird Gardens</td>
<td>R.S.A.</td>
<td><a href="mailto:moya@montebg.co.za">moya@montebg.co.za</a></td>
</tr>
<tr>
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<td>Johannesburg Zoo</td>
<td>R.S.A.</td>
<td><a href="mailto:elaine.bratt@jhbzoo.org.za">elaine.bratt@jhbzoo.org.za</a></td>
</tr>
<tr>
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<td>Mabula Ground Hornbill Project</td>
<td>U.K.</td>
<td><a href="mailto:annturner2010@gmail.com">annturner2010@gmail.com</a></td>
</tr>
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<td>R.S.A.</td>
<td><a href="mailto:dee.dewaal@gmail.com">dee.dewaal@gmail.com</a></td>
</tr>
<tr>
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<td>U.S.A.</td>
<td><a href="mailto:DSweet@sandiegozoo.org">DSweet@sandiegozoo.org</a></td>
</tr>
<tr>
<td>Jane Finch</td>
<td>Cricket St. Thomas</td>
<td>U.K.</td>
<td><a href="mailto:peapod777@hotmail.com">peapod777@hotmail.com</a></td>
</tr>
<tr>
<td>Jacqui Rankin</td>
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</tr>
<tr>
<td>Hendri Coetzee</td>
<td>North West University</td>
<td>R.S.A.</td>
<td><a href="mailto:hc.researchlogistics@gmail.com">hc.researchlogistics@gmail.com</a></td>
</tr>
</tbody>
</table>

*Still rearing at present and thus have current skills.
Growth curves showing mean mass at day x since hatching for a total of 25 chicks.

Of these 20 are birds that were reared with few issues (green circles), 3 were chicks that were a problem arose but the chicks were pulled through (blue circles) and 2 chicks that didn’t make it (red circles). Until day 16 there is very little difference between any of the chicks.
HANDREARING RECORD SHEET
Southern Ground-Hornbill (*Bucorvus leadbeateri*)

<table>
<thead>
<tr>
<th>Sex:</th>
<th>ID:</th>
<th>Hand-rearer:</th>
</tr>
</thead>
<tbody>
<tr>
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<table>
<thead>
<tr>
<th>Origin:</th>
<th>Date of Birth:</th>
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<table>
<thead>
<tr>
<th>History:</th>
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<tbody>
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<table>
<thead>
<tr>
<th>Food:</th>
<th>Date</th>
<th>Time</th>
<th>Weight (g)</th>
<th>Faeces</th>
<th>Urine</th>
<th>Habitus</th>
<th>Intake</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
</tbody>
</table>
## Chick ID: Nkoszi

### Hatch Date: 10 Oct 06

#### Date: 28/11/2006

<table>
<thead>
<tr>
<th>TIME</th>
<th>AMT FOOD</th>
<th>AMT FLUID</th>
<th>Feeding Response</th>
<th>BeeFee Powder</th>
<th>Calciuim Powder</th>
<th>Codliver Oil</th>
<th>Sun:</th>
</tr>
</thead>
<tbody>
<tr>
<td>0800</td>
<td>11.3g</td>
<td>3rd Il</td>
<td>GFL/F</td>
<td>Yes</td>
<td>Yes</td>
<td>1 drop</td>
<td>07h30 to 16h45</td>
</tr>
</tbody>
</table>

### Comments:

Feeding: Quick now sitting up and swallowing. Takes long to feed but going much better.

Development / Condition:

---

## Chick ID: Nkoszi

### Hatch Date: 10 Oct 06

#### Date: 29/11/2006

<table>
<thead>
<tr>
<th>TIME</th>
<th>AMT FOOD</th>
<th>AMT FLUID</th>
<th>Feeding Response</th>
<th>BeeFee Powder</th>
<th>Calciuim Powder</th>
<th>Codliver Oil</th>
<th>Sun:</th>
</tr>
</thead>
<tbody>
<tr>
<td>0800</td>
<td>58g</td>
<td>3rd Il</td>
<td>PFL/F</td>
<td>Yes</td>
<td>Yes</td>
<td>1 drop</td>
<td>07h30 to 16h45</td>
</tr>
</tbody>
</table>

### Comments:

Feeding: Did not want to eat breakfast. Kept lying down again.

Development / Condition:
# SECTION 2: GENERIC GUIDELINES FOR SOUTHERN GROUND HORNBILL

**Based on a decade of experience (2003-2011)**

**Common Name:** Southern Ground Hornbill  
**Scientific Name:** *Bucorvus leadbeateri*

**Incubation Period:** 37-43 days  
**Nestling Phase:** 86 days (12 weeks)

**Abbreviations:** RL = Ringer’s Lactate; ºC = Degrees Celsius; SQ = sub-cutaneous

<table>
<thead>
<tr>
<th>DAY</th>
<th>BROODER/TEMP.</th>
<th>FREQ.</th>
<th>DIET</th>
<th>INTAKE</th>
<th>MISC</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>35.0ºC – 36.0ºC</td>
<td>12-24 hours post-hatch</td>
<td>Ringers Lactate (RL) only.</td>
<td>1 ml Every 2 hr</td>
<td>Hatch blind, naked, w/ pink skin. Seal should be treated w/ Iodine/Betadine Egg tooth present. Asleep ~90% of time. <strong>Monitor faecal output daily!</strong> Chicks should faecal and pass urates after each feeding. Faeces are dark green and contain solids; urates are white. <strong>Begin sunning - 5 mins/day but not direct sun to ensure the chick is warm.</strong></td>
</tr>
<tr>
<td></td>
<td>Drop 1ºC/day</td>
<td>No talking when feeding chicks! Play background tape of natural sounds in rearing room.</td>
<td>If chick is cold, do not feed! Allow chick time to warm up in brooder for about 15-30 minutes before giving RL.</td>
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<tr>
<td></td>
<td>Small tubs with water and/or sponges to prevent drowning.</td>
<td>Every 2hr (7x day)</td>
<td>Pinkie mice (newborn mouse); skinned, w/out legs and tail. Moisten pinkie w/ RL; if required supplements can be added daily.</td>
<td><strong>20% of body weight</strong>*</td>
<td>Air sacs observed on shoulder - if chick is dehydrated air sacs will be deflated as will the skin on the throat Ensure chick is active - exercise is important – you must make the chick work for food</td>
</tr>
<tr>
<td></td>
<td>If humidity is high then chick should not peel badly - avoid gels and only use oils for flaky skin as gels inhibit the growth of feathers.</td>
<td>Chick will lift head, gape and chirp while giving a feeding Give chick more RL if chick gives a drinking response or has a tantrum when syringe is removed. Chicks require large amounts of fluid - be careful not to over hydrate.</td>
<td>Whole skinned pinkies; no legs or tail Meal worms can be added but may be passed undigested. Flying ants are very useful as a source of food -they can be frozen and</td>
<td><strong>25% of body weight</strong></td>
<td>Skin starts to change color (dark purple), but throat and mouth remain pink. Vocalizations may begin.</td>
</tr>
<tr>
<td>3</td>
<td>34.0ºC</td>
<td>Every 3hr (5x day)</td>
<td></td>
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</tr>
<tr>
<td>4</td>
<td>33.0ºC</td>
<td>Whole skinned pinkies; no legs or tail Meal worms can be added but may be passed undigested. Flying ants are very useful as a source of food -they can be frozen and</td>
<td></td>
<td><strong>30% of body weight</strong></td>
<td>Start to see dry flaky skin. Vocalizations may begin.</td>
</tr>
<tr>
<td>Day</td>
<td>Temperature</td>
<td>Action</td>
<td>Feeding Instructions</td>
<td></td>
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<tr>
<td>5</td>
<td>32.0°C</td>
<td>Consider varying diet w/in first week by adding more natural food items, such as frogs, lizards, snakes, etc. (Meat only, no skin, bones, tail, or legs) Natural food items fed to young chicks must be thoroughly cleaned of all debris and prepped accordingly! Good brand of dog food soaked in warm water can be introduced - ½ pellet to start increasing to 5-8 pellets later. <strong>Be very cautious; watch for impaction!</strong></td>
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<tr>
<td>7</td>
<td>30.0°C</td>
<td>Change to fuzzies (week-old mice). 1-3 day old rat pups can also be fed—intro of small amount of fur; skinned, w/out legs and tail; moistened w/ RL.</td>
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<tr>
<td>8</td>
<td>29.0°C – 30.0°C</td>
<td>Every 4hr (4x day)</td>
<td>Day old chicks can be added to diet remove fluff and head. Cut whole chick up with a meat cleaver. SGH chicks seem to be able to digest cartilage but not bones.</td>
<td></td>
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<tr>
<td>9</td>
<td>28.0°C – 29.0°C</td>
<td>Put chicks out next to adult camp for short periods once eyes start opening. Ensure that chick is comfortable - not hot or cold. If adults show an interest in feeding chick ensure that what they feed will not cause impaction.</td>
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<tr>
<td>11</td>
<td>28.0°C</td>
<td>Move to brooder box w/ newspaper, non slip and green leaves during day + brooder at night. Night brooder should have the same substrate.</td>
<td>Yolk of boiled egg can be added.</td>
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<tr>
<td>12</td>
<td>27.0°C</td>
<td>Change bedding daily; move chicks to boxes or plastic crates during day back to brooder at night. As much time to be spent outside as possible near adults.</td>
<td>Very young rat pups whole fuzzies; red meat meal worms flying ants, crickets etc. moistened w/RL.</td>
<td></td>
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<tr>
<td>13</td>
<td>26.0°C</td>
<td>Add mice meat w/ crushed rib bones. No sharp pieces, must be smooth!</td>
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<tr>
<td>15-16</td>
<td>25.0°C</td>
<td>Female leaves the nest day 15-20 chicks can regulate own heat to certain degree.</td>
<td>Add dove (breast meat only; completely de-boned) or alternate food items per feeding (mice, chicken etc.)</td>
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<tr>
<td>18-20</td>
<td>24.0°C</td>
<td>Moved to plastic tubs at day 20; Infrared lamps provided for heat; Place lamps at one end of crate</td>
<td>Add small pieces of mouse pelt, 5mm² gradually ↑ to 1cm² over next several days until chick is eating a whole mouse by day 30.</td>
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</table>

**35% of body weight** SQ pinning visible. Ensure that tub holding chick is big enough - allow tub to grow with chick to ensure exercise. **Eye slits forming. Feather quills emerging. Dorsal air sac fully developed.** **Eye slits both eyes.** **40% of body weight** **Eyes ½ open or 1 eye ½ open; eager eaters at this age!** **If temperatures outside is low avoid stressing the chicks - rather return them to heat.** **Pin feathers emerging.** **Eyes fully open; eye lashes may be emerging; sitting upright during feedings.**
<table>
<thead>
<tr>
<th>Day Range</th>
<th>Ambient Temp</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>21-23</td>
<td>23.0°C</td>
<td>Every 6hr (2x) Offer food in a bowl to chick; encourage self-feeding. Once chicks feed themselves they may become reluctant to pick dog food - feed with the tweezers. Legs strong and well developed; eye lashes more conspicuous.</td>
</tr>
<tr>
<td>22-25</td>
<td>22.0°C Outside in Boma next to adult birds. Soak pellets ~2 hrs. prior to feeding in warm water. <em>Dry dog food only!</em> 45% of body weight Sunning in boma next to adults.</td>
<td></td>
</tr>
<tr>
<td>23-27</td>
<td>21.0°C Change to small adult mice; (cut skin into strips on mouse. Add skinned and de-piped grapes; 2 grapes/chick cut in halves. Chicks can be offered food on a small flat bowl to encourage self-feeding. Leave bowl for a few minutes in front of chick. Some chicks get the idea fast while others will learn by making a mess. Remember to feed left over food.</td>
<td></td>
</tr>
<tr>
<td>28-30</td>
<td>19.0°C Ambient Temp should be maintained at 19.0°C in order to make smooth transition w/out heat. Change to small adult whole mice; (½ skinned); Leave a food dish between feedings. Add mealworms; 2/feeding. Feathers covering most of body; Chick weights +/- 1kg</td>
<td></td>
</tr>
<tr>
<td>33</td>
<td>No heat inside Change to (small-med.) adult whole mice; (½ skinned); Leave a food dish between feedings. ½ skinned and unskinned mice Ad lib Transfer before birds begin standing.</td>
<td></td>
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<tr>
<td>35-38</td>
<td>Outside all day; inside at night 3-day old Chicks Chick may begin standing</td>
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<tr>
<td>40-45</td>
<td>30 Whole mice (not gutted) at day 50  Whole chicks at day 56 -60 Primary blood feathers may begin to develop.</td>
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<tr>
<td>46-51</td>
<td>60 Feeding Schedule: 0730; 1200; 1630 Change to 1-week old chicks; freshly killed, skinned, gutted, no head or legs and small rib bones crushed into small pieces. Do not use chicks over 10 days old! Chicks fed by group through the wire. Never leave food in boma – attract wild animals. First Casting May need to assist chicks w/ feeding</td>
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<tr>
<td>60</td>
<td>56</td>
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<tr>
<td>Time</td>
<td>Event Description</td>
<td>Action</td>
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<tr>
<td>68-70</td>
<td>Outside in Boma during day in upright dustbins w/ soft leaf lining; inside at night.</td>
<td>Chicks will drop 1 feed a day, but never the same one.</td>
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<tr>
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<td>Begin adding skin and small feathers of 1-week old chicks to diet.</td>
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<tr>
<td>78-84</td>
<td>Outside in Boma at night in upright dustbins.</td>
<td>Change to chopped (1-week old to 10-day old) chicks in small pieces.</td>
</tr>
<tr>
<td>84-90</td>
<td>Dustbins placed on side in Boma during the day; so chicks have access to hopping out onto low branches.</td>
<td><strong>Feeding Schedule:</strong> 0730 and 1630</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Feeding by group through wire of boma; difficult to assess how much food chicks are receiving.</td>
</tr>
<tr>
<td>91+</td>
<td>Larger chick in boma w/ 1 adult bird.</td>
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</tr>
<tr>
<td>114-120</td>
<td>Chicks out of Boma during day; inside Boma at night.</td>
<td></td>
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</tbody>
</table>

**REMEMBER:**
- The aim is strong, wild, non-imprinted birds that will be able to survive in the wilds and keep out of harm’s way which is invariably humans so **avoid the temptation to rear them as one would for a captive situation.** Even if they end up remaining in a captive situation they are more likely to be socially healthy and productive if they are not imprinted on humans.
- Hornbill chicks will **impact** on fur, feathers, bones, insect exoskeletons, dirt, sand, and rocks. **Make all changes to roughage gradually!**
- **Air sacs** develop subcutaneously on these birds within a couple of days and are not cause for alarm.
- **Monitoring of faecal output is crucial** throughout the entire rearing process and acts as an early warning system of any issues.
- Try and **speak to an experienced hand-rearer** often as this allows one to pick up problems earlier while mitigation is still possible and makes you feel part of a wider effort. Share what you are learning too with other rearers.
- **Even low grade stress will compromise their immune systems** – make sure the rearing situation is as close to that in the wild as possible and if you are having a stressed day spend as little time with the chicks as possible.
- **It is vital to keep accurate rearing records** to help you and any advisors correctly assess the chick should a problem arise.
- **ENJOY!** These are intelligent, long-lived, highly social birds and are a vital part of our savannah ecosystems and you are playing a vital role in helping them remain there.
PROBLEMS & SOLUTIONS QUICK GUIDE
(for more in-depth information refer to the full protocol)

ASPIRATION - inhalation of fluid into airways

**Signs** -
Bubbles coming from nares
Difficulty breathing; gasping, open mouth breathing, and clicking sound when breathing
Depression

**Causes** -
Inhalation of fluids or food while feeding (feeding too much, too fast)
Reluctant feeding response or no feeding response
Feeding unaccustomed water

**Treatment** -
If the chick inhales a small amount of fluid **stop feeding immediately**. Watch to see if any bubbles appear at the nares, wipe nares carefully and gently w/ cotton swab or cotton gauze. Make sure chick stays warm, place back in brooder and monitor closely for difficulty breathing, listen carefully for any thick clicking sounds when breathing. Once chick is stable resume feeding schedule. **Feeding should only take place when there is an active begging behaviour. If large amounts of fluid or food are inhaled, the bird may die from asphyxiation. Aggressive antibiotic and steroid therapy may be required to keep chick alive.**

DEHYDRATION – loss of body fluids

**Signs** -
Sunken eyes
Decreased skin elasticity; specifically skin of the eyelids; (skin tents – stays up for more than 1-2 seconds when pinched)
Tacky mucous membranes (white strands in mouth)
Wrinkled abdomen
Lethargy
Depression

**Causes** -
Exposure to environment
Lack of fluids
Temperature of brooder is too high
Animal has diarrhea

**Treatment** -
Stop feedings. Never feed an animal that is dehydrated because it cannot digest the food. Give warm rehydration fluids (Ringer’s Lactate) orally. For week-old chicks; 1ml of warm RL each hour until hydration improves and chick resumes feeding response. When administering oral fluids, be very cautious to not aspirate the chick. Drip the fluids one drop at a time onto chicks beak, do not force beak open! If hydration doesn’t improve and chick continues to be unresponsive and very weak, then warm Subcutaneous (SQ) fluids may be given at 5% of chick’s body weight.

