

Hand-rearing barbets, Megalaimidae sp.

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Lineated barbet

Asian barbets (Megalaima sp.)

There are 28 recognized species of Asian barbets: 26 species of typical barbets (megalaima) in the family Megalaimidae, along two separate genres that include the Brown and the Fire-tufted barbet. The birds all inhabit wooded areas preferring broad-leaved trees. An exception to this is the Coppersmith barbet (*Megalaima haemacephala*), also prefers broad-leaved trees but readily lives and breeds in rural and suburban landscapes.

Asian barbets are known to consume fruits that they can swallow whole – primarily figs and other berries. Some species are also known to thrive in plantations. The birds also consume various insects and grubs, while larger birds may opportunistically pick up small lizards and frogs as well – this behaviour seems to be strongly associated with the high amounts of protein required to feed the young during the breeding period.

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Asian barbets are known to breed between the summer months of Feb and August, laying a clutch of 2-4 eggs and may raise more than 1 brood of chicks in the season. Nests are made in cavities of dense trees and may easily be over a foot deep. The eggs are actively incubated by both parents and are known to hatch after an incubation period of 2-3 weeks depending upon the species. Chicks are actively fed by both parents and they fledge at the age of about 28-35 days on average. Fledgling chicks are dependent on their parents for at least a few weeks after they fledge and are continued to be fed by the parents until they are independent.

Need for assistance

Baby barbets are not commonly admitted as rescues. Their nests are made in tree cavities and therefore highly unlikely to fall. The primary reason for admitting the species is when nesting trees have been felled during the nesting season. Such rescued babies may be placed in artificial nests (use similar dimensions as those of boxes described in pg. 5) and hung close to their original nesting trees; observe the nest from a distance to make sure the parents have returned to the new nest and have started feeding the chicks. Parent barbets frequently completely abandon such spaces once the nesting trees have been felled, making it necessary for the babies to be hand-raised.

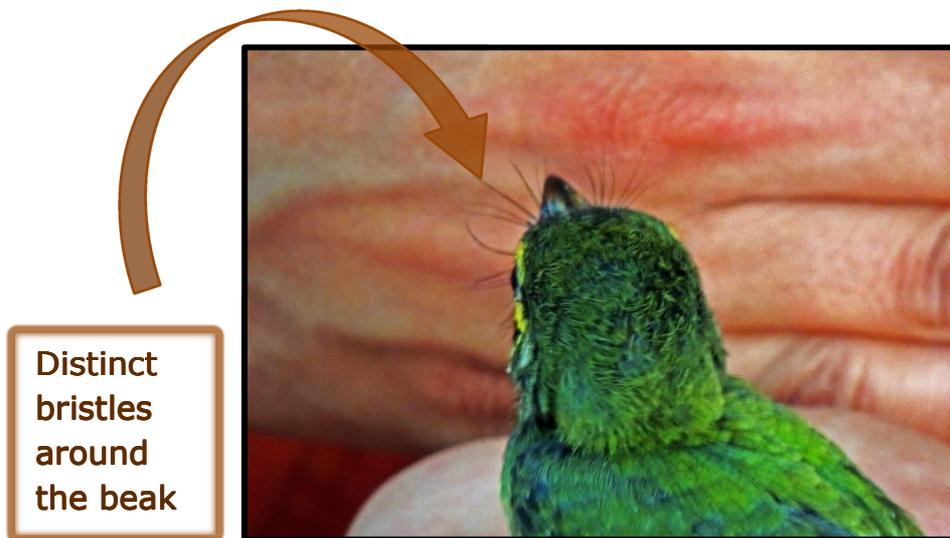
The chicks may also be found during the fledgling stage when they either jump out of the nest too soon or are unable to keep up and land in unsafe locations. In most cases, the parents will be close-by, keeping an eye on the chicks and feeding them wherever they are, thus requiring no human intervention. Ensure, from a safe distance away so as not to scare away the parents, that the chicks have been unfed or unattended to for at least a few hours before attempting to rescue the chicks.