**Fluids** -
Ringer’s Lactate solution or a similar balanced isotonic solution warmed to (38.0C to 39.0C) is recommended for fluid replacement and shock therapy. Using warm fluids is particularly important with neonates to prevent hypothermia and shock. **Emergency formula – 1tsp. Salt and 3 tsp. in 500 ml of warm water.**
HYPERTHERMIA – high body temperature

**Signs** -
- Panting and rapid breathing
- Holding wings stretched out and one of both legs extended to the rear.
- Animal feels hot
- Weakness and loss of muscle coordination
- Tremors and or seizures

**Causes** -
- Exposure to high temperatures
- High humidity and/or inadequate ventilation for an extended period
- Direct rays of sun (during neonatal stage)

**Treatment** -
- Move animal to a cool, shaded area (if out in the field). If in the rearing room, check brooder and make sure temp. is correct. If too high remove chick immediately and transfer to another brooder.
- Stop feedings and check for dehydration. If chick is responsive give oral fluids.
- If the chick is unresponsive then place its legs and feet in cool water and if necessary wet feathers down to the skin with water or alcohol. Check rectal temperature every 10 minutes until reading is normal.
- Monitor chick frequently until its condition is stable and allow chick to rest quietly until all signs are normal.

IMPACTION/ NOT DEFECATING –

**Signs** –
- No faeces seen in cage or after feeding *(a healthy chick will faecal after each feeding).*
- Distended abdomen; Anorexia; Depression; Regurgitation
- Lack of appetite to no appetite; Lethargy

**Causes** –
- Foreign material ingestion (sand, grit, rock)
- Roughage added to diet too quickly (fur, feathers, insect exoskeletons, and bones)
- Food substances that are difficult to digest (large pieces of animal tissues, fruit)
- Not enough moisture in the diet
- Dehydration; Intestinal blockage; faecal impaction

**Treatment** -
- Stop feedings. If chick is giving a feeding response; give only warm oral fluids to stimulate faecaling. Do not feed again until chick has passed a faecal. A laxative of lactulose (Duphalac) may be given as well to help stimulate faecaling. Can try massaging abdomen to encourage faecaling as well as using a warm damp cotton gauze wiped gently over the vent/cloaca to encourage faecaling. May also try K-Y Surgical Lube Jelly w/ small cotton Q-tip and very carefully insert Q-tip just into the opening of the vent/cloaca of the chick and very gently move Q-tip in one circular motion to stimulate chick to faecal. Do not try this on own unless someone experienced has shown you how to perform this procedure.
SECTION 3

CASE STUDIES

The following case-studies provide some actual day-by-day examples of birds that have been reared in South Africa and survived. More will be added with time and we would like you to submit any other hand-rearing records to add to a growing database. This will allow for in-depth analysis that will help not just our efforts in South Africa but in institutions across the world. It will also be an important reference for other endangered hornbill species where harvest of a redundant chick is possible.

Case Study 1: This bird was a ‘no problem’ bird and thus an excellent reference. This bird is due for release in 2013.

Case Study 2: This bird was not doing well and was moved to a more experienced hand-rearer to pull through successfully. If your chick is struggling this will show you how it is possible to pull a ‘problem’ bird through.

Case Study 3: This was a successful rearing and another good reference.

The following abbreviations were used:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Word</th>
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<tbody>
<tr>
<td>bf</td>
<td>Beefee</td>
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<tr>
<td>cal</td>
<td>Calcium</td>
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<tr>
<td>ccH₂O</td>
<td>Water</td>
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<tr>
<td>ccRl or mLRL</td>
<td>ml Ringers Lactate (Rl)</td>
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<tr>
<td>Ch</td>
<td>chicken = DOC</td>
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<tr>
<td>Doc</td>
<td>Day Old Chick</td>
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<td>Fants</td>
<td>Flying ants</td>
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<td>FFR</td>
<td>Fair feeding response</td>
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<td>GFR</td>
<td>Good feeding response</td>
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<tr>
<td>PFR</td>
<td>Poor feeding response</td>
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<td>Pk</td>
<td>Pinky</td>
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<td>Pred</td>
<td>Predator supplement</td>
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<td>pron</td>
<td>Pronutro</td>
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<tr>
<td>prox</td>
<td>Probiotics - protexin</td>
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<tr>
<td>RP</td>
<td>rat pup</td>
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<tr>
<td>SDB</td>
<td>Soaked dog biscuit</td>
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<tr>
<td>SPF</td>
<td>Soaked puppy food</td>
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<tr>
<td>Rab</td>
<td>rabbit meat</td>
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<tr>
<td>Sandoz</td>
<td>Calcium Fizzy</td>
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<tr>
<td>Bfly</td>
<td>butterfly</td>
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CASE STUDY 1
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<tr>
<th>Date</th>
<th>Day</th>
<th>Housed?</th>
<th>Weight (g)</th>
<th>No. of Feeds</th>
<th>Time</th>
<th>Intake</th>
<th>Habitus</th>
<th>Faeces</th>
<th>Urine</th>
<th>General comments</th>
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<td>1</td>
<td>Brooder</td>
<td>70 g</td>
<td>1</td>
<td>08:00</td>
<td>2 Pinkies, Prox Vocal</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Chick collected from Letaba</td>
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<td>1 mlRl</td>
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<td>2 Pinkies, Prox Y</td>
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<td>08:30</td>
<td>1.6 mlRl</td>
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<td>bowl in brooder Y</td>
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<td>21:55</td>
<td>mlRl</td>
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<td>4</td>
<td>02:00</td>
<td>1 mlRl</td>
<td>GFR</td>
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<td>Fell out bowl, Very stressed</td>
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<td>3 mlRl</td>
<td>GFR</td>
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<td>08:00</td>
<td>2 Pinkies, 1 mlRl, Prox</td>
<td>GFR</td>
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<td>11:15</td>
<td>4 g Pinkies, 2 g Pinkies, 8 flying ants, 2mlRl</td>
<td>GFR</td>
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<td>13:45</td>
<td>1 g PK, 6 flying ants, Prox</td>
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<td>22:30</td>
<td>1 Pk, 0.5 mlRl</td>
<td>Not hungry, not really responding</td>
<td>Y</td>
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<tr>
<td>16-Dec-08</td>
<td>4 Brooder 90 g</td>
<td>6 06:30</td>
<td>2 NB Pinkies, 1 mlRl (peeling stopped) Vocal, GFR Y x 3 Y</td>
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<td></td>
<td>09:30</td>
<td>1 pup, Bf, 1 mlRl 4 g DOC organs, 2 mlRl GFR Y x 3 Y</td>
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<td>11:45</td>
<td>1.2 Do Pinkies, 1 mlRl GFR YY Y ? Y</td>
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<td>13:45</td>
<td>4 mlRl, Bf GFR, vocal Y ? Y Raining</td>
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<td>16:15</td>
<td>4 g Dk, Bf, 2 mlRl GFR Y Y Sunshine</td>
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<td>18:15</td>
<td>4 Flying ants GFR Y Y Took long to warm up</td>
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<td>22:30</td>
<td>4 Flying ants 4 DOC, Flying ants, 1 mlRl, Y bit</td>
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<td>17-Dec-08</td>
<td>5 Brooder 108 g</td>
<td>5 07:15</td>
<td>3 mlRl, Prox GFR mustard Y</td>
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<td>10:15</td>
<td>4 g Dk, Bf, 2 mlRl GFR Y Y Sunshine</td>
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<td>12:30</td>
<td>6 g DOC meat, 2 mlRl, Pron GFR Y Y Incubator very hot, lid open</td>
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<td>14:30</td>
<td>6 g DOC, Cal, 2.5 mlRl GFR</td>
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<td>17:15</td>
<td>12 Day PK, 1 mlRl GFR</td>
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<td>22:30</td>
<td>2 mlRl GFR</td>
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<tr>
<td>18-Dec-08</td>
<td>6 Brooder 128 g</td>
<td>5 06:00</td>
<td>3 mlRl GFR YY Y</td>
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<td>07:30</td>
<td>6g Pk x 3, 2 mlRl, fantx, Protx GFR YY Y</td>
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<td>10:00</td>
<td>8 g DOCs, mouse, 2.5 mlRl, Bf</td>
<td>GFR, drinks well Y Y</td>
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<tr>
<td>13:30</td>
<td>8 g DOC Pk mouse, 6 fant, 3 mlRI</td>
<td>GFR, thirsty gave H2O boiled. Y Y</td>
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<td>16:45</td>
<td>8 g Pk, Fants, 1 moth, 1 mlRI, 2 ml boiled H2O</td>
<td>GFR Y Y</td>
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<td>20:30</td>
<td>4 g Pk, cal, 3 mlRI, 1 moth</td>
<td>GFR Y Y</td>
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<td>Brooder, Incubator</td>
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<td>19-Dec-08 7 38 152 g</td>
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<tr>
<td>06:30</td>
<td>8 g Pk, 3 mlRI, Prox</td>
<td>Y Y Hot</td>
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<td>09:30</td>
<td>8 g Pk, DOC Pron, 4 mlRl</td>
<td>Y, Drinking well Y Y</td>
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<tr>
<td>12:30</td>
<td>8 g, Day old mice, 4 meal worms, 5 mlRI</td>
<td>Y, Drinking well Y, more??</td>
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<td>13:25</td>
<td>12 g DOC, 3 PK, cal, 1 ml H2O</td>
<td>Eyes slitting, cleaned and washed out.</td>
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<td>18:30</td>
<td>10 g Mice, DOC Pro</td>
<td>Y Y</td>
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<td>Sun, 10 min shade, Incubator</td>
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<td>20-Dec-08 8 5 off 176 g</td>
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<td>07:00</td>
<td>8 g Pk, 3 mlRI, Prox</td>
<td>GFR YY Y Hot</td>
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<td>10:00</td>
<td>12 g Pk, DOC Bf, 1 mlRl, 2 ml H2O</td>
<td>GFR Y Y</td>
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<td>13:05</td>
<td>moth</td>
<td>Y Y</td>
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<td>16:15</td>
<td>12 g Mice, 5 mlRI</td>
<td>GFR Y ? Y</td>
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<td>21-Dec-08</td>
<td>19:10</td>
<td>10 g Mice Pk, 1 soaked dog biscuit, Prox, 2 mlIR</td>
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<td>21-Dec-08</td>
<td>8 g Pk, meal worms, 3 mlIR</td>
<td>Y</td>
<td>Hot</td>
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<td>10:15</td>
<td>10 g Ch meat, 2 mlIR, 1 ml H₂O</td>
<td>Y</td>
<td>Skin peeling, Aloe ferox</td>
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<td>13:15</td>
<td>12 g Pk, 1/3 peeled grape, 1 ml H₂O, 2 mlIR</td>
<td>Y</td>
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<td>17:00</td>
<td>12 g DOC meat, cal, 1 ml H₂O, 2 mlIR (oil)</td>
<td>Y</td>
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<td></td>
<td>21:30</td>
<td>8 g DOC Bf, 2 mlIR</td>
<td>Y</td>
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<td>22-Dec-08</td>
<td>07:00</td>
<td>12 g Pk, Prox, 3 mlIR</td>
<td>Y</td>
<td>Hot</td>
<td></td>
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<td></td>
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<tr>
<td></td>
<td>10:30</td>
<td>12 DOC 5 mlIR, Pron</td>
<td>Y</td>
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<tr>
<td></td>
<td>14:30</td>
<td>12 Mice, 2 mlIR, H₂O</td>
<td>Y</td>
<td></td>
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<tr>
<td></td>
<td>18:00</td>
<td>12 g Mice, 4 mlIR</td>
<td>Y</td>
<td></td>
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<tr>
<td></td>
<td>22:00</td>
<td>14 g MRK, kidney, 1.5 mlIR, Rabbit liver</td>
<td>GFR</td>
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<tr>
<td>23-Dec-08</td>
<td>05:30</td>
<td>6 g Rab organs, 1 Pk, 1 mlIR</td>
<td>GFR</td>
<td>Very hot</td>
<td></td>
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</table>
Sun,
changed
bowl to whole 1/2 of incubator

10:00 16 g DOC prox, 1 mlRl GFR Y Y
14 g Pk, DOC, 6 mlRl
13:30
1 ml H2O
14 g Pk, DOC, Bf, 2
17:00 H2O, 2 mlRl GFR YY Y
22:15 1 New born rat pup Y Y

Brooder,
Incubator 38 C, chick very hot - Red light. 312 g

24-Dec-08 12 Red light. 312 g
6 01:30 6 mlRl, 2 H2O Rained
20 g DOC, Pk, moth, 6
06:30 mlRl
10:10 16 g Mice, Pro, 6 mlRl
14 g Pk, DOC, meal worm, moth, 3 mlRl
13:15 14 g Mice, DOC, meal worm, 3 mlRl Whole Incubator
Sun 17:30 14 g Mice, DOC Prox, GFR Y Y
22:30 12 g Mice, Pk, 3 mlRl GFR Y Y
25-Dec-08 13 Brooder 350 g
4 07:00 6 mlRl (oil) GFR Y Y Hot
11:00 20 g DOC Bf Y Y Y
<table>
<thead>
<tr>
<th>Date</th>
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<tr>
<td>26-Dec-08</td>
<td>14</td>
<td>390 g</td>
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<td>27-Dec-08</td>
<td>15</td>
<td>420 g</td>
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<td>28-Dec-08</td>
<td>16</td>
<td>470 g</td>
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<td>29-Dec-08</td>
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<table>
<thead>
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<th>Time</th>
<th>Weight</th>
<th>Mice, Cal, 3 mRI</th>
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<tbody>
<tr>
<td>14:45</td>
<td>18 g</td>
<td>Y</td>
</tr>
<tr>
<td>16:41</td>
<td>6 mL</td>
<td>Y</td>
</tr>
<tr>
<td>20:30</td>
<td>mL</td>
<td>Y</td>
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</table>

**Asleep on its back**

<table>
<thead>
<tr>
<th>Time</th>
<th>Weight</th>
<th>DOC, Bf, GFR</th>
</tr>
</thead>
<tbody>
<tr>
<td>21:53</td>
<td>mL</td>
<td>Y</td>
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</table>

| Eyes 1/2 open, pin feathers developing |

<table>
<thead>
<tr>
<th>Time</th>
<th>Weight</th>
<th>Mice, moths, Prox, 6 mL, Hot</th>
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<tbody>
<tr>
<td>10:36</td>
<td>26 g</td>
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</tr>
<tr>
<td>14:45</td>
<td>26 g</td>
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</tbody>
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| 24 g DOC mice, 3 mL, GFR |

| Eyes 1/2 open, pin feathers developing |

<table>
<thead>
<tr>
<th>Time</th>
<th>Weight</th>
<th>Mice, SDB, Cal, 3 mL, Cal GFR</th>
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<tbody>
<tr>
<td>11:40</td>
<td>26 g</td>
<td>Hot</td>
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| Turkey heart & liver, SDB |

| Sun |

<table>
<thead>
<tr>
<th>Time</th>
<th>Weight</th>
<th>Mice, DOC, mice, Bf, GFR</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:00</td>
<td>28 g</td>
<td>Rained</td>
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| Mice, DOCs, Cal, RI |

<table>
<thead>
<tr>
<th>Time</th>
<th>Weight</th>
<th>Mice, DOC mice, Pron, 6 mLRI, GFR</th>
</tr>
</thead>
<tbody>
<tr>
<td>12:15</td>
<td>32 g</td>
<td>Y</td>
</tr>
</tbody>
</table>

| Mice, Bf, DOCen, GFR |

<table>
<thead>
<tr>
<th>Time</th>
<th>Weight</th>
<th>DOC mice, rat pup, 6 mLRI, GFR</th>
</tr>
</thead>
<tbody>
<tr>
<td>15:46</td>
<td>34 g</td>
<td>Y</td>
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<p>| Eyes 1/2 open, pin feathers developing |</p>
<table>
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<tr>
<th>Date</th>
<th>Brooder</th>
<th>Weight</th>
<th>Meal Type</th>
<th>Time</th>
<th>Amount</th>
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<tr>
<td>30-Dec-08</td>
<td>18</td>
<td>590 g</td>
<td>38 g Rabbit meat, DOC, Bf, 3 mlRl</td>
<td>20:15</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>40 g Mice, DOC 6 mlRl</td>
<td>GFR</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td></td>
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<td></td>
<td>30 g Mice, Bones, cal, 9 mlRl</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>16 g Rabbit liver &amp; heart</td>
<td>GFR</td>
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<td>Y</td>
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<td>28 g Mice, bones chopped small</td>
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<tr>
<td>31-Dec-08</td>
<td>19</td>
<td>656 g</td>
<td>40 g DOC, mice, prox, Bf, 3 mlRl</td>
<td>08:00</td>
<td>Y</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>42 g Mice, Liver, heart, 3 mlRl</td>
<td>GFR</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td></td>
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<td></td>
<td>32 g Liver, DOCs Sun</td>
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<tr>
<td>01-Jan-09</td>
<td>20</td>
<td>706 g</td>
<td>36 g Mice, DOC Pro, Prox</td>
<td>09:25</td>
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<td>58 g DOC, Pro, 6 mlRl</td>
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<tr>
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<td>38 g Mice, cal, 3 mlRl</td>
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<tr>
<td>02-Jan-09</td>
<td>21</td>
<td>760 g</td>
<td>44 g Mice, DOC Prox, Bf</td>
<td>08:44</td>
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<td>38 g Mice Pk, 1 grasshopper, 3 mlRl, Pronutro</td>
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<td>30 g DOC GFR</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>46 g DOC, Rab, cal, 3 mlRl</td>
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<tr>
<td>Date</td>
<td>Brooder</td>
<td>Weight</td>
<td>Time</td>
<td>Action</td>
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<tr>
<td>03-Jan-09</td>
<td>22</td>
<td>828 g</td>
<td>09:30</td>
<td>40 g Mice, cricket, moth, Pron, 10 ml</td>
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<td>14:05</td>
<td>60 g DOC, Bf</td>
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<td>19:30</td>
<td>38 g Mice, Prox</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>22:43</td>
<td>(DOCs bad)</td>
<td>Feathers doing well, eyes are open.</td>
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<tr>
<td>04-Jan-09</td>
<td>23</td>
<td>894 g</td>
<td>09:00</td>
<td>64 g Liver, lungs, DOC, Mice, Prox</td>
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<td>16:00</td>
<td>40 g Mice, Bf (DOC bad)</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>22:18</td>
<td>30 g</td>
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<tr>
<td>05-Jan-09</td>
<td>24</td>
<td>904 g</td>
<td>09:17</td>
<td>68 g DOC, cal, RI food</td>
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<td>16:12</td>
<td>68 g Nice new DOCs</td>
<td>Sloppy</td>
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<td>22:30</td>
<td>62 g DOC Bf, No RI</td>
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<tr>
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<tr>
<td>06-Jan-09</td>
<td>25</td>
<td>990 g</td>
<td>08:30</td>
<td>32 g Ch</td>
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<td></td>
<td></td>
<td></td>
<td>12:23</td>
<td>78 g DOC Pro</td>
<td>Y</td>
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<td>16:28</td>
<td>26 g DOC Prox</td>
<td>Y</td>
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<td>19:13</td>
<td>92 g DOC Prox, Pro</td>
<td>Y, better</td>
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<tr>
<td>07-Jan-09</td>
<td>26</td>
<td>1064 g</td>
<td>08:30</td>
<td>78 g</td>
<td></td>
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<td>Fed by Finee, weight</td>
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<td>14:45</td>
<td>unknown</td>
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<td></td>
<td>21:30</td>
<td>74 g</td>
<td>Changed to leaves</td>
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<tr>
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<td>Brooder</td>
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</tr>
<tr>
<td>08-Jan-09</td>
<td>27</td>
<td>1142 g</td>
<td>09:00</td>
<td>102 g DOC mice, Prox</td>
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<td></td>
<td>HOT. Outside with adult (10:00 - 13:30)</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** DOCs bad refers to the quality of the food or care provided to the birds. GFR indicates growth or feeding rate. Sloppy indicates the health or behavior of the birds, with Y indicating a positive outcome or status.
<table>
<thead>
<tr>
<th>Date</th>
<th>Brooder</th>
<th>Weight</th>
<th>Time</th>
<th>Description</th>
<th>GFR</th>
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<tbody>
<tr>
<td>09-Jan-09</td>
<td>28</td>
<td>1248 g</td>
<td>08:00</td>
<td>50 g DOC mice, Prox</td>
<td>Y</td>
<td>Y</td>
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<td>10:00</td>
<td>48 g Mice</td>
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<tr>
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<td>13:00</td>
<td>84 g DOC rat pup, Bf</td>
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<td>15:26</td>
<td>104 g DOC Bf</td>
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<tr>
<td>10-Jan-09</td>
<td>29</td>
<td>1296 g</td>
<td>09:30</td>
<td>48 g Mice</td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>13:00</td>
<td>78 g DOC cal, spot ant</td>
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<tr>
<td>11-Jan-09</td>
<td>30</td>
<td>1382 g</td>
<td>08:04</td>
<td>46 g DOC Prox</td>
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<tr>
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<td>10:00</td>
<td>48 g Mice</td>
<td>Y</td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>15:26</td>
<td>104 g DOC Bf</td>
<td></td>
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</tr>
<tr>
<td>12-Jan-09</td>
<td>31</td>
<td>1462 g</td>
<td>11:25</td>
<td>124 g DOC Prox</td>
<td>Y</td>
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</tr>
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<td>15:15</td>
<td>110 g</td>
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<td></td>
<td>18:00</td>
<td>110 g</td>
<td>GFR</td>
<td>Y</td>
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<tr>
<td>13-Jan-09</td>
<td>32</td>
<td>1612 g</td>
<td>07:15</td>
<td>124 g DOC mice, Pk,</td>
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<td></td>
<td>13:00</td>
<td>124 g DOC mice, Bf</td>
<td></td>
<td></td>
</tr>
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<td></td>
<td>14:30</td>
<td>74 g Mice</td>
<td></td>
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<tr>
<td>14-Jan-09</td>
<td>33</td>
<td>1698 g</td>
<td>09:30</td>
<td>126 g DOC Prox</td>
<td>GFR</td>
<td>Y</td>
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<tr>
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<td></td>
<td>14:30</td>
<td>74 g Mice, Ch</td>
<td></td>
<td></td>
</tr>
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<td></td>
<td></td>
<td></td>
<td>20:30</td>
<td>30 g Mice</td>
<td></td>
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</tr>
<tr>
<td>Date</td>
<td>Brooder</td>
<td>Weight</td>
<td></td>
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<tr>
<td>15-Jan-09</td>
<td>34</td>
<td>1748 g</td>
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<td>16-Jan-09</td>
<td>35</td>
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<td>17-Jan-09</td>
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<td>19-Jan-09</td>
<td>37</td>
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<td>20-Jan-09</td>
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<tr>
<td>21-Jan-09</td>
<td>39</td>
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<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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</thead>
<tbody>
<tr>
<td>08:00</td>
<td>150 g DOC Prox</td>
</tr>
<tr>
<td>10:30</td>
<td>66 g DOC Bf</td>
</tr>
<tr>
<td>13:46</td>
<td>Feed at fence</td>
</tr>
<tr>
<td>19:05</td>
<td>154 g Ch</td>
</tr>
<tr>
<td>08:30</td>
<td>168 g DOC Bf</td>
</tr>
<tr>
<td>13:30</td>
<td>Mice, Pk, Fuzzie</td>
</tr>
<tr>
<td>07:30</td>
<td>194 g DOC Prox</td>
</tr>
<tr>
<td>14:00</td>
<td>6 DOCs</td>
</tr>
<tr>
<td>14:21</td>
<td>142 g DOC, dove</td>
</tr>
<tr>
<td>21:42</td>
<td>breast, Prox</td>
</tr>
<tr>
<td>09:31</td>
<td>20 g Dove breast</td>
</tr>
<tr>
<td></td>
<td>136 g DOC Prox fed</td>
</tr>
<tr>
<td>18:00</td>
<td>by Kruger</td>
</tr>
<tr>
<td>20:18</td>
<td>34 g Mice</td>
</tr>
</tbody>
</table>

Put out from 10:00 - 19:00 at fence

Very restless, slip on floor, unable to weigh - out crate all day, fed by adults x 3

Out all day with adults.
Standing for short periods, eating out bowl.
CASE STUDY 2
Rio (harvested from a wild nest) - a 'problem bird' - see how the experienced rearer used the bird weight per the growth curve to pull it back to where it needed to be. Even though the chick was on day 39 the weight on that day means it needed to receive the same treatment as a 22 day old bird.

<table>
<thead>
<tr>
<th>Date</th>
<th>Day</th>
<th>Rearer</th>
<th>Housed?</th>
<th>Weight (g)</th>
<th>No. of Feeds</th>
<th>Time</th>
<th>Intake</th>
<th>Habitus</th>
<th>Faeces</th>
<th>Urine</th>
<th>General comments</th>
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<tbody>
<tr>
<td>29-Dec-08</td>
<td>2</td>
<td>1</td>
<td>Brooder</td>
<td>70.0 g</td>
<td>7</td>
<td>06h00</td>
<td>2.50 g, 0.5 ccRl</td>
<td>Chick not eager to take or swallow ringers. First solid meal.</td>
<td>Y</td>
<td></td>
<td>No record of food items was made till the bird changed to the other hand-rearer.</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td>Chick better with fluids</td>
<td>Y</td>
<td></td>
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<td></td>
<td>GFR: shaking head a lot</td>
<td>Y</td>
<td></td>
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<td></td>
<td>GFR: shaking head a lot</td>
<td>Y</td>
<td></td>
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<td></td>
<td>GFR: shaking head a lot</td>
<td>Y</td>
<td></td>
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<td></td>
<td></td>
<td>GFR: Chick looked a bit hot - removed feather duster.</td>
<td>Y</td>
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<td></td>
<td></td>
<td>GFR</td>
<td>Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30-Dec-08</td>
<td>3</td>
<td>1</td>
<td>Brooder</td>
<td>85.60 g</td>
<td>7</td>
<td>06h00</td>
<td>3.40 g, 1ccRl, 3.00 g, 1ccRl, Probiotics</td>
<td>GFR: chick still struggling to swallow fluid.</td>
<td>Y</td>
<td></td>
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<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Lost of fecal</td>
<td>Y</td>
<td></td>
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<td>GFR</td>
<td>Y</td>
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<td></td>
<td>GFR</td>
<td>Y</td>
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<td></td>
<td></td>
<td>GFR</td>
<td>Y</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>GFR</td>
<td>Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>31-Dec-08</td>
<td>4</td>
<td></td>
<td>Brooder</td>
<td>101.30 g</td>
<td>7</td>
<td>06h00</td>
<td>4.00 g, 1ccRl</td>
<td>GFR</td>
<td>y</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
08h00  4.40 g, 1ccRl  GFR: but hard a hard time swallowing food, got fluids in slowly  y

10h00  4.40 g, 1ccRl  GFR: Still having a hard time swallowing, easily took fluids  y

12h00  4.40 g, 1ccRl  GFR: still having a hard time swallowing, got fluids in slowly.  y

14h00  4.40 g, 7ccRl  GFR: still having a hard time swallowing, got fluids in slowly.  y

16h00  4.40 g, 7ccRl  GFR: still having a hard time swallowing, got fluids in slowly.  y

18h00  4.40 g, 7ccRl  Small faeces, still having a hard time swallowing.  y

Chick dark, moved to a bigger bowl. Gave more fluids and changed to H2O.