Identifying and sexing barbets

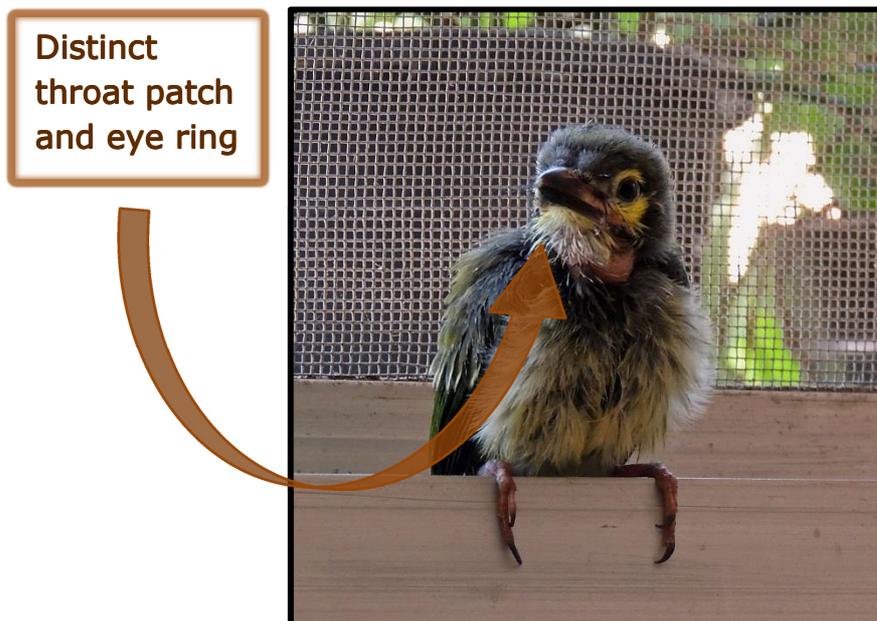
Asian barbets are small green birds with often striking colouring around the face, crown and bib. They have heavy beaks (proportionately bigger

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in the larger species) with large, prominent and outward pointing bristles around the base of the beak. Depending on the species, the distinct eye rings and throat patches will also visible once the birds are feathered.



Identifying barbets
Photograph clicked by Jagdish Aras



Distinct eye ring and throat patch in feathered chicks

Male and female barbets are monomorphic, i.e., there is no external distinguishing factor between the male and the female, but the females may have duller plumage in comparison to the males of the species. Females also have comparatively lighter (often dullish red-brown) coloured bills while the bill of male birds is black.

General guidelines for hand-rearing barbets



Baby barbet – nestling

Hygiene

The chicks must be kept in extremely hygienic conditions until they are ready to fledge as young chicks are susceptible infections. Their bedding must be kept clean and changed as often as required. Hands must be washed every single time before touching the nestlings. Excessive handling of the chicks must be avoided and they must only be handled during feeding times, although in most cases, it will be absolutely unnecessary to touch the chicks when feeding them.

Chicks will defecate several times through the day. Baby bird droppings are often enclosed in a capsule-like structure which makes it very easy for the parent birds to pick and drop them away from the nest. In most cases, you should be able to do the same and the paper towel lining may only be replaced a couple of times a day. But if you are unable to pick the droppings, then the towel must be replaced each time the chick defecates to prevent the droppings from sticking to the chick's feathers and skin. Droppings harden after sticking to the body and are extremely painful to remove and inevitably peel off with a bit of skin, exposing raw skin to bacterial infections.

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Baby barbets can be a little messy and a rather slow on preening until after fledging. Although they do judiciously preen their feathers and remove the casings of the pin feathers, they are unlikely to try and clean their beak or feathers of any food residue. They must therefore be wiped clean promptly after feeding them. Food residue left on then will again harden and stick to the body inviting bacterial infections and fungal growth – this must be avoided.

Handling and lifting barbet chicks

Unlike most birds, barbet chicks move by moving backwards, and they often keep backing until they can feel something solid against their backs. Freshly rescued birds will be particularly shy and will back away suddenly and quickly. Never leave them unattended on a table as they will most likely back up and fall off. If lifting or carrying them, ensure to always hold them in cupped hands.



Carrying baby birds in cupped hands

Alternatively, what I found effective for nestlings (although, I would recommend carrying them in cupped hands rather than this) was to lift them by inserting two fingers under their chest and lifting their body, leaving the legs hanging. Fledglings may be carried like normal birds – they will even perch on your hands although it is best (for their survival after release) not to train them to do so.

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Lifting baby barbets

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Housing

The chicks must be housed indoors in small nesting boxes. Although, smaller boxes: 10 x 15 cms width and 20 cms deep are adequate for nestlings, I find it comfortable to house them in slightly larger boxes: 20 x 20 cms width and 25 cms deep as it is easier to feed the chicks in the larger boxes itself and they are easier to keep clean.



Boxes for chicks: Approx. Width: 10 x 15 cms, Height: 20 cms



Boxes for chicks: Approx. Width: 20 x 20 cms; Height: 25 cms

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The chicks must never be placed on the cloth towels directly as their nails tend to get caught in the fibrous loops of the towels. Cotton too must never be used to line the nests as it gets entangled around the chick's beak and claws and also sticks to the droppings. The chicks must instead be placed on paper towels upon the cloth towel which also makes it easier to clean and replace soiled bedding.

On fledging, the chicks must be shifted to an aviary for adequate flight exercise before release. An aviary that is roughly 10 ft. X 5 ft. and 8-10 feet high is adequate for barbet chicks. The aviary must be equipped with several perches and some foliage but must also allow the barbets to fly about freely and exercise their flight muscles.

Inter-species interactions

The chicks must never be housed in close proximity to predatory species like crows, hawks, cats or dogs. Housing the chicks in close proximity to such species will either lead to constant stress due to the smells, sounds and movements of the predators; or it will lead to habituation and lack of fear and decrease their chances of survival after release.