01-Jan-09  5 1  Brooder  117.20 g  4
06h00  4.40 g, 1ccRl  GFR  Y
09h00  7.50 g, 2ccH2O  GFR  Y
09h00  7.50 g, 2ccH2O, Probiotics  GFR  Y
12h00  Probiotics  GFR, lots of fluid in faeces  Y
15:00  7.50 g, 2ccH2O  GFR  Y
<table>
<thead>
<tr>
<th>Date</th>
<th>Day</th>
<th>Brooder</th>
<th>Weight (g)</th>
<th>Feeding Times</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>02-Jan-09</td>
<td>6</td>
<td>Brooder</td>
<td>136.70</td>
<td>07h30, 2ccH₂O</td>
<td>Having a hard time swallowing, a bit cold on the underside</td>
</tr>
<tr>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10h15, 2ccH₂O, Cod liver</td>
<td>Much better swallowing this feed</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>13h15, 2ccH₂O, Calcium</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>16h15, 2ccH₂O, Probiotics</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>19h00, 2ccH₂O</td>
<td></td>
</tr>
<tr>
<td>03-Jan-09</td>
<td>7</td>
<td>Brooder</td>
<td>153.80</td>
<td>06h00, 8.00 g, 2ccH₂O</td>
<td>GFR</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>09h00, 9.50 g, 2ccH₂O, Cod liver</td>
<td>GFR</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12h00, 9.50 g, 2ccH₂O, Calcium</td>
<td>GFR</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>15h00, Probiotics</td>
<td>GFR: Begs before swallowing last food</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>18h00, 9.50 g, 2ccH₂O</td>
<td>GFR</td>
</tr>
</tbody>
</table>

Am the chick was very cold. Temp was down to 19 C. Turned on brooder at 05h30. Changed out bowls for warm dry bowls. Fed chicks when were warm.
<table>
<thead>
<tr>
<th>Date</th>
<th>Num</th>
<th>Brooder</th>
<th>Weight</th>
<th>AM</th>
<th>Time</th>
<th>Feeds</th>
</tr>
</thead>
<tbody>
<tr>
<td>04-Jan-09</td>
<td>8</td>
<td>Brooder</td>
<td>182.50 g</td>
<td>5</td>
<td>06h00</td>
<td>11.00 g, 2ccH2O, 11.00 g, 2ccH2O, Calcium</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>09h00</td>
<td>GFR: Sleeping till opened brooder then ate well.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12h00</td>
<td>Beefee 11.00 g, 2ccH2O, Cod</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>15h00</td>
<td>GFR: still begging for food after feed</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>18h00</td>
<td>GFR</td>
</tr>
<tr>
<td>05-Jan-09</td>
<td>9</td>
<td>Brooder</td>
<td>205.20 g</td>
<td>5</td>
<td>06h00</td>
<td>13.00 g, 2ccH2O, 13.00 g, 2ccH2O, Calcium</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>09h00</td>
<td>GFR</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12h00</td>
<td>Beefee 13.00 g, 2ccH2O, Cod</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>15h00</td>
<td>GFR: still begging for food after feed</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>18h00</td>
<td>GFR</td>
</tr>
</tbody>
</table>

This a.m. both scales did not want to work. Once we got a scale to work we weighed approx at 08h00 then subtracted a portion of a.m. feed to get the best estimate.

Overall feeds this bird will continue to beg loudly for food after each feed even though it has no more room for food.
<table>
<thead>
<tr>
<th>Date</th>
<th>Age</th>
<th>Brooder</th>
<th>Weight</th>
<th>06h00</th>
<th>09h00</th>
<th>12h00</th>
<th>15h00</th>
<th>18h00</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>06-Jan-09</td>
<td>10</td>
<td>Brooder</td>
<td>240.00 g</td>
<td>13.50, 2ccH2O, 14.60, 2ccH2O</td>
<td>14.60, 2ccH2O, Calcium</td>
<td>14.60, 2ccH2O, Beefee</td>
<td>14.60, 2ccH2O, Cod liver</td>
<td>14.60, 2ccH2O</td>
<td>GFR: great feed up and ready to eat</td>
</tr>
<tr>
<td>07-Jan-09</td>
<td>11</td>
<td>Brooder</td>
<td>274.70 g</td>
<td>16.00 g, 2ccH2O</td>
<td>16.00 g, 2ccH2O, Calcium</td>
<td>16.00 g, 2ccH2O, Beefee</td>
<td>16.00 g, 2ccH2O, Cod liver</td>
<td>16.00 g, 2ccH2O</td>
<td>GFR: ready to eat</td>
</tr>
<tr>
<td>08-Jan-09</td>
<td>12</td>
<td>Brooder</td>
<td>307.40 g</td>
<td>18.00 g, 2ccH2O, Probiotics</td>
<td>18.50 g, 2ccH2O, Calcium</td>
<td>GFR</td>
<td>GFR</td>
<td>GFR: hot in room/ brooder today Dee and Ann</td>
<td>Y</td>
</tr>
</tbody>
</table>

Moved this chick to the older white brooder between 15h00 - 18h00. Also moved chick to shredded paper substrate.

This chick continues to vocalize at a high pitch and screams after being fed. Overall feeds are good.
<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Weight</th>
<th>Feed</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>09-Jan-09</td>
<td>12h00</td>
<td>18.50 g</td>
<td>Beefee</td>
<td>GFR Y</td>
</tr>
<tr>
<td>09-Jan-09</td>
<td>15h00</td>
<td>18.50 g</td>
<td>liver</td>
<td>GFR Y</td>
</tr>
<tr>
<td>09-Jan-09</td>
<td>18h00</td>
<td>18.50 g</td>
<td>2ccH2O</td>
<td>GFR Y</td>
</tr>
<tr>
<td>10-Jan-09</td>
<td>06h00</td>
<td>22.30 g</td>
<td>Probiotics</td>
<td>31 g prepared but would not take all of it this a.m. Y</td>
</tr>
<tr>
<td>10-Jan-09</td>
<td>10h00</td>
<td>27.00 g</td>
<td>Calcium</td>
<td>Found undigested papaya and chicken in faeces Y</td>
</tr>
<tr>
<td>10-Jan-09</td>
<td>14h00</td>
<td>27.00 g</td>
<td>Cod liver</td>
<td>Ate all food well faeces was good. No indigestible material Y</td>
</tr>
<tr>
<td>10-Jan-09</td>
<td>18h00</td>
<td>20.00 g</td>
<td>Cod</td>
<td>A few pieces of undigested material in faeces. Did not have room for all food. Y</td>
</tr>
<tr>
<td>09-Jan-09</td>
<td>13 1</td>
<td>337.40 g</td>
<td>Brooder</td>
<td>Put onto 4 hourly feeds. On new bedding for night of shredded paper, paper towel, and non-slip kitchen/ rug mat.</td>
</tr>
<tr>
<td>10-Jan-09</td>
<td>14 1</td>
<td>356.10 g</td>
<td>Brooder</td>
<td>Overnight faeces still had undigested papaya and chicken in it. Started chick on kudu meat that was shaved finely at the 10h00 feed. Also, cut chicken finely and gave grape pieces instead of papaya.</td>
</tr>
<tr>
<td>Date</td>
<td>Time</td>
<td>Action</td>
<td>Weight Change</td>
<td>Remarks</td>
</tr>
<tr>
<td>------------</td>
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<td>------------------</td>
<td>---------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>10h00</td>
<td></td>
<td>Beefee</td>
<td>28.00 g</td>
<td>faeces is a bit brown and watery</td>
</tr>
<tr>
<td>14h00</td>
<td></td>
<td>Liver</td>
<td>22.80 g</td>
<td>faeces still a bit runny (could possibly be grapes?)</td>
</tr>
<tr>
<td>18h00</td>
<td></td>
<td>Calcium</td>
<td>23.90 g</td>
<td>Sat up for feed well</td>
</tr>
<tr>
<td>11-Jan-09</td>
<td>06h00</td>
<td>Probiotics</td>
<td>28.00 g</td>
<td>Chick only ate 26.7 g</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>10h00</td>
<td>Y</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Beefee</td>
<td>24.30 g</td>
<td>Chick settled before all the food was finished, just gave the rest of the fluids.</td>
</tr>
<tr>
<td></td>
<td>14h00</td>
<td>Calcium, Cod liver</td>
<td>16.50 g</td>
<td>Y</td>
</tr>
<tr>
<td>12-Jan-09</td>
<td>06h00</td>
<td>Probiotics</td>
<td>30.00 g</td>
<td>Noticed faeces at 09h00 watery and undigested food.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>00.00 g</td>
<td>Did not feed due to watery faeces and undigested food.</td>
</tr>
<tr>
<td></td>
<td>10h00</td>
<td>Liver</td>
<td></td>
<td>Y</td>
</tr>
</tbody>
</table>
14h00 25.00 g, 2ccH2O, Calcium, Cod Liver
27.60 g, 2ccH2O, Probiotics
Watery brown faeces again. Y
18h00 Some normal faeces at this feed. Y

13-Jan-09 17 1 Brooder 358.10 g 4
29.00 g, 2ccH2O, Probiotics
faeces was runny but brown and just a few undigested pieces of food. Y
10h00 28.80 g, 2ccH2O, Probiotics, Beefee
faeces still a bit runny but GFR. Y
14h00 28.80 g, 2ccH2O, Calcium, Cod liver
GFR. Y
18h00 28.80 g, 2ccH2O, Probiotics
GFR some of faeces was red from kudu meat. Y

14-Jan-09 18 1 Brooder 393.30 g 4
30.00 g, 2ccH2O, Probiotics
GFR Y
10h00 29.30 g, 2ccH2O, Beefee
GFR: a few undigested pieces still in faeces Y
14h00 29.30 g, 2ccH2O, Calcium, Cod liver
GFR Y
18h00 29.30 g, 2ccH2O, Probiotics
GFR: sits up well for feed Y

15-Jan-09 19 1 Brooder 393.40 g 4
31.00 g, 2ccH2O, Probiotics
GFR Y

Increased brooder temperature a bit for overnight due to colder temperature outside.
Half the food at each feed was made into a pulp to try and help digestion issues.
<table>
<thead>
<tr>
<th>Time</th>
<th>Weight</th>
<th>Feeding Schedule</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>10h00</td>
<td>35.50 g, 2ccH₂O, Beefee</td>
<td>Watery faeces at this feed</td>
<td>Y</td>
</tr>
<tr>
<td>14h00</td>
<td>35.50 g, 2ccH₂O, Calcium, Cod liver</td>
<td>Ate everything well</td>
<td>Y</td>
</tr>
<tr>
<td>18h00</td>
<td>35.50 g, 2ccH₂O, Probiotics</td>
<td>GFR</td>
<td></td>
</tr>
</tbody>
</table>

Brooder, Sun (10h05 - 11h10, app 29 C, did 10:20 feed outside) 429.00 g 4

<table>
<thead>
<tr>
<th>Time</th>
<th>Weight</th>
<th>Feeding Schedule</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>10h20</td>
<td>38.00 g, 2ccH₂O, Beefee</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14h10</td>
<td>38.00 g, 2ccH₂O, Calcium, Cod liver</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18h00</td>
<td>38.00 g, 2ccH₂O, Probiotics x 2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Chicks weight gain better today. Will keep on 35% body weight until weight/faeces improves. May be able to see light. Spoke to Dr. Michelle Burrows about undigested food in faeces, she said to add lots of Probiotics to each feed.
17-Jan-09  21  1  Brooder, Sun (09h00 - 10h10, then brought in for 10h20 feed).  431.40 g

<table>
<thead>
<tr>
<th>Time</th>
<th>Weight (g)</th>
<th>Fluid (cc)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>06h30</td>
<td>40.40 g, 2ccH₂O, Probiotics</td>
<td>FFR</td>
<td>Y</td>
</tr>
<tr>
<td>06h30</td>
<td>37.00 g, 2.5ccH₂O, Probiotics</td>
<td>FFR: Still bits of undigested chicken in faeces.</td>
<td>Y</td>
</tr>
<tr>
<td>10h20</td>
<td>35.00 g, 2ccH₂O, Probiotics</td>
<td>Slow to eat</td>
<td>Y</td>
</tr>
<tr>
<td>14h10</td>
<td>4.80 g, 2ccH₂O, Probiotics</td>
<td>Didn’t want to eat but gave fluids. Chick felt hot, temperature high today.</td>
<td>Y</td>
</tr>
<tr>
<td>18h00</td>
<td>28.70 g, 2ccH₂O, Probiotics</td>
<td>Continue with watery brown faeces with bits of undigested food.</td>
<td>Y</td>
</tr>
</tbody>
</table>

18-Jan-09  22  Brooder  417.10 g

<table>
<thead>
<tr>
<th>Time</th>
<th>Weight (g)</th>
<th>Fluid (cc)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>06h30</td>
<td>35.70 g, 2ccH₂O, Probiotics</td>
<td>Slow to wake up, very deflated.</td>
<td>Y</td>
</tr>
<tr>
<td>10h20</td>
<td>35.70 g, 2ccH₂O, Probiotics</td>
<td>Continue with watery brown faeces with bits of undigested food.</td>
<td>Y</td>
</tr>
<tr>
<td>14h10</td>
<td>15.70 g, 2ccH₂O, Probiotics</td>
<td>faeces a bit better and better eating at this feed.</td>
<td>Y</td>
</tr>
<tr>
<td>18h00</td>
<td>35.70 g, 2ccH₂O, Probiotics</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
19-Jan-09  23  1  Brooder  408.10 g  4  

- 06h30: 21.30 g, 2ccH₂O, Probiotics
- 06h30: 28.50 g, 2ccH₂O, Probiotics
- 10h20: 28.50 g, 2ccH₂O, Probiotics

Prepared 37 g, still deflated but wanting food just got tired during feed.  
FFR: got tired during feed but ate well.

- 12h00: 31.30 g, 3ccH₂O, Probiotics, Calcium
- 14h10: 31.30 g, 3ccH₂O, Probiotics
- 18h00: 33.70 g, 3ccH₂O, Probiotics

More vocal and ate well.  Food digested better in faeces.  
Slow to eat.  faeces runny brown but looking better.

Continue Baytril Day 2 of 5.  Received it at 06h30 feed and 18h00 feed.  09h00 - found a long tubular white/cream colour then dark green coloured faeces in brooder.  It was moist when touched (compared to Nwanetsi's one yesterday that was dry).

20-Jan-09  24  1  Brooder, Sun  411.00 g  3  

- 06h30: 36.00 g, 3ccH₂O, Probiotics
- 06h30: 29.90 g, 3ccH₂O, Probiotics
- 12h00: 29.90 g, 3ccH₂O, Probiotics

Slow to eat but ate all food.  
Prepared 43.7 g but would not eat all food.

Continue Baytril day 3 of 5.  Received it at 06h30 and 18h00 feed.  Ostrich was added to diet today.
<table>
<thead>
<tr>
<th>Date</th>
<th>Brooder</th>
<th>Weight</th>
<th>Feeding Time</th>
<th>Feeding</th>
<th>Treatment</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>21-Jan-09</td>
<td>25</td>
<td>420.50</td>
<td>06h30</td>
<td>12.90 g</td>
<td>Probiotics, Beefee</td>
<td>Slow to eat but vocal</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>18h00</td>
<td>9.90 g</td>
<td>Calcium, Cod liver</td>
<td>Slow to eat.</td>
</tr>
<tr>
<td>22-Jan-09</td>
<td>26</td>
<td>419.40</td>
<td>07h00</td>
<td>47.30 g</td>
<td>Probiotics, Calcium</td>
<td>Stood up for most of the feed. Nice faeces overnight.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>12h00</td>
<td>19.50 g</td>
<td>Probiotics, Cod liver</td>
<td>Did not want to swallow food. Not very vocal at feed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>13h00</td>
<td>00.00 g</td>
<td>0.6ccH2O</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>14h00</td>
<td>00.00 g</td>
<td>1ccH2O</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>15h00</td>
<td>00.00 g</td>
<td>1ccH2O</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>16h00</td>
<td>00.00 g</td>
<td>1ccH2O</td>
<td></td>
</tr>
</tbody>
</table>

Continue Baytril day 4 of 5. Received at 06h30 and 18h00 feed.

Continue on Baytril day 5 of 5. Received at 06h30 and 18h00 feed. We are going to give one more day of the good Baytril. 10h00 - large amount of faeces present in brooder. 12h00 - liquid faeces coming out of bird when moved to bowl to feed. Started on
23-Jan-09  27  1  Brooder  422.44 g  4

- 7.1 g, 3ccH₂O, Probiotics  
- 18h00

This food fed at 16h00 and 18h00

Y

23-Jan-09  27  1  Brooder  422.44 g  4

- 26.70 g, 3ccH₂O, Calcium, Probiotics  
- 07h00

FFR: slow to eat

Y

- 7.10 g, 2ccH₂O, Probiotics, Beefee  
- 10h20

FFR: slow to eat

Y

- 27.20 g, 3ccH₂O, Probiotics, Cod liver  
- 14h10

Right eye closed but left eye open

Y

- 21.50 g, 3ccH₂O, Probiotics  
- 18h00

Both eye slits now open. Vocal during feeding. Feces still brown and runny.

Y

24-Jan-09  28  1  Brooder  430.90 g  4

- 34.30 g, 3ccH₂O, Calcium, Probiotics  
- 07h00

Vocal and sitting up during the feed

Y

- 32.00 g, 3ccH₂O, Probiotics, Beefee  
- 10h20

Feces still brown and watery.

Y

- 32.00 g, 3ccH₂O, Probiotics, Cod-liver  
- 14h10

Slow but ate all food.

Y

- 32.00 g, 3ccH₂O, Probiotics  
- 18h00

Chick acting more vocal and sitting up well.

Y

25-Jan-09  29  1  Brooder  458.70 g  4

- 34.60 g, 3ccH₂O, Probiotics, Beefee  
- 07h00

Air sacs a bit inflated and sitting up in brooder well.

Y
<table>
<thead>
<tr>
<th>Time</th>
<th>Weight</th>
<th>Fluid</th>
<th>Supplements</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>10h20</td>
<td>34.30</td>
<td>3ccH₂O</td>
<td>Probiotics, Calcium</td>
<td>Ate well.</td>
</tr>
<tr>
<td>14h10</td>
<td>34.30</td>
<td></td>
<td>Probiotics, Cod liver</td>
<td>Vocal and sitting up during feed.</td>
</tr>
<tr>
<td>18h00</td>
<td>34.30</td>
<td></td>
<td>Probiotics</td>
<td>Would not take anymore food if offered.</td>
</tr>
<tr>
<td></td>
<td>36.0</td>
<td>3ccH₂O</td>
<td>Probiotics, Calcium</td>
<td>Making dinosaur like noises this a.m.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>papaya undigested in faeces.</td>
</tr>
<tr>
<td>10h20</td>
<td>36.80</td>
<td></td>
<td>Probiotics, Beefee</td>
<td>GFR: still does not sound like a normal</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>chick but ate everything.</td>
</tr>
<tr>
<td>14h10</td>
<td>36.80</td>
<td></td>
<td>Probiotics, Cod liver</td>
<td>GFR</td>
</tr>
<tr>
<td></td>
<td>36.80</td>
<td>3ccH₂O</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Probiotics</td>
<td></td>
</tr>
<tr>
<td>18h00</td>
<td>36.80</td>
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</tbody>
</table>

26-Jan-09 30 1 Brooder 485.00 g 4

Added small pieces of chicken into the diet to see how chick will digest them. This chick looks good sitting up and vocal. Air sacs and throat are starting to inflate and stay inflated throughout the day.
<table>
<thead>
<tr>
<th>Date</th>
<th>Code</th>
<th>Brooder (Cold and Raining)</th>
<th>Weight (g)</th>
<th>Time</th>
<th>Feeding Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>27-Jan-09</td>
<td>31</td>
<td>508.50</td>
<td>3</td>
<td>07h00</td>
<td>42.60 g, 3ccH₂O, Probiotics, Cod liver may not have got ton last two mouthfuls in. Faeces looks good.</td>
</tr>
<tr>
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<tr>
<td></td>
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<td></td>
<td>50.90 g, 2ccH₂O, Probiotics, Cod liver FFR: Got tired and did not want to eat last bit.</td>
</tr>
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<td></td>
<td>54.90 g, 2ccH₂O, Probiotics, Calcium, GFR Y</td>
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<tr>
<td>28-Jan-09</td>
<td>32</td>
<td>517.70</td>
<td>3</td>
<td>07h00</td>
<td>56.00 g, 1ccH₂O, Probiotics, Beefee Ate well, runny faeces overnight. Y</td>
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<td></td>
<td>49.70 g, 2ccH₂O, Probiotics, Cod liver GFR Y</td>
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<td></td>
<td>49.70 g, 2ccH₂O, Probiotics, Calcium GFR Y</td>
</tr>
<tr>
<td>29-Jan-09</td>
<td>33</td>
<td>547.30</td>
<td>3</td>
<td>07h00</td>
<td>52.50 g, 3ccH₂O, Probiotics, Beefee Overnight faeces looks good. Y</td>
</tr>
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</tr>
<tr>
<td>Time</td>
<td>Food Description</td>
<td>Amount</td>
<td>Comments</td>
<td></td>
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<td>------------</td>
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<td></td>
</tr>
<tr>
<td>12h00</td>
<td>Probiotics, Beefee</td>
<td>44.90 g, 2ccH₂O</td>
<td>Slow to eat. Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18h00</td>
<td>Probiotics, Beefee</td>
<td>52.50 g, 2ccH₂O</td>
<td>GFR Y</td>
<td></td>
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</tr>
</tbody>
</table>

Made 55.8 g for this a.m. but did not eat all the food. Used this number to figure food amount today because without 39.5 g the amount were to large to feed this bird. Increased Calcium to every meal due to Lindanda having weak bones and bill. Chick may digest food slower than others. At the 18h00 feed the chick's back area was full and chick did not beg very much for food.

<table>
<thead>
<tr>
<th>Time</th>
<th>Food Description</th>
<th>Amount</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>07h00</td>
<td>Probiotics, Beefee</td>
<td>39.50 g, 3ccH₂O</td>
<td>Slowed down and did not eat all food Y</td>
</tr>
<tr>
<td>12h00</td>
<td>Probiotics, Cod liver</td>
<td>45.80 g, 3ccH₂O</td>
<td>Slowed down and did not eat all food Y</td>
</tr>
<tr>
<td>18h00</td>
<td>Probiotics, Calcium</td>
<td>26.10 g, 3ccH₂O</td>
<td>Slowed down and did not eat all food Y</td>
</tr>
<tr>
<td>Date</td>
<td>Time</td>
<td>Brooder</td>
<td>Brood Mass (g)</td>
</tr>
<tr>
<td>------------</td>
<td>------</td>
<td>---------</td>
<td>----------------</td>
</tr>
<tr>
<td>31-Jan-09</td>
<td>07h00</td>
<td>35 1</td>
<td>567.80</td>
</tr>
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<td></td>
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<td></td>
<td>12h00</td>
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<tr>
<td>01-Feb-09</td>
<td>07h00</td>
<td>36 1</td>
<td>596.00</td>
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</tbody>
</table>

**Note:** Chick collected on the 1-Feb-09. Chick was very dehydrated and approximately 1500 g underweight. Beak had a strange deformity below nostril. Pin feathers were out but also deformed.

Chicks top mandible is turning up. Changing diet to exclude kudu and include a fuzzie with each meal.

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Brooder</th>
<th>Brood Mass (g)</th>
<th>Brood SIZE</th>
<th>Time</th>
<th>Mass (g)</th>
<th>Additives</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>02-Feb-09</td>
<td>02h19</td>
<td>37 (19)</td>
<td>9</td>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td>Inspect connection</td>
</tr>
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</tbody>
</table>

2 mlRl, 1 skinned hopper 21h16

9 mlRl 22h32

12 mlRl, 1 skinned mouse, Prox 02h19
24 mlRl, 1 skinned

05h30 hopper GFR Y Y
08h23 12mlRl GFR Y Y
09h30 10 mlRl, 20 g fuzzie GFR Y Y

Sacs filling, developing well, drinks well.
Shoulder sacs inflating well, throat also
Sacs inflated on neck and shoulder, preening, inside of throat very pale - as in anaemia.
Sunshine for 20 minutes.

Note: 5 mlRl per hour. Feed as day 19 - frequency & amount.
(4 feeds per day, 40 mlRl & 50 g per feed).
Eyes not as sunk in as before, inside of throat very pale - as in anaemia.

Brooder
12h11 6 mlRl GFR

3 mlRl, 24 g DOC, two 13h07 week mice x 4, Pred GFR, Very THIRSTY YY
14h45 5 mlRl GFR Y

Eyes not as sunk in as before, inside of throat very pale - as in anaemia.

16h45 ? GFR Y Y Sleeping

3 mlRl on food, 40 g 19h20 DOC, Pk, 1 hopper GFR Slow to swallow
<table>
<thead>
<tr>
<th>Time</th>
<th>Treatment</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>03-Feb-09</td>
<td>05h30 Pk, Bf, GFR</td>
<td>Brooder/Sun 654 g 10</td>
</tr>
<tr>
<td></td>
<td>07h30 7 mlRI</td>
<td></td>
</tr>
<tr>
<td></td>
<td>09h15 5 mlRI</td>
<td></td>
</tr>
<tr>
<td></td>
<td>11h34 11 mlRI</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12h00 Map, PK, BF</td>
<td>Brown and sloppy, Good YY</td>
</tr>
<tr>
<td></td>
<td>12h45</td>
<td></td>
</tr>
</tbody>
</table>

- Very vocal. Sacs inflated on shoulders and on neck. Very responsive, change in voice not so raspy.
- Throat pale. Calls like a chicken.
- Ate well, did not tire at end until all food was taken in and then he was exhausted. Drinks.
- Throat nice and red.
- Y, very water.
Very vocal, ate very well, stood on hocks to end - much stronger. Shoulders inflated - neck a little flat. Looking for food on floor L214.

Y (light - trace of blood however it is difficult to see due to red ink on newspaper) Y

Cold after feed, paper towel cover, Brooder temp POOR.
6 mlIRL, 28 g mice,  
08h30  DOC, Prox

6 mlIRL, 26 g mice,  
11h39  DOC, BF  
12h23  6 mlIRL, 1 moth  
15h10  9 mlIRL

46 g mice, Bf fed in  
15h29  stages.

48 g DOC, 2 RP, Cal,  
19h00  1 soaked dog biscuit.  GFR

* Day 3  
26 mlIRL, 4 g mice, Cal,  
22h19  only took 4 g of DOC.  GFR

05-Feb-09  40 (23) 2  Brooder  846 g  11  
05h39  Prox,  
23 mlIRL, 22 g Pk,  

Still calling after feed  
but only took 4 g Ch.  
Warm feel under red light - not shivering  
after meal.  Brooder temp. POOR, out 31 -  
in 29.  Vocal sounds like a Ground Hornbill  

Sloppy Y -  
y brown  Y  

Not very keen to eat.  
Defecated after feed.  
Sacs good.
09h00 DOC, Cal  Difficult  Yes - sloppy  Y

3 mlRl, 28 g (Made feed over 20 min), DOC, Cal, 2 PK, 1

12h30 moth, Mealworms GFR ? (spits out food)  Solids Y **
13h39
14h30 12 ml Sandoz GFR
32 g Ch, 1 mantis,

16h00 Bfly, tiny Moth YY Y
16h30 12 g Pk Did not spit out food.
17h01 2 g Pk

18h21 8 g rp x 2, Sandoz OFR Vocal, until it gets his food and then spits out.

2 mlRl, 14 g RP, DOC, OFR
21h52 Sandoz, PK x 3, Meal worms passed through system, no digestion.

22h25 Meal worms Y *

NOTE: Changed to H$_2$O and brooder with infrared light.
<table>
<thead>
<tr>
<th>Time</th>
<th>Action</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>10h13</td>
<td>4 mlRL, moths x2, 1 grasshopper</td>
<td></td>
</tr>
<tr>
<td>12h00</td>
<td>12 g hopper, 5 ml Sandoz, blood, Bf</td>
<td></td>
</tr>
<tr>
<td>15h14</td>
<td>5 mlRL, 28 g RP, DOC, 10 g RP</td>
<td></td>
</tr>
<tr>
<td>12h00</td>
<td>5 mlRL, 20 g RP, Bf, 28 g RP, DOC, 2 g = 34 g</td>
<td></td>
</tr>
<tr>
<td>06h30</td>
<td>5 mlRL/ Sandoz, 32 g</td>
<td></td>
</tr>
<tr>
<td>08h31</td>
<td>1 Sub-Adult mouse GFR 34 g DOC, 50/50 RL, 12h30 San on food, Prox GFR</td>
<td></td>
</tr>
<tr>
<td>14h21</td>
<td>4 g DOC, Fluid RL, approx 52 g mice, 16h30 DOC, Prox V. GFR</td>
<td></td>
</tr>
<tr>
<td>17h35</td>
<td>26 g mice, PK, 19h30 DOC, San, Calling</td>
<td></td>
</tr>
<tr>
<td>22h15</td>
<td>Asleep</td>
<td></td>
</tr>
</tbody>
</table>

Note: New born Pinkies fed at 21h52 passed straight through system, NO Digestion. PFR: till chick gets food, then spits it out. 8 g Hopper.

Note: Today was a BAD DAY.

Note: today is a good day. Calling for food, brushed to allow for feather growth. Wants to pick-up.

Changed brooder to leaves & non - slip. Not vocal after fed, settled down. Asleep
08-Feb-09  43 (26) 2  Outside  922 g  4  09:15  3 mlRl (on meat), 0.5 RL, 40 g DOC, 0.5 San, Moth GFR, calling Y Y
                     2 ml Rl, 40 g DOC x 2, Weaners x 2, 3 moths, Bf
12:28  50/50 san + Rl, 40 g DOC, 1.5 hopper, GFR Y Y
15:15  Not very Hungry

12:28  6 mlRl, 40 g Hopper, GFR YY Y
21:50  Very hungry,
       Screaming but settled well. Was out all day - 1/2 day with adults.

09-Feb-09  44 (27) 2  992 g  4  08:00  3 mlRl50 g mice, 1 Pk with skin on and DOC chopped, DOC, Prox, 3 ml San GFR YY Y
                     Mice to big, slow at mid of feed. Brushed chick today.
12:30  6 mlRl, 50 g DOC, Pk, Hop, GFR Y Y
16:30  Settled well after feed.