Imprinting and dependency

Imprinting is a process whereby a young animal learns and imitates the behaviour traits of its parents. It serves as an indirect method of instilling the appropriate behaviour and survival traits in young animals.

Under the unnatural conditions of captivity, the chicks may imprint on humans and other animals they are constantly exposed to. To prevent this, they must never be handled excessively or exposed to too many people and animals, and handling must cease once the chicks have fledged. This also keeps them from being dependent on the caregivers.

Warmth

Birds, especially smaller sized birds, have higher basal metabolic rates and higher body temperatures ranging between 39°C – 43°C (102°F – 107°F). New-born chicks require additional warmth to maintain their body temperatures in the initial weeks of their lives and must always feel slightly warm on touch. As a rule of thumb, the smaller the chick, the more warmth it will require. Unfeathered chicks will require external heat all day long. The intensity of heat required will gradually reduce as the chicks become adequately feathered and discontinued upon fledging.

External heat may be provided in the form of incubators, heating lamps or hot-water bottles. Most breeding and rescue centres are equipped with incubators and prefer the same for baby birds. It is easiest to both control and monitor the temperature of the nest chamber when using incubators. But these may not be easily available to individual rescuers, in which case, alternate methods of providing external heat may be used. A primary advantage of summer breeders is that they nest during the warmer months of the year and the chicks require little additional heat when kept at room temperatures.

Heating lamps adequately serve the purpose of providing heat for nestlings. The distance of the heating lamp from the box will depend upon the wattage of the bulb and the body condition of the chicks. A room thermometer placed in the box will help you gauge the temperature and adjust the distance of lamp as and when required. Chicks that get too warm will pant to decrease their body temperature. If such behaviour is noticed, external heat must be reduced and ventilation increased immediately to prevent over-heating. The box must be covered with a cloth at night to prevent the light of the lamp from falling directly on the chicks and interrupting the natural circadian rhythm of the chicks.

Hot-water bottles may also be used for the chicks and are safe to use with smaller birds. The bottle, wrapped in a couple of layers of cloth, must be placed under the chick's bedding and it must be ensured that the chicks cannot come in direct contact with the bottle as they will scald if

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they do. Hot-water bottles must only be placed under half of the chick's bedding leaving them the flexibility to shift to the uncovered part of the box if they get too warm. Hot-water bottles may even be placed just outside the box while still touching the box to ensure adequate warmth.

Water and hydration

Baby birds are seldom given water orally. They receive adequate water through their feeds. Baby birds must be offered soft and moist foods as it both assists digestion and ensures sufficient hydration. Mild dehydration may be addressed by offering the chick softer foods or formulas until dehydration has been addressed. To help restore the electrolyte balance in dehydrated chicks, rehydration electrolytes may be added to the formula. Refrain from administering water orally as the risk of water going down the trachea and aspirating the chick is high. If severe dehydration exists, the chick may be given fluids subcutaneously but this must only be done by an avian veterinarian. Such chicks must be fed only after dehydration has been addressed.

Baby birds that are dehydrated will appear weak and listless. Their skin, especially around the breast and stomach, will appear tighter and wrinkled. The skin turgor test or the 'tent test' may also be used to assess dehydration. Well hydrated chicks, on the other hand, are soft to touch and appear rounded and well. They will also be a lot more active and interested in movements around them than dehydrated chicks.

Feed and formulas

The chicks need to be fed every half hour for the first two weeks of their life, and then every hour to every hour and a half until they fledge. Feeding must begin at dawn and continue for the next 12 hours or so until sunset. If feeding several chicks, you must ensure that all chicks are well fed as the runts or weaker chicks often get pushed aside and may consequently get weaker if not given adequate attention.

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Baby barbets can be comfortably hand-raised on fruits like banana, chiku (sapodilla), muskmelon and fig. Protein must be provided in the form of boiled eggs, fish, caviar or caterpillars. Different feed combinations will be appropriate for the chicks at different stages of their growth and development – details given in 'stage-wise care' after page 19.

Foods to be offered

- Banana – excellent base food for the formula – nutritious and easily digestible. 50% of the chick's diet can comprise of banana during the hand-feeding stage.
- Figs – excellent feed and closest to the adult's natural diet. Young chicks though are not often fed on figs but rather various berries. Proportion of figs may be up to 20% of diet in unfeathered chicks, increasing to 50-80% of diet in fledglings.
- Chiku (Sapodilla) – a good addition to the diet – upto 20% of a feathered chick's diet can comprise of chiku.
- Muskmelon – excellent and easily digestible, although quite high in water content for nestling birds. Again, an excellent option if rehydrating chicks. Feed proportion can be kept to 20-30% of diet.
- Boiled eggs (both egg yolk and white) – excellent feed option – good source of protein and high in natural fats and minerals. Can comprise of roughly 50% of diet in unfeathered chicks; 20-25% of diet in feathered chicks and completely stopped once the chicks have fledged. Use higher ratio of egg yolk for unfeathered chicks.
- Soft boiled fish – a good feed option – a source of easily digestible protein, fats and vitamins. Can comprise 20% of the chick's diet.
- Soft boiled caviar (fish eggs) – another excellent feed option – good source of protein and unlike eggs (chicken's), it is given whole – making a better substitute for the invertebrate protein which the parents would provide in nature. Can and must comprise of roughly 50% of diet in unfeathered chicks; 20-25% of diet in feathered chicks and completely stopped once the chicks have fledged.
- Infant cereals – cereals without any milk, for example, Nestum, may be added to the chick's diet. Although the chicks digest it well, it is an unnatural and unnecessary addition to their diet but may be used for convenience. Do not use infant formulas that contain milk.