16:30  3 mlRl, 50 g PK, Map, DOC, 1 moth GFR

21:30  No liquid taken, not very hungry.

10-Feb-09  45 (28) 2  Outside all day  1064 g  4  08:15  6 mlRl, 44g chopped mice, DOC, San mix, Prox GFR Y Y
<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Action Description</th>
<th>Amount</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>11-Feb-09</td>
<td>08:30</td>
<td>3 mlRl, 3 ml San, 58 g DOC, Fuzzie, Pk, GFR</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>11-Feb-09</td>
<td>14:00</td>
<td>3 mlRl, 60 g DOC, Bf, San, PK, Fuzzie, GFR</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>11-Feb-09</td>
<td>20:30</td>
<td>3 mlRl, 60 g DOC, Pk, Prox, 2 Pk, Vocal</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>12-Feb-09</td>
<td>09:00</td>
<td>3 mlRl, 52 g mice, PK, DOC</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>12-Feb-09</td>
<td>13:30</td>
<td>3 mlRl, 60 g DOC, Cal, 70 g mice, DOC, RI, San</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>12-Feb-09</td>
<td>18:15</td>
<td></td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Outside all day, 30 min at avary. 1116 g 4

Fed at avary: Cathing of tweezer and picking up off floor well. Beak stronger.

Awake at 05:00, was calling

Out with adults
<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Weight</th>
<th>Age</th>
<th>Crate</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>13-Feb-09</td>
<td>22:10</td>
<td>24 g</td>
<td>2</td>
<td></td>
<td>DOC, Bf, GFR, YY less Y</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13-Feb-09</td>
<td>08:22</td>
<td>78 g</td>
<td>4</td>
<td>1220 g</td>
<td>DOC, Sub mice, Prox, GFR</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13-Feb-09</td>
<td>14:11</td>
<td>70 g</td>
<td>4</td>
<td>Bf, San</td>
<td></td>
</tr>
<tr>
<td>13-Feb-09</td>
<td>17:13</td>
<td>62 g</td>
<td>4</td>
<td>DOC, Sub mice, GFR</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14-Feb-09</td>
<td>09:15</td>
<td>44 g</td>
<td>4</td>
<td>DOC, Prox, Bf</td>
<td></td>
</tr>
<tr>
<td>14-Feb-09</td>
<td></td>
<td>98 g</td>
<td>4</td>
<td>Sub Ad mice, Pk, GFR, calling after 72 g, change in call after ex 26 g.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>13:45</td>
<td>80 g</td>
<td>4</td>
<td>DOC, Bigger mice, Pred</td>
<td></td>
</tr>
</tbody>
</table>

Bird is DEMANDING more. Bird preening often more success due to beak that co-operates. Top mandible is touching bottom - has stopped turning up. Feathers are short and fluffy.

Placed into small grey crate - too big for brooder.

Not sloppy, well formed.

98 g Sub Ad mice, Pk, GFR, calling after 72 g, change in call after ex 26 g.
58 g DOC, Mice in puppy pen 1/2 day exercising
23:46 48 g DOC

74 g Mice Ad chopped, DOC, Prox GFR Y Y
14:10 80 g DOC, Mice, Cal GFR
17:15 34 g DOC, Bf
21:10 6 Weaners, DOC, Ate at bowl

80 g Mice, DOC, Bf,

16-Feb-09 51 (34) 2
1470
07:31 62 g
13:20 62 g Ate all out of bowl
17:45 62 g
21:13 2 x Rat pups

17-Feb-09 52 (35) 2
14????
11:30 70 g Mice ad bones chopped, DOC, Bf GFR - bird very hungry, calling to hungry Y Y
15:10 44 g Rat pups

82 g Mice, Dog
18:13 biscuits soaked, DOC

72 g Mice, DOC,
Soaked dog bis, RI, First night without red light.

18-Feb-09 53 (36) 2
1584
00:36 Cal GFR Y Y
GFR YY, BIRD NEEDS MORE FOOD Y Y
10:00 84 g Mice, DOC, Prox Cal, RI
108 g Mice, DOC,
13:30 102 g Mice, DOC, Bf, RI
18:10
**19-Feb-09  54 (37) 2**

<table>
<thead>
<tr>
<th>Time</th>
<th>Weight</th>
<th>Feeding Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>07:45</td>
<td>1666 g</td>
<td>74 g Mice, Prox, RI</td>
</tr>
<tr>
<td>12:30</td>
<td>100 g</td>
<td>DOC, Cal</td>
</tr>
<tr>
<td>15:32</td>
<td>108 g</td>
<td>Mice, DOC, Bf</td>
</tr>
<tr>
<td></td>
<td>48 g</td>
<td>Rat pup, Mice,</td>
</tr>
<tr>
<td>23:40</td>
<td>DOC</td>
<td></td>
</tr>
</tbody>
</table>

* Last couple of days bird is smelling like a hornbill = stinks, and not like sweet soap - the stink is good - indicates a working digestive system.

**20-Feb-09  55 (38) 2**

<table>
<thead>
<tr>
<th>Time</th>
<th>Weight</th>
<th>Feeding Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:02</td>
<td>1736 g</td>
<td>88 g Mice, DOC, Prox</td>
</tr>
<tr>
<td>11:24</td>
<td>112 g</td>
<td>Mice, DOC, FFR</td>
</tr>
<tr>
<td>17:01</td>
<td>100 g</td>
<td>DOC, Bf, GFR</td>
</tr>
<tr>
<td>20:06</td>
<td>40 g</td>
<td>Mice, RI</td>
</tr>
</tbody>
</table>

GFR, Not very hungry maybe due to 19/02/09 late feed

Put chick into large pen at avary

**21-Feb-09  56 (39) 2**

<table>
<thead>
<tr>
<th>Time</th>
<th>Weight</th>
<th>Feeding Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:30</td>
<td>1824 g</td>
<td>Prox</td>
</tr>
<tr>
<td>13:15</td>
<td>102 g</td>
<td>DOC, Bf, Self service</td>
</tr>
</tbody>
</table>

Y Y
17:10 78 g DOC, ate out of bowl
19:07 78 g DOC, Cal

11:45 100 g DOC, Bf
16:00 ??? DOC, Cal

22-Feb-09 57 (40) 2 1928 g

108 g DOC, Prox,
09:45 Mice
11:45 100g DOC, Bf

23-Feb-09 58 (41) 2 1964 g

08:45 112 g RP, DOC, Bf
13:00 118 g RP, DOC

Ate all out of bowl

Beak deformity in middle of bill. New growth is natural? Cut 4th toe nail due to it hooking on nonslip. Nails a bit long as bird should be standing. Attempts to stand, wings out - beak on floor - raising hocks off floor. Preening very well.
17:30  118 g
21:45  28 g

24-Feb-09  59 (42) 2  20???
12:30
16:45  3 Rat pups
20:00  202 g DOC, Prox

Trying to stand, flapping wings.
Changed bird to yellow crate.

25-Feb-09  60 (43) 2

Feeding x 3 DOC, Mice, Supplements

Feeding x 3 DOC, Mice, Supplements
(food not chopped as much, bigger pieaces given)

26-Feb-09  61 (44) 2

Out all day, bought in at night. Yellow crate higher allowing chick to sleep more comfortable. Responds well to adults.
Fed by adults first time, Ntwana does the feeding. Makhudzi in capture passage, Rio in pen. In passage at night x2.

Standing with help of wings, feathers doing well.

Standing well for short periods (no wings). Out all day fed by Ntwane mostly.

Standing short periods, wing tips turned up will :::: straighter???

Perching
Rearing records from a chick at Umgeni Bird Park – another good reference

**Day 0:**
**FOOD:**
5 ml Ringers every hour from time of hatching.
Can continue ringers into the night if chick is very dehydrated.
If chick strong and healthy can be given 1 pinkie. Skinned, no tail, no legs, gutted.
**GENERAL**
Chick in Brooder at 36 degrees Celsius, under feather duster.

**Day 1:**
**FOOD:**
2 hourly feeds, feeding 7 times a day
Pinkies: skinned no tails, no legs, gutted. Can be cut into smaller pieces.
Food moistened with ringers. Also given 1ml ringers after each feed.
Daily intake 25% of body weight
**GENERAL**
Chick in Brooder at 36 degrees Celsius, under feather duster.

**Day 2:**
**FOOD:**
2 hourly feeds, feeding 7 times a day
Pinkies: skinned no tails, no legs, gutted. Can be given whole, not cut up anymore.
Using 3 day old pinkies.
Food moistened with ringers. Also given 1ml ringers after each feed.
Daily intake 30% of body weight
Adding Calcium powder - 0.01g, Cod liver oil - 1 drop and small amount of beefee powder to food.
Only add one supplement per meal, spreading them out throughout the day.
**GENERAL**
Chick in Brooder at 36 degrees Celsius, under feather duster.
Skin starting to darken up, Bottom of beak turning black.
DAY 4:
FOOD:
**Feeding 3 hourly, 5 feeds a day.**
Feeding pinkies and fuzzies. Skinned, no tails, no legs, crush sculls, gut if they were frozen.
30% of body weight is fed through day.
Food moistened with ringers. Also given 1ml ringers after each feed.
Adding Calcium powder - 0.01g, Cod liver oil - 1 drop and small amount of beefee powder to food.
GENERAL
Chick in Brooder at 36 degrees Celsius, under feather duster.
Skin darker, beak almost black.

DAY 5:
FOOD:
**Feeding 3 hourly, 5 feeds a day.**
Feeding pinkies and fuzzies. Skinned, no tails, no legs, crush sculls, gut if they were frozen.
30% of body weight is fed through day.
Food moistened with ringers. Also given 1ml ringers after each feed.
Adding Calcium powder - 0.01g, Cod liver oil - 1 drop and small amount of beefee powder to food.
GENERAL
Chick in Brooder at 36 degrees Celsius, under feather duster.
Eye slits might become visible, Capital pins might become visible.

DAY 6:
FOOD:
**Feeding 3 hourly, 5 feeds a day.**
Feeding pinkies and fuzzies. Skinned, no tails, no legs, crush sculls, gut if they were frozen.
30% of body weight is fed through day.
Food moistened with ringers. Also given 1ml ringers after each feed.
Adding Calcium powder - 0.01g, Cod liver oil - 1 drop and small amount of beefee powder to food.
GENERAL
Chick in Brooder at 36 degrees Celsius, under feather duster.
Wearing Socks if eye slits are starting to open.
Alar and cacdal pins might be emerging.
Throat patch might be turning purple.

DAY 7:
FOOD:
**Feeding 4 hourly, 4 times a day.**
Feeding pinkies and fuzzies. Skinned, no tails, no legs, crush sculls, gut if they were frozen.
30% of body weight is fed through day.
Food moistened with ringers. Also given 1ml ringers after each feed.
Adding Calcium powder - 0.01g, Cod liver oil - 1 drop and small amount of beefee powder to food.
GENERAL
DAY 8:
FOOD:
**Feeding 4 hourly, 4 times a day.**
Feeding pinkies and fuzzies. Skinned, no tails, no legs, crush sculls, gut if they were frozen.  
30% of body weight is fed through day. 
Food moistened with ringers. Also given 1ml ringers after each feed. 
**Calcium powder up to 0.02g.Cod liver oil up to 2 drops. Still sprinkle food with beefee powder.**

GENERAL 
Chick in Brooder at 36 degrees Celsius, under feather duster. 
Wearing Socks if eye slits are starting to open.

DAY 9:
FOOD:
**Feeding 4 hourly, 4 times a day.** 
Feeding pinkies and fuzzies. Skinned, no tails, no legs, crush sculls, gut if they were frozen. 
**Also feeding chicken breast meat. Meat only no bones or feathers!**
30% of body weight is fed through day. 
Food moistened with ringers. Also given 1ml ringers after each feed. 
**Brooder door had to be left open, Temp in brooder room very high.** 
Wearing Socks if eye slits are starting to open. 
**Chicks go outside for half hour from 10h00 to 10h30. Remember to sprinkle baby powder to stop ants.**

DAY10:
FOOD:
**Feeding 4 hourly, 4 times a day.**
Feeding pinkies and fuzzies. Skinned, no tails, no legs, crush sculls, gut if they were frozen. 
Also feeding chicken breast meat. Meat only no bones or feathers! 
30% of body weight is fed through day. 
**Food moistened with ringers. Stopped giving ringers after each feed.** 
**Chicks given 2 to 3ml water after feed.** 

GENERAL 
Wearing Socks if eye slits are starting to open. 
Chicks go outside for half hour not in the heat of the day.

DAY 11:
FOOD:
**Feeding 4 hourly, 4 times a day.**
Feeding pinkies and fuzzies. Skinned, no tails, no legs, crush sculls, gut if they were frozen. 
Also feeding chicken breast meat. Meat only no bones or feathers!
30% of body weight is fed through day.
Food moistened with ringers.
Chicks given 2 to 3ml water after feed.
**Added mealworms to diet (approx 1 per feed). Crush Mealworm head before feeding.**

**GENERAL:**
Wearing Socks, eye slits are starting to open.
Chicks go outside for half hour not in the heat of the day.
**Added leaves to bowl to make more natural 'Nest'**

**DAY 12:**
**FOOD:**
**Feeding 4 hourly, 4 times a day.**
Feeding pinkies and fuzzies. Skinned, no tails, no legs, crush sculls, gut if they were frozen.
**Also feeding chicken breast meat and leg meat. Meat only no bones or feathers!**
30% of body weight is fed through day.
Food moistened with ringers.
**Chicks given 3ml water after feed.**
Mealworms: (approx 1 per feed). Crush Mealworm head before feeding.
**GENERAL:**
**Wearing Socks, and ghost Eyes are open.**
Chicks go outside for half hour not in the heat of the day.
Add leaves to bowl to make more natural 'Nest''

**DAY 13:**
**FOOD:**
**Feeding 4 hourly, 4 times a day.**
Feeding pinkies and fuzzies. Skinned, no tails, no legs, crush sculls, gut if they were frozen.
**Also feeding chicken breast meat and leg meat. Meat only no bones or feathers!**
30% of body weight is fed through day.
Food moistened with ringers.
Chicks given 3ml water after feed.
Mealworms: (approx 1 per feed). Crush Mealworm head before feeding.
**GENERAL:**
**Wearing Socks, and ghost Eyes are open.**
Chicks go outside for half hour not in the heat of the day.
Add leaves to bowl to make more natural 'Nest''
**Pin feathers emerging.**

**Day 14:**
**FOOD:**
**Feeding 5 hourly, 3 times a day.**
Feeding pinkies and fuzzies. Skinned, no tails, no legs, crush sculls, gut if they were frozen.
**Also feeding chicken breast meat and leg meat. Meat only no bones or feathers!**
**Added dog food to diet. Dog food must be soaked before feeding.**
30% of body weight is fed through day.
Food moistened with ringers.
Chicks given 3ml water after feed.
Mealworms:(approx 1 per feed). Crush Mealworm head before feeding.
GENERAL:
Wearing Socks, and ghost Eyes are open.
**Chicks go outside for hour, not in the heat of the day.**
Add leaves to bowl to make more natural 'Nest'

**Day 15:**
**FOOD:**
**Feeding 5 hourly, 3 times a day.**
Feeding pinkies and fuzzies. Skinned, no tails, no legs, crush sculls, gut if they were frozen.
Dog food must be soaked before feeding.
**Using chicken meat from all parts of body now. No skin or bone yet.**
30% of body weight is fed through day.
Food moistened with ringers.
**Chicks given 3 to 6 ml water after feed.**
Mealworms: (approx 1 per feed). Crush Mealworm head before feeding.
GENERAL:
Wearing Socks and ghost.
Chicks go outside for hour, not in the heat of the day.
Add leaves to bowl to make more natural 'Nest'

**Day 16:**
**FOOD:**
**Feeding 5 hourly, 3 times a day.**
Feeding pinkies and fuzzies. Skinned, no tails, no legs, crush sculls, gut if they were frozen.
Dog food must be soaked before feeding.
Using chicken meat from all parts of body. No skin or bone yet.
30% of body weight is fed through day.
Food moistened with ringers.
Chicks given 3 to 6 ml water after feed.
Mealworms:(approx 1 per feed). Crush Mealworm head before feeding.
GENERAL:
Wearing Socks and ghost.
Chicks go outside for hour, not in the heat of the day.
Add leaves to bowl to make more natural 'Nest'

**DAY 17:**
**FOOD:**
**Feeding 5 hourly, 3 times a day.**
Feeding pinkies and fuzziest. Skinned, no tails, no legs, crush sculls, gut if they were frozen.
Dog food must be soaked before feeding.
Using chicken meat from all parts of body. No skin or bone yet.
30% of body weight is fed through day.
Food moistened with ringers.
Chicks given 3 to 6 ml water after feed.
Mealworms: (approx 1 per feed). Crush Mealworm head before feeding.
**Added grapes to diet. Only 1 per day. Skinned and take pips out.**
**GENERAL:**
Wearing Socks and ghost. Eyes are open.
Chicks go outside for hour, not in the heat of the day.
Add leaves to bowl to make more natural 'Nest'
**Spinal and pin feathers emerging.**

**DAY 18:**
**FOOD:**
**Feeding 5 hourly, 3 times a day.**
Feeding pinkies and fuzzies. Skinned, no tails, no legs, crush sculls, gut if they were frozen.
Dog food must be soaked before feeding.
Using chicken meat from all parts of body now.
**Added small pieces of chicken flesh with soft feathers to one or two feeds**
30% of body weight is fed through day.
Food moistened with ringers.
Chicks given 3 to 6 ml water after feed.
Crush Mealworm head before feeding.
Grapes: Only 1 per day. Skinned and take pips out.
**GENERAL:**
Wearing socks and ghost.
**Chicks go outside for two hours, not in the heat of the day.**
Add leaves to bowl to make more natural 'Nest'

**DAY 19:**
**FOOD:**
**Feeding 5 hourly, 3 times a day.**
Feeding pinkies and fuzzies. Skinned, no tails, no legs, crush sculls, gut if they were frozen.
Dog food must be soaked before feeding.
Using chicken meat from all parts of body now.
Add small pieces of chicken flesh with soft feathers to one or two feeds.
30% of body weight is fed through day.
Food moistened with ringers.
Chicks given 3 to 6 ml water after feed.
Crush Mealworm head before feeding.
Grapes: Only 1 per day. Skinned and take pips out.
**GENERAL:**
Wearing socks and ghost.
Chicks go outside for two hours, not in the heat of the day.
Add leaves to bowl to make more natural 'Nest''

**DAY 20:**

**FOOD:**

**Feeding 5 hourly, 3 times a day.**

**Calcium up to 0.03g Cod liver oil up to 3 drops.**

Feeding pinkies and fuzzies. Skinned, no tails, no legs, crush sculls, gut if they were frozen.

Dog food must be soaked before feeding.

Using chicken meat from all parts of body now.

Add small pieces of chicken flesh with soft feathers to one or two feeds.

30% of body weight is fed through day.

Food moistened with ringers.

Chicks given 3 to 6 ml water after feed.

Crush Mealworm head before feeding.

Grapes: Only 1 per day. Skinned and take pips out.

**GENERAL:**

Wearing socks and ghost.

Chicks go outside for two hours, not in the heat of the day.

Add leaves to bowl to make more natural 'Nest''

**DAY 21:**

**FOOD:**

**Feeding 5 hourly, 3 times a day.**

Feeding pinkies and fuzzies.

Crush sculls, gut if they were frozen.

Dog food must be soaked before feeding.

Using chicken meat from all parts of body now.

Add small pieces of chicken flesh with soft feathers to one or two feeds.

**Can add small pieces of bone from ribs, no sharp edges! (chicken meat)**

30% of body weight is fed through day.

Food moistened with ringers.

Chicks given 3 to 6 ml water after feed.

**Now up to 2 Mealworms per feed. Crush Mealworm head before feeding.**

Grapes: 2 to 3 per day. Skinned and take pips out.

**GENERAL:**

Wearing socks and ghost.

Chicks go outside for two hours, not in the heat of the day.

Add leaves to bowl to make more natural 'Nest''

**DAY 22:**

**FOOD:**

**Feeding 5 hourly, 3 times a day.**

Feeding pinkies and fuzzies.

Crush sculls, gut if they were frozen.
Dog food must be soaked before feeding. 
Using chicken meat from all parts of body now. 
**Add small pieces of chicken flesh with soft feathers to every feed.**
Can add small pieces of bone from ribs, no sharp edges! (chicken meat)
30% of body weight is fed through day. 
Food moistened with ringers. 
Chicks given 3 to 6 ml water after feed. 
Crush Mealworm head before feeding. 
Grapes: 2 to 3 per day. Skinned and take pips out. 
**GENERAL:** 
Wearing socks and ghost. 
Chicks go outside for two hours, not in the heat of the day. 
Add leaves to bowl to make more natural 'Nest'

**DAY 23:**
**FOOD:**
**Feeding 5 hourly, 3 times a day.**
*Feeding pinkies and fuzzies. Can leave small pieces of fur on fuzzies, leave skin on head.*
Crush sculls, gut if they were frozen. 
Dog food must be soaked before feeding. 
Using chicken meat from all parts of body now. 
Small pieces of chicken flesh with soft feathers to every feed. 
Can add small pieces of bone from ribs, no sharp edges! (chicken meat) 
30% of body weight is fed through day. 
Food moistened with ringers. 
Chicks given 3 to 6 ml water after feed. 
Crush Mealworm head before feeding. 
Grapes: 2 to 3 per day. Skinned and take pips out. 
**GENERAL:** 
Wearing socks and ghost. 
Chicks go outside for two hours, not in the heat of the day. 
Add leaves to bowl to make more natural 'Nest'

**DAY 24:**
**FOOD:**
**Feeding 5 hourly, 3 times a day.**
Feeding pinkies and fuzzies. Can leave small pieces of fur on fuzzies, leave skin on head. 
Crush sculls, gut if they were frozen. 
Dog food must be soaked before feeding. 
Using chicken meat from all parts of body now. 
Small pieces of chicken flesh with soft feathers to every feed. 
Add small pieces of bone from ribs, no sharp edges! (chicken meat) 
30% of body weight is fed through day. 
Food moistened with ringers.
Chicks given 3 to 6 ml water after feed.
Crush Mealworm head before feeding.
Grapes: 2 to 3 per day. Skinned and take pips out.
GENERAL:
Wearing socks and ghost.
Chicks go outside for two hours, not in the heat of the day.
Add leaves to bowl to make more natural 'Nest''

DAY 25:
FOOD:
**Feeding 5 hourly, 3 times a day.**
Feeding pinkies and fuzzies. Can leave small pieces of fur on fuzzies, leave skin on head.
Crush sculls, gut if they were frozen.
Dog food must be soaked before feeding.
Using chicken meat from all parts of body now.
Small pieces of chicken flesh with soft feathers to every feed.
Add small pieces of bone from ribs, no sharp edges! (chicken meat)
30% of body weight is fed through day.
Food moistened with ringers.
Chicks given 3 to 6 ml water after feed.
Crush Mealworm head before feeding.
Grapes: 2 to 3 per day. Skinned and take pips out.
GENERAL:
Wearing socks and ghost.
Chicks go outside for two hours, not in the heat of the day.
Add leaves to bowl to make more natural 'Nest''

DAY 26:
FOOD:
**Feeding 5 hourly, 3 times a day.**
Feeding pinkies and fuzzies. Can leave small pieces of fur on fuzzies, leave skin on head.
Crush sculls, gut if they were frozen.
Dog food must be soaked before feeding.
Using chicken meat from all parts of body now.
Small pieces of chicken flesh with soft feathers to every feed.
Add small pieces of bone from ribs, no sharp edges! (chicken meat)
30% of body weight is fed through day.
Food moistened with ringers.
Chicks given 3 to 6 ml water after feed.
Crush Mealworm head before feeding.
Grapes: 2 to 3 per day. Skinned and take pips out.
GENERAL:
Wearing socks and ghost.
Chicks go outside for two hours, not in the heat of the day.
Add leaves to bowl to make more natural 'Nest'

**Chicks moved out of brooders and into boxes. No more temp controlled.**

**DAY 27:**

**FOOD:**

**Feeding 5 hourly, 3 times a day.**

**Cod liver oil up to four drops.**

Feeding pinkies and fuzzies. Can leave small pieces of fur on fuzzies, leave skin on head.
Crush sculls, gut if they were frozen.
Dog food must be soaked before feeding.
Using chicken meat from all parts of body now.
Small pieces of chicken flesh with soft feathers to every feed.
Add small pieces of bone from ribs, no sharp edges! (chicken meat)
30% of body weight is fed through day.
Food moistened with ringers.
Chicks given 3 to 6 ml water after feed.
Crush Mealworm head before feeding.
Grapes: 2 to 3 per day. Skinned and take pips out.

**GENERAL:**

Wearing socks and ghost.
Chicks go outside for two hours, not in the heat of the day.
Add leaves to bowl to make more natural 'Nest'
Chicks in boxes not brooders anymore.

If defecation runny less water and cut out grapes.

---

Day 28:

**FOOD:**

**Feeding 5 hourly, 3 times a day.**

**Feeding pinkies and fuzzies. Leaving about half the fur on the fuzzies...**
Crush sculls, gut if they were frozen.
Dog food must be soaked before feeding.
Using chicken meat from all parts of body now.
Small pieces of chicken flesh with soft feathers to every feed.
Add small pieces of bone from ribs, no sharp edges! (chicken meat)
30% of body weight is fed through day.
Food moistened with ringers.
Chicks given 3 to 6 ml water after feed.
Crush Mealworm head before feeding.
Grapes: 2 to 3 per day. Skinned and take pips out.

**GENERAL:**

Wearing socks and ghost.
Chicks go outside for two hours, not in the heat of the day.
Add leaves to bowl to make more natural 'Nest'
Chicks in boxes not brooders anymore.
If defeation runny less water and cut out grapes.

**DAY 29:**

**FOOD:**

**Feeding 5 hourly, 3 times a day.**

Feeding pinkies and fuzzies. Leaving about half the fur on the fuzzies...

Crush sculls, gut if they were frozen.

Dog food must be soaked before feeding.

Using chicken meat from all parts of body now.

Small pieces of chicken flesh with soft feathers to every feed.

Add small pieces of bone from ribs, no sharp edges! (chicken meat)

30% of body weight is fed through day.

Food moistened with ringers.

Chicks given 3 to 6 ml water after feed.

Crush Mealworm head before feeding.

Grapes: 2 to 3 per day. Skinned and take pips out.

**GENERAL:**

Wearing socks and ghost.

Chicks go outside for two hours, not in the heat of the day.

Add leaves to bowl to make more natural 'Nest'

Chicks in boxes not brooders anymore.

If defeation runny less water and cut out grapes.

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**Day 30:**

**FOOD:**

**Feeding 5 hourly, 3 times a day.**

**Cod liver oil up to 6 drops.**

**Calcium up to 0.06g**

Feeding pinkies and fuzzies. Leaving about half the fur on the fuzzies...

Crush sculls, gut if they were frozen.

Dog food must be soaked before feeding.

Using chicken meat from all parts of body now.

Small pieces of chicken flesh with soft feathers to every feed.

Add small pieces of bone from ribs, no sharp edges! (chicken meat)

30% of body weight is fed through day.

Food moistened with ringers.

Discontinued giving water after feeds. - Check chicks hydration closely.

Crush Mealworm head before feeding.

**Fed flying ants because they where available.**

Grapes: 2 to 3 per day. Skinned and take pips out.

**GENERAL:**

Wearing socks and ghost.

Chicks go outside for two hours, not in the heat of the day.

Add leaves to bowl to make more natural 'Nest'
Chicks in boxes not brooders anymore.
If defecation runny less water and cut out grapes.

Day 31:

**FOOD:**

**Feeding 5 hourly, 3 times a day.**
Feeding pinkies and fuzzies. Leaving about half the fur on the fuzzies...
Crush sculls, gut if they were frozen.
Dog food must be soaked before feeding.
Using chicken meat from all parts of body now.
Small pieces of chicken flesh with soft feathers to every feed.
Add small pieces of bone from ribs, no sharp edges! (chicken meat)
30% of body weight is fed through day.
Food moistened with ringers.
Discontinued giving water after feeds. - Check chicks hydration closely.
Crush Mealworm head before feeding.
Grapes: 2 to 3 per day. Skinned and take pips out.

**GENERAL:**
Wearing socks and ghost.

**Chicks out for 3 hours a day.**
Add leaves to bowl to make more natural 'Nest'
Chicks in boxes not brooders anymore.

Day 32:

**FOOD:**

**Feeding 5 hourly, 3 times a day.**
Feeding pinkies and fuzzies and adult mice. Leaving about half the fur on the fuzzies...
Crush sculls, gut if they were frozen.
Dog food must be soaked before feeding.
Using chicken meat from all parts of body now.
Small pieces of chicken flesh with soft feathers to every feed.
Add small pieces of bone from ribs, no sharp edges! (chicken meat)
30% of body weight is fed through day.
Food moistened with ringers.
Discontinued giving water after feeds. - Check chicks hydration closely.
Crush Mealworm head before feeding.
Grapes: 2 to 3 per day. Skinned and take pips out.

**GENERAL:**
Wearing socks and ghost.
Chicks out for three hours a day
Add leaves to bowl to make more natural 'Nest'
Chicks in boxes not brooders anymore.

Day 33:
FOOD:

**Feeding 5 hourly, 3 times a day.**

Feeding pinkies and fuzzies and adult mice. Leaving about half the fur on the fuzzies...

Crush sculls, gut if they were frozen.

Dog food must be soaked before feeding.

Using chicken meat from all parts of body now.

Small pieces of chicken flesh with soft feathers to every feed.

Add small pieces of bone from ribs, no sharp edges! (chicken meat)

30% of body weight is fed through day.

Food moistened with ringers.

Discontinued giving water after feeds. - Check chicks hydration closely.

Crush Mealworm head before feeding.

Grapes: 2 to 3 per day. Skinned and take pips out.

GENERAL:

Wearing socks and ghost.