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Foods that may be offered judiciously

- Grapes – very high in water content and not a good feed option for the chicks. But using fresh squeezed grape juice instead of water to dilute the feeds is a great idea – a good way to provide natural sugars and vitamins.
- Pomegranate – I wouldn't recommend serving pomegranates to the chicks because of the seeds. But using fresh squeezed pomegranate juice instead of water to dilute the feeds is again a great idea – a good way to provide natural sugars and vitamins.
- Guava – may be offered in small quantities, not exceeding 10% of daily diet. Avoid the seeds.
- Caterpillars and other grubs/larvae – a good, natural source of protein and, if feasible, may be added to the chick's diet. They may be wild caught but the easiest way to obtain caterpillars is by combing through rotten vegetables like cauliflowers and peas. They must nonetheless be picked carefully as some species can be poisonous and harmful for young birds.
- Grasshoppers, crickets, dried fish and shrimp too may be chopped and added to the chick's diet, although I have not personally tried these food items and therefore advise you to do so judiciously.

Foods to be avoided

- Papaya – I would advise you not to use papaya for the chicks at all. I tried papaya at different stages twice and had severe reactions with Coppersmith barbet chicks each time. The 1st attempt was at 3 weeks of age – one chick immediately vomited half the papaya, both had diarrhoea and completely fell low within an hour after serving the fruit. The 2nd attempt was at 1 month of age, after fledging – again, both chicks had severe diarrhoea immediately. Both times, the condition was corrected by administering anti-diarrhoeal medications, and glucose and electrolytes to stabilize the chicks. The chicks responded well to the treatment each time. Papaya may be given to older birds, but in my limited experience, must not exceed 10-15% of their daily diet. The birds are strongly

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attracted to the colour of papayas and tend to selectively overeat it as well which also leads to excessive droppings if not diarrhoea.

- Mango – unlike papaya, the chicks did not seem to be attracted to mangos at all and are therefore unlikely to consume it if given the choice. Again, it must not exceed 10-15% of their daily diet.

Avian vitamins and calcium supplements must be added to the formula for baby birds. The next best choice to avian supplements (if none available) would be other veterinary or paediatric vitamin drops – choose a supplement with added minerals too. Most multivitamin combinations do not include calcium and this must be supplemented as well – veterinary calcium drops are a good option. Probiotics too may be added to the chick's diet. Avian probiotics are of course the first choice but human or veterinary probiotics, for example, Gutwell, too will be helpful. The exact doses may be obtained from an avian veterinarian.

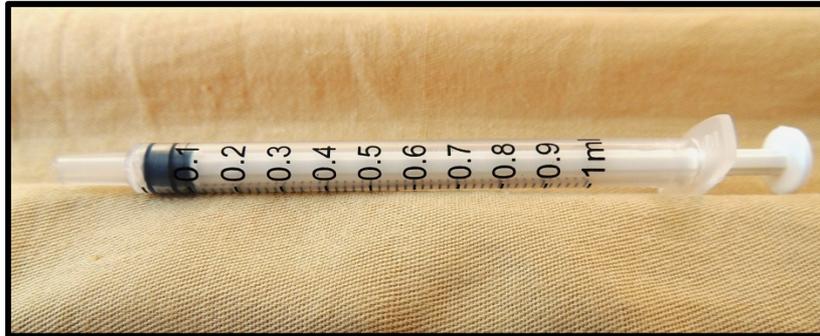
Baby birds will be given a formula consisting of pureed fruit and fish/eggs. It is easiest to feed them with a syringe for the first 2-3 weeks of their life. Once the birds are nearing fledging age, they can be fed small boluses of mashed fruit and egg/fish either by hand or with a pair of forceps. Fledglings will comfortably take pieces of fruit with a pair of forceps and will soon pick up pieces of fruit from a plate.

The consistency of the formula should be similar to that of a soft pudding – neither too thick, which would make it difficult for the baby to swallow and it may choke, nor too diluted as the baby could inhale the formula into its lungs causing aspiration. The chicks must be fed warm formula just as mammalian young are given warm milk. Formula that is too hot will scald the baby bird's crop, causing crop burn. Crop burn is the scalding of the chick's crop and oesophagus. Cold formula, on the other hand, will slow the process of digestion and cause 'sour crop'. Sour crop is a condition in which the formula in the chick's crop has gone bad as the contents of the crop have not emptied.

Once the chicks have fledged, fruit pieces must be offered at room temperature. Refrain from offering refrigerated fruits, rather, let the fruit come up to room temperature for an hour before offering it to the chicks.

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Feeders



1 ml tuberculin syringe for baby birds

Feeding syringes are required for feeding formulas as formulas are much too soft to be picked up with the forceps or by hand. Syringes however must either be discarded or sterilized after every use. I prefer using a fresh 1 ml tuberculin syringe for each of the feeds. The 1 ml syringes are impossible to sterilize in water as the plastic is too soft and loses shape and must hence be discarded after every feed.

Bigger syringes (2 ml onwards) can be sterilized. However, I find them impracticable for thick feeds – they are okay for mammal milk formulas. The syringes must be rinsed to wash off any feed residue and then boiled in boiling water for 5 minutes to sterilize it. Not sterilizing the feeders will lead to a build-up of bacteria in the feeders which can prove to be fatal for the chicks.



Blunt-tipped forceps for feeding older chicks

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A pair of blunt-tipped forceps is ideal for feeding fledgling barbets. These are easy to use, comfortable for the chicks and easy to clean. They only need to be washed with soap and water after the feed.

Feeding instructions

The chick can be placed on a napkin or paper towel on a table so you can feed the chick in a comfortable position – this is vital when feeding the chicks with a syringe. You can also feed the chick when it's in the basket but all spilled food must be picked up immediately, often necessitating the bedding to be changed after feeds.



Baby bird begging for food

The chicks gape as soon as the feeder approaches them. If not, you may gently tap on the chick's beak to stimulate begging and feeding. The chicks will only have a couple of morsels at a time. If using a syringe, feed the chicks the equivalent of a couple of bite-sized morsels for that chick. The chick must be given time to swallow the first morsel before the second one is offered. Once it has had enough to eat, the chick will stop gaping and refuse to open its beak. Feeding must be stopped immediately. The baby must not be forced to feed when it is reluctant to accept food. Force feeding or over feeding can cause the formula to flow into the throat and down its windpipe, which can be life threatening. The beak and feathers must be wiped gently with a moist cloth after feeding.

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Feeding baby bird with a pair of forceps



Feeding baby bird with a syringe



Feeding baby bird by hand

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Baby bird droppings

In comparison to their size, baby barbets consume copious amounts of food, which obviously means that there will be lots and lots of poop. In my experience, their poop is well clustered and very easy to remove as long as they are getting the right feed. It is often only when feeding is inappropriate that the problems start.



Baby bird dropping

The droppings will of course vary in colour and consistency depending upon the feed given, but here are some examples of healthy and normal droppings of baby barbets. Anything pasty or watery is definitely not a good sign and the diet must be rectified immediately.



Baby bird droppings

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Drinking water

Although most barbets would prefer to suck the water droplets on wet foliage, which is a typical behaviour of all highly arboreal species, they will be tempted to descend to water bowls during the peak of the summers. A small bowl of fresh water must therefore always be available for the barbets.



Drinking water from a bowl



Drinking water droplets on the leaves

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Bathing



Playing in wet foliage

Barbets seldom bathe in water bowls. They are arboreal birds and prefer to stay in tree cover. What they do enjoy is playing in foliage that has been sprayed with water – they will roll in the leaves and get as much water on themselves as they can. Encourage this behaviour by spraying the foliage in their enclosure once every day in the afternoons – this also helps to beat the summer heat. You may also gently spray them with a plant mister once in a few days – this also encourages preening as they preen more actively once they are a little soggy. A fresh bowl of drinking water must always be available for the birds nonetheless.

Stage-wise care of barbet chicks

Stage 1: Nestling – unfeathered

Characteristics: Barbet chicks are born completely naked with their eyes closed and are completely dependent on their parents for warmth, food and care. Thermoregulation is poorly developed in new-born chicks and they need an external source of heat at all times. The chicks' eyes open by the end of the first week. At the same time, the first pin feathers begin to erupt. Pin feathers rapidly erupt in the second week of the chick's life and the chick is fairly feathered by the end of the second week.

Feed: The chicks are extremely delicate at this stage and must only be fed on soft and very easily digestible foods. Soft boiled egg, fish protein and fish eggs must together make up roughly 50% of the chick's diet for the first couple of weeks. The remaining 50% can comprise of primarily banana and some chiku, melon and figs. Infant cereal too may be added to the diet if required but is unnecessary and perhaps best avoided. The foods must be skinned and pureed or blended in a mixer and fed to the chicks with the help of a syringe. A blend of egg, fish and/or fish eggs may be made for the entire day and refrigerated but fresh fruits must be added to every meal. I prefer giving the chicks a 50:50 mix of fruit and protein in each feed. The feed may be diluted a wee bit in the first week by adding fresh squeezed fruit juices – grapes and pomegranates are excellent for the purpose.