Chicks out for 3 hours a day

Add leaves to bowl to make more natural 'Nest'

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**Day 34:**

**FOOD:**

**Feeding 5 hourly, 3 times a day.**

Feeding pinkies and fuzzies and adult mice. Leaving about half the fur on the fuzzies...

Crush sculls, gut if they were frozen.

Dog food must be soaked before feeding.

Using chicken meat from all parts of body now.

Small pieces of chicken flesh with soft feathers to every feed.

Add small pieces of bone from ribs, no sharp edges! (chicken meat)

30% of body weight is fed through day.

Food moistened with ringers.

Crush Mealworm head before feeding.

Grapes: 2 to 3 per day. Skinned and take pips out.

GENERAL:

Wearing socks and ghost.

Chicks out for 3 hours a day

Add leaves to bowl to make more natural 'Nest'

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**Day 35:**

**FOOD:**

**Feeding 5 hourly, 3 times a day.**

Cod liver oil up to 8 drops.

Feeding pinkies and fuzzies and adult mice. Leaving about half the fur on the fuzzies...

Crush sculls, gut if they were frozen.

Dog food must be soaked before feeding.
Using chicken meat from all parts of body now.
Small pieces of chicken flesh with soft feathers to every feed.
Add small pieces of bone from ribs, no sharp edges! (chicken meat)
30% of body weight is fed through day.
Food moistened with ringers.
Crush Mealworm head before feeding.
Grapes: 2 to 3 per day. Skinned and take pips out.
GENERAL:
Wearing socks and ghost.
**Chicks outside for 4 hours a day**
Add leaves to bowl to make more natural 'Nest''

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**DAY 36:**

**FOOD:**

**Feeding 5 hourly, 3 times a day.**

**Calcium up to 1.0**

Feeding pinkies and fuzzies and adult mice. Leaving about half the fur on the fuzzies...
Crush sculls, gut if they were frozen.
Dog food must be soaked before feeding.
Using chicken meat from all parts of body now.
Small pieces of chicken flesh with soft feathers to every feed.

**Add more pieces of bone. Still small. No sharp edges!**

30% of body weight is fed through day.
Food moistened with ringers.
Crush Mealworm head before feeding.
Grapes: 2 to 3 per day. Skinned and take pips out.
GENERAL:
Wearing socks and ghost.
Chicks outside for 4 hours a day
Add leaves to bowl to make more natural 'Nest''

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**DAY 37:**

**FOOD:**

**Feeding 5 hourly, 3 times a day.**

Feeding pinkies and fuzzies and adult mice. Leaving about half the fur on the fuzzies...
Crush sculls, gut if they were frozen.
Dog food must be soaked before feeding.
Using chicken meat from all parts of body now.
Small pieces of chicken flesh with soft feathers to every feed.
Add more pieces of bone. Still small. No sharp edges!
30% of body weight is fed through day.
Food moistened with ringers.
Crush Mealworm head before feeding.
Grapes: 2 to 3 per day. Skinned and take pips out.
GENERAL:
Wearing socks and ghost.
Chicks out for 4 hours a day
Add leaves to bowl to make more natural 'Nest''

DAY 38:
FOOD:
**Feeding 5 hourly, 3 times a day.**
Feeding pinkies and fuzzies and adult mice. Leaving about half the fur on the fuzzies...
Crush sculls, gut if they were frozen.
Dog food must be soaked before feeding.
Using chicken meat from all parts of body now.
Small pieces of chicken flesh with soft feathers to every feed.
Add more pieces of bone. Still small. No sharp edges!
30% of body weight is fed through day.
Food moistened with ringers.
Crush Mealworm head before feeding.
Grapes: 2 to 3 per day. Skinned and take pips out.
GENERAL:
Wearing socks and ghost.
Chicks out for 4 hours a day
Add leaves to bowl to make more natural 'Nest''

DAY 39:
FOOD:
**Feeding 5 hourly, 3 times a day.**
Feeding pinkies and fuzzies and adult mice. Leaving about half the fur on the fuzzies...
Crush sculls, gut if they were frozen.
Dog food must be soaked before feeding.
Using chicken meat from all parts of body now.
Small pieces of chicken flesh with soft feathers to every feed.
Add more pieces of bone. Still small. No sharp edges!
30% of body weight is fed through day.
Food moistened with ringers.
Crush Mealworm head before feeding.
Grapes: 2 to 3 per day. Skinned and take pips out.
GENERAL:
Wearing socks and ghost.
Chicks out for 4 hours a day
Add leaves to bowl to make more natural 'Nest''

DAY 40:
FOOD:
**Feeding 5 hourly, 3 times a day.**
Feeding pinkies and fuzzies and adult mice. Leaving about half the fur on the fuzzies...
Crush sculls, gut if they were frozen.
Dog food must be soaked before feeding.
Using chicken meat from all parts of body now.
Small pieces of chicken flesh with soft feathers to every feed.
Add more pieces of bone. Still small. No sharp edges!
30% of body weight is fed through day.
Food moistened with ringers.
Crush Mealworm head before feeding.
Grapes: 2 to 3 per day. Skinned and take pips out.
GENERAL:
Wearing socks and ghost.
Chicks out for 6 hours a day
Add leaves to bowl to make more natural 'Nest'

DAY 41:
FOOD:
Feeding 5 hourly, 3 times a day.
Feeding pinkies and fuzzies and adult mice. Leaving about half the fur on the fuzzies...
Crush sculls, gut if they were frozen.
Dog food must be soaked before feeding.
Using chicken meat from all parts of body now.
Small pieces of chicken flesh with soft feathers to every feed.
Add more pieces of bone. Still small. No sharp edges!
30% of body weight is fed through day.
Food moistened with ringers.
Crush Mealworm head before feeding.
Grapes: 2 to 3 per day. Skinned and take pips out.
GENERAL:
Wearing socks and ghost.
Chicks out for 6 hours a day.
Add leaves to bowl to make more natural 'Nest'

DAY 42:
FOOD:
Feeding 5 hourly, 3 times a day.
Feeding pinkies and fuzzies and adult mice. Leaving about half the fur on the fuzzies...
Crush sculls, gut if they were frozen.
Dog food must be soaked before feeding.
Using chicken meat from all parts of body now.
Small pieces of chicken flesh with soft feathers to every feed.
Add more pieces of bone. Still small. No sharp edges!
30% of body weight is fed through day.
Food moistened with ringers.
Crush Mealworm head before feeding.
Grapes: 2 to 3 per day. Skinned and take pips out.

GENERAL:
Wearing socks and ghost.
Chicks out for 6 hours a day.
Add leaves to bowl to make more natural 'Nest"

**DAY 43:**

**FOOD:**

*Feeding 5 hourly, 3 times a day.*
Feeding pinkies and fuzzies and adult mice. Leaving about half the fur on the fuzzies...
Crush sculls, gut if they were frozen.
Dog food must be soaked before feeding.
Using chicken meat from all parts of body now.
Small pieces of chicken flesh with soft feathers to every feed.
Add more pieces of bone. Still small. No sharp edges!
30% of body weight is fed through day.
Food moistened with ringers.
Crush Mealworm head before feeding.
Grapes: 2 to 3 per day. Skinned and take pips out.

**GENERAL:**
Wearing socks and ghost.
Chicks out for 6 hours a day.
Add leaves to bowl to make more natural 'Nest"

**DAY 44:**

**FOOD:**

*Feeding 5 hourly, 3 times a day.*
Feeding pinkies and fuzzies and adult mice. Leaving about half the fur on the fuzzies...
Crush sculls, gut if they were frozen.
Dog food must be soaked before feeding.
Using chicken meat from all parts of body now.
Small pieces of chicken flesh with soft feathers to every feed.
Add more pieces of bone. Still small. No sharp edges!
30% of body weight is fed through day.
Food moistened with ringers.
Crush Mealworm head before feeding.
Grapes: 2 to 3 per day. Skinned and take pips out.

**GENERAL:**
Wearing socks and ghost.
Chicks out for 6 hours a day.
Add leaves to bowl to make more natural 'Nest"

**DAY 45:**
FOOD:

**Feeding 5 hourly, 3 times a day.**

*Food bowl is put in half hour before feed to see if they will start self feeding.*

Feeding pinkies and fuzzies and adult mice. Leaving about half the fur on the fuzzies...

Crush sculls, gut if they were frozen.

Dog food must be soaked before feeding.

Using chicken meat from all parts of body now.

Small pieces of chicken flesh with soft feathers to every feed.

Add more pieces of bone. Still small. No sharp edges!

30% of body weight is fed through day.

Food moistened with ringers.

Crush Mealworm head before feeding.

Grapes: 2 to 3 per day. Skinned and take pips out.

**GENERAL:**

Wearing socks and ghost.

Chicks out for 6 hours a day.

Add leaves to bowl to make more natural 'Nest"
Add more pieces of bone. Still small. No sharp edges!
30% of body weight is fed through day.
Food moistened with ringers.
Crush Mealworm head before feeding.
Grapes: 2 to 3 per day. Skinned and take pips out.
GENERAL:
Wearing socks and ghost.
Chicks out for 6 hours a day.
Add leaves to bowl to make more natural 'Nest'

**DAY 48:**

**FOOD:**
**Feeding 5 hourly, 3 times a day.**
Feeding pinkies and fuzzies and adult mice. Leaving about half the fur on the fuzzies...
Crush sculls, gut if they were frozen.
Dog food must be soaked before feeding.
Using chicken meat from all parts of body now.
Small pieces of chicken flesh with soft feathers to every feed.
Add more pieces of bone. Still small. No sharp edges!
30% of body weight is fed through day.
Food moistened with ringers.
Crush Mealworm head before feeding.
Grapes: 2 to 3 per day. Skinned and take pips out.
GENERAL:
Wearing socks and ghost.
Chicks out for 6 hours a day.
Add leaves to bowl to make more natural 'Nest'

**DAY 49:**

**FOOD:**
**Feeding 5 hourly, 3 times a day.**
2 Skinned chick torsos plus leg meat with feathers and 3 whole fuzzies with fur.
Crush sculls, gut if they were frozen.
Dog food must be soaked before feeding.
Using chicken meat from all parts of body now.
Small pieces of chicken flesh with soft feathers to every feed.
Add more pieces of bone. Still small. No sharp edges!
30% of body weight is fed through day.
Food moistened with ringers.
Crush Mealworm head before feeding.
Grapes: 2 to 3 per day. Skinned and take pips out.
GENERAL:
Wearing socks and ghost.
Chicks out for 6 hours a day.
Add leaves to bowl to make more natural 'Nest"

DAY 50:
FOOD:
**Feeding 5 hourly, 3 times a day.**
2 Skinned chick torsos plus leg meat with feathers and 3 whole fuzzies with fur.
Crush sculls, gut if they were frozen.
Dog food must be soaked before feeding.
Using chicken meat from all parts of body now.
Small pieces of chicken flesh with soft feathers to every feed.
Add more pieces of bone. Still small. No sharp edges!
30% of body weight is fed through day.
Food moistened with ringers.
Crush Mealworm head before feeding.
Grapes: 2 to 3 per day. Skinned and take pips out.
GENERAL:
Wearing socks and ghost.
Chicks out for 6 hours a day.
Add leaves to bowl to make more natural 'Nest"

DAY 51:
FOOD:
**Feeding 5 hourly, 3 times a day.**
2 Skinned chick torsos plus leg meat with feathers and 3 whole fuzzies with fur.
Crush sculls, gut if they were frozen.
Dog food must be soaked before feeding.
Using chicken meat from all parts of body now.
Small pieces of chicken flesh with soft feathers to every feed.
Add more pieces of bone. Still small. No sharp edges!
30% of body weight is fed through day.
Food moistened with ringers.
Crush Mealworm head before feeding.
Grapes: 2 to 3 per day. Skinned and take pips out.
GENERAL:
Wearing socks and ghost.
Chicks out for 6 hours a day.
Add leaves to bowl to make more natural 'Nest"

DAY 52:
FOOD:
**Feeding 5 hourly, 3 times a day.**
2 Skinned chick torsos plus leg meat with feathers and 3 whole fuzzies with fur.
Crush sculls, gut if they were frozen.
Dog food must be soaked before feeding.
Using chicken meat from all parts of body now.
Small pieces of chicken flesh with soft feathers to every feed.
Add more pieces of bone. Still small. No sharp edges!
30% of body weight is fed through day.
Food moistened with ringers.
Crush Mealworm head before feeding.
Grapes: 2 to 3 per day. Skinned and take pips out.
GENERAL:
Wearing socks and ghost.
Chicks out for 6 hours a day.
Add leaves to bowl to make more natural 'Nest'

**DAY 53:**
**FOOD:**
**Feeding 5 hourly, 3 times a day.**
2 Skinned chick torsos plus leg meat with feathers and 3 whole fuzzies with fur.
Crush sculls, gut if they were frozen.
Dog food must be soaked before feeding.
Using chicken meat from all parts of body now.
Small pieces of chicken flesh with soft feathers to every feed.
Add more pieces of bone. Still small. No sharp edges!
30% of body weight is fed through day.
Food moistened with ringers.
Crush Mealworm head before feeding.
Grapes: 2 to 3 per day. Skinned and take pips out.
GENERAL:
Wearing socks and ghost.
Chicks out for 6 hours a day.
Add leaves to bowl to make more natural 'Nest'

**DAY 54:**
**FOOD:**
**Feeding 5 hourly, 3 times a day.**
2 Skinned chick torsos plus leg meat with feathers and 3 whole fuzzies with fur.
Crush sculls, gut if they were frozen.
Dog food must be soaked before feeding.
Using chicken meat from all parts of body now.
Small pieces of chicken flesh with soft feathers to every feed.
Add more pieces of bone. Still small. No sharp edges!
30% of body weight is fed through day.
Food moistened with ringers.
Crush Mealworm head before feeding.
Grapes: 2 to 3 per day. Skinned and take pips out.
GENERAL:
DAY 55:
FOOD:
**Feeding 5 hourly, 3 times a day.**
2 Skinned chick torsos plus leg meat with feathers and 3 whole fuzzies with fur.
Crush sculls, gut if they were frozen.
Dog food must be soaked before feeding.
Using chicken meat from all parts of body now.
Small pieces of chicken flesh with soft feathers to every feed.
Add more pieces of bone. Still small. No sharp edges!
30% of body weight is fed through day.
Food moistened with ringers.
Crush Mealworm head before feeding.
Grapes: 2 to 3 per day. Skinned and take pips out.
GENERAL:
Wearing socks and ghost.
Chicks out for 6 hours a day.
Add leaves to bowl to make more natural 'Nest"
2 Skinned chick torsos plus leg meat with feathers and 3 whole fuzzies with fur.
Crush sculls, gut if they were frozen.
Dog food must be soaked before feeding.
Using chicken meat from all parts of body now.
Small pieces of chicken flesh with soft feathers to every feed.
Add more pieces of bone. Still small. No sharp edges!
30% of body weight is fed through day.
Food moistened with ringers.
Crush Mealworm head before feeding.
Grapes: 2 to 3 per day. Skinned and take pips out.
GENERAL:
Wearing socks and ghost.
Chicks out for 6 hours a day.
Add leaves to bowl to make more natural 'Nest'