Once the chicks have settled and are accepting the feed well, ¼ drop of vitamin and calcium drops must be added to at least 2 feeds a day to begin with and gradually increasing to ¼ drop in four feeds of the day by the end of the second week. Probiotic supplements too may be added as per the chick's requirements – a tiny pinch of powder added to 3-4 feeds should be adequate for a chick at this age.

The chicks do not require any additional water at this stage as they get the required amount through their feed. [Please refer to note on 'Water and Hydration on pg.10 for further details.]

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Pin feathers begin to cover the body

Feeding quantity and frequency: Feeding must begin at about 6 am and continued till about 7 pm. The chicks must be fed every half hour in their first week of life and every 40-45 minutes in their second week of life.

A new-born chick may only have 0.1 ml of formula per feed, increasing to 0.2 ml of formula per feed by the end of the first week. The feed quantity would gradually increase to 0.5 ml of formula per feed by the end of the second week. Once the chick has had enough, it will cease to beg and must then be fed at the next feed. Over-feeding must always be avoided.

As a rough estimate, a chick will consume 2-3 ml of feed a day at birth and up to 4-5 ml of feed per day by the end of the first week. The daily average of feed consumed would increase to 8-10 ml by the end of the second week.

Special care: Naked nestlings require additional warmth throughout the day even when housed at room temperatures. The surrounding temperature must be maintained at approximately 104°F – 106°F for the first week and reduced to approximately 102°F – 104°F in the second week of the chick's life.

As their skin is very tender, they must be kept on soft bedding – a lining of soft cotton cloth may be preferable to paper towels at this stage. Refrain from using fleece or cotton towels.

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Stage 2: Nestling – feathered

Characteristics: The chicks are adequately feathered, covering the bulk of the body, at this stage. Colour markings which are indicative of the species, become prominent at this stage. Chicks develop rather quickly now and will be ready to attempt short flights in another week to ten days. The chicks are quite active and strong by this stage and begin standing on their legs by the fourth week of their lives.



Nestling – partially feathered

Feed: The chicks are given a similar diet but the food proportions vary. At this stage, I would reduce protein content (fish, eggs, caviar) to about 25% of the chick's diet, reduce bananas to roughly 25% of the diet and increase other fruits like chiku, melon and figs to 50%. Formula must nonetheless be pureed and fed with a syringe in the 3rd week but the chicks will now also accept mashed fruits. For better digestion, I prefer introducing mashed fruits only in the 4th week while slowly also introducing small pieces of fruit. At this stage, the chicks can be fed with a pair of forceps or by hand.

½ a drop of vitamin drops and calcium drops must be added to three feeds daily. Probiotics too may be added if required – a pinch of probiotics thrice a day should suffice each chick.

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Feeding quantity and frequency: The chicks may only be fed every hour in the 3rd week and every hour and a half in the 4th week as they will now be able to consume larger quantities in one go. Feeding must begin by 7 am and continued till about 7 pm.

Special care: External heat may be discontinued during the day [unless the days are chilly] in the 3rd week but will still be required at night. The ambient temperature may be maintained at 100°F for the chicks at this stage. Thermoregulation develops by this age and as the chicks are now also feathered, they retain heat a lot better. External heat may be totally discontinued in the 4th week but the chicks must nevertheless be housed in warm spaces at night.

Chicks get competitive and aggressive at this age. They often peck each other in competition and typically aim for the face and eyes of the other chicks. In most cases, this is normal competition between the chicks; but you may consider separating them if they seem too aggressive and likely to physically hurt the other chicks. Once the chicks are a little older, they will themselves move out of harm's way and although the competition will continue, there will be little risk of physical harm.

Stage 3: Fledgling – dependent upon parents



Fledgling, 4 weeks old – dependent upon parents
Photograph clicked by Jagdish Aras

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Characteristics: The chicks fledge by the time they are 4-5 weeks of age. Flying feathers develop with speed at this age; yet, their bodies will not be covered in adequate insulating feathers. A thicker layer of insulating feathers only starts to develop only once the chicks have left the nest.

Feed: The chicks will now readily accept small cut pieces of fruit: banana, chiku, muskmelon (the orangy ones), figs, etc. The chicks are naturally attracted to orange, red, yellow and brown coloured fruits and will soon even ignore bananas. Mashed egg must be continued if the chicks readily accept it; in most cases, they don't.



Plate of chopped fruit for fledglings



Fledgling picking up fruit on its own

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Feeding quantity and frequency: A plate of chopped fruit must be given to the chicks 5-6 times a day. The plate must be left before them to encourage eating on their own and fruit must be replaced every 2 hours. The chicks start feeding by themselves at this age and will be completely off hand-feeding within 4-5 days of fledging. Intermittent hand-feeding must be continued for a week or two after fledging until they chicks are consuming an adequate quantity themselves. To encourage eating on their own, offer a plate of chopped food and draw the chick's attention to it. To encourage independence, the plate must be offered to the chicks when they beg instead of offering pieces of fruit by hand – they learn to pick up pieces of fruit faster this way.

By the time the young birds are 6 weeks old, i.e. a couple of weeks after fledging, feeding may be reduced to 4 times a day. A plate of chopped fresh fruits may be offered to the birds early in the morning, mid-morning, early afternoon and late afternoon. Older birds rarely eat after 5-6 pm – they prepare to return to their roosts at this time.



Fledgling (6 weeks old) with a piece of fruit

The young birds will eat on their own and hand-feeding must have ceased completely by six weeks of age. In nature, barbets typically swallow whole fruits and berries, and the fruits must now be given in big pieces – just big enough for them to swallow. The chicks will also not require

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skinned fruit anymore. In fact, they must be encouraged to have whole (i.e., with the skin) fruit pieces.

Special care: The chicks must be shifted to an aviary at this stage as they need flight practice before release. The aviaries must also have a nest box for the chicks as they would prefer to roost in the box at night. Alternatively, they may be shifted indoors for the night.

The chicks don't require any external heat at this stage but must nonetheless be given warm roosting spaces at night, at least until a week or two after fledging. What they essentially need is something to block off the cool breeze at night until they are a little older. Insulating feathers also rapidly develop at this stage and by 6 weeks of age, the chicks will be well covered in insulating feathers. They may now be allowed to sleep in their aviaries and may even prefer to just sleep on branches instead of going into nest boxes.



A week after fledging – insulating feathers rapidly cover the body

Once the chicks start to eat by themselves, they will attempt to pick up anything brightly coloured that stands out against the background. Often, they will pick up and ingest their droppings for the first few days until they are able to distinguish between their dropping and actual food. Droppings must be picked up frequently to prevent this.

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A bowl of fresh water must also now be available for the chicks at all times as they will now start drinking water. It is also a good idea to offer a big and shallow bowl of water for the birds to bathe in – they will certainly enjoy it during the summer months.

Stage 4: Fledgling – independent



Fledgling – independent

Characteristics: The secondary plumage feathers begin to erupt by 8-9 weeks of age and the chicks have the characteristic adult colours by the time they are 10-11 weeks old. They are still fledglings at this age – notice in the pic above how they hold the wings just as fledglings do.

Feeding: The chicks will now consume an adult diet and will begin to consume a wide variety of foods. Although the primary diet will consist of figs, they will now readily consume banana, chiku, grapes, pomegranates, papaya, boiled peas, musk melon, water melon, guava, plum, java plum (jamun), *carissa congesta* (karvand), etc. Boiled eggs and caterpillars must still be offered every once in a while. Wild picked berries and fruit must now be introduced to their diet – this helps them familiarize with the foods available in the wild.

Hand-rearing barbets, Megalaimidae sp.



Offering whole fruits

The birds must be offered a combination of whole fruit and some chopped fruit pieces. The whole fruit encourages the birds to learn to peck small pieces out of whole fruit as they will consume many fruits that cannot be swallowed whole. Fresh food and water must be available for them at all times.

Special care: The chicks are now completely independent and must be readied for release. The process of soft release begins at 12-15 weeks of age, whereas birds being released through a hard release must be left after they cross 3-4 months of age.

Stage 5: Sub-adult/Immature

The chicks will appear brightly coloured and very muscular at this stage. They will have achieved 70% of their body growth and the beak may still appear proportionally a little larger.

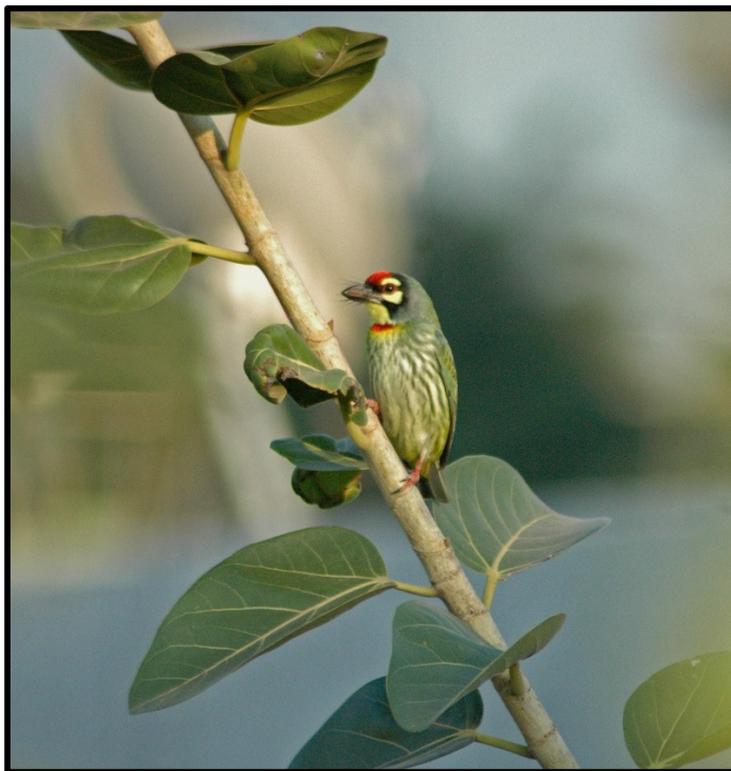
They are now completely independent and must have been released by this stage. If opting for a hard release, this is the right time to release them.

Hand-rearing barbets, Megalaimidae sp.



Sub-adult barbets

Stage 6: Adult birds



Adult Coppersmith barbet

Adult barbets will be completely independent and should have completely stopped returning to the aviary. They will breed in the following season.

Rehabilitation and Release

The young birds must be shifted to an aviary at the time of fledging and given adequate flight exercise before release. This is essential for them to develop the agility and swiftness required for survival. The aviary must be at least partially sheltered so the birds are not exposed to harsh sunlight throughout the day. Food at this stage must not be offered in one place but scattered around throughout the day so the young birds learn to search for it. Care must be taken to prevent the chicks from flying into the mesh and injuring themselves. Fresh drinking water and a larger shallow bowl of water to bathe in must be available at all times. The aviary must also have a couple of nest boxes, hung higher in the aviary, for the young birds to roost in.



A small aviary for barbets

The first step towards getting your bird ready for release is to break the young bird's dependency on human beings and to give it maximum opportunities to be tuned in to its natural instincts. The process of rehabilitation must actively start by the time the chick fledges and followed meticulously until release.

Hand-rearing barbets, *Megalaimidae* sp.

Important things to be kept in mind when releasing barbets,

1. Place of release and the prevailing environmental conditions

Wherever possible, all rescued animals must be released where they have been picked up from. This is particularly important when releasing animals that had been admitted to care centres as adults so they can have the chance to go back to familiar and known spaces. Younger birds must be released in suitable locations with good tree cover and ample fruiting trees, particularly figs, and in locations where they will be easy to monitor for the first few days after release.

The only instance where release to the same location must be avoided is if there have been irreversible changes which led to the initial displacement of the birds in the first place and will have rendered the place unsuitable for the survival of the species.

2. Age and timing of release

Birds that have been admitted as sub-adults or adults may be released just as soon as they are ready to be released. The only consideration for them is fitness for survival.

Birds that have hand-raised, on the other hand, need to go through a more protective method of release. Young birds may be released at the age of about 2½ - 3 months when opting for a soft release whereas those that are being hard released must only be released after 4 months of age.

3. Method of release

Birds may be released by following protocols for either a soft release, which is most ideal and recommended for hand-raised young, or through a hard release.

Hand-rearing barbets, Megalaimidae sp.

Hard Release is a means by which the animal is released into a new location without its being accustomed to the new environment. This process is appropriate for barbets that have been taken into care as adults.

Soft Release is a means by which the animal is gradually introduced or familiarized to a new environment before its release into that location. Hand-raised animals are at a disadvantage of not having had adequate parental learning and require additional safety and protection during release; hence the ideal way to release them is through a process of soft release.

The simplest way to soft release a barbet is by allowing it to fly in-and-out of its enclosure for the first few weeks after it fledges and becomes fairly independent. The young must be shifted to enclosures where they will be released from so that they can identify the enclosure and their surroundings – this will help in building site fidelity and make it easier for them to return to the safety of the enclosure until they are completely independent and ready to leave. The young birds may be allowed to fly out in a few weeks thereafter through a couple of openings/windows in their enclosures. At this age, the birds will not fly far and return to their enclosure several times during the day and most certainly to roost at night. The access opening and windows must only be opened at dawn and closed at night to prevent entry of predators like rats, cats, snakes, etc.

Once they have explored their surroundings and have found safe roosting spaces for themselves (typically in a few weeks), they will cease to return to the protection of their aviary but may return for titbits of food. Eventually, they will become completely independent and cease to return to the aviary at all. Supplemental feeding must be continued until the birds are independent but may be ceased once the birds are self-sufficient.

Birds may be released in a similar manner if hand-raising and rehabbing from home [appropriate only for species that are found

Hand-rearing barbets, Megalaimidae sp.

near your home – this mostly applies only to Coppersmith barbets]. Consider a small cagey extension out of any room or window – this system works best in apartment buildings. The extension may simply be a light frame with wire mesh if there is no threat of cats – this is inexpensive and very easy to install. I used the method below and periodically let the young birds in the room to exercise their wings.



**Example of rehab enclosure at home
(Dimensions: 4 ft. x 3 ft. x 7 ft. high)**

Although barbets are generally very independent, birds being rehabilitated and released from homes may return for longer durations as they are likely to have stronger bonds with both the homes and the caregivers. They may also visit every now and then well after the gain complete independence. Do refrain from encouraging the birds to enter the house if the birds visit you. Birds that are accustomed to entering the house are twice as likely to accidentally fly into someone else's house and land into trouble.

Note of caution: A ceiling fan must never be used in a room with birds to ensure they don't fly into a moving fan and get injured fatally.

Hand-rearing barbets, Megalaimidae sp.



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