Hand-rearing and rehabilitation of corvids: House crow (*C. splendens*) and Jungle crow (*C. macrorhynchos*)

Devna Arora

Introduction

House crow feeding its chicks
Tejas Katdare

The House crow (*Corvus splendens*) and the Jungle crow (*Corvus macrorhynchos)* are two of the commonest species of India – both widespread and sympatric in distribution, commonly found in cities and as far as man goes. They have well followed man outside their native range. Although there are few differences in the habits of each of the species, the house crow is comparatively more gregarious and tames easily. Both are highly observant and intelligent species – carefully watching and following human movement.

Although the house crow is known to be a summer breeder breeding between March and June, the Jungle crow is primarily known to be a winter breeder breeding between December and February, but the

breeding seasons' well overlap with both species mostly breeding in the summer months. Each species lays 4 eggs on average, some of which may be replaced by the koels (*Eudynamys scolopaceus*), in a large nest cup made up of twigs, grass, leaves, wool, hair, etc. Nests are typically placed high up in trees.

Need for assistance

Baby crows are seldom found as smaller chicks, i.e., unfeathered chicks, unless the entire nesting tree has fallen or has been felled. Damage during storms is also significantly less as they build (owing to their larger size I presume) their nests on studier branches. Where fallen chicks or nests are found, they may be placed in sturdy wicker baskets and placed high on the tree or possibly an adjacent tree if the nesting tree itself has fallen. Some people have found it tricky to reunite babies (the smaller ones) in the past, and unless the parents accept them and the other crows don't bother them, the chicks have been taken in for hand-rearing.

Baby crows from a fallen nest (tree was felled)
Priya Mishra

Unfledged babies (esp. when unfeathered) that have fallen from a height are highly likely to have sustained injuries, particularly internal injuries. High mortality is observed in these babies if they cannot be assisted.

Chicks are more commonly found at the fledgling stage and even though they may be on the ground, they are very strongly guarded by the entire crow community. As long as the babies are healthy and without any physical damage, they may simply be placed on the nesting tree or the nearest tree (although they do normally need to be placed high up), preferably closer to the other siblings if they can be located and the parents will continue to look after them. Injured babies may also be treated and then reunited with their flocks as corvids form strong bonds with their families and they benefit most by being with their own parents.

Protective gear: wearing a motorcycle helmet to rescue crows
Photo clicked by Arpna Dev

N.B. Crows will mob any predator (including the rescuers) in great numbers. They can and will come at you from all sides and their beak can cause significant damage. So please ensure to wear some protective gear when going in to rescue/assist crows. I personally prefer to use a full-face motorcycle helmet with the visor covering the eyes; perhaps a full-sleeved shirt and some gloves would also be helpful but I would say a helmet is very important or some kind of protective glasses covering the eyes at the minimum.

Identifying baby crows

First and foremost, baby crows are bigger than the average baby passerine and even younger babies will likely fill your entire palm when you hold them. The beak is heavy in proportion to the body and characteristically pink in colour. The gape is a bright pink (verging on red) and the gape flange (at the base of the beak) is again pink. The beak darkens as the chick grows, turning to black by the time the birds fledge but the gape flange, i.e., the base of the beak is a visible pink in newly fledged babies that are still dependent upon their parents.



Baby crow beak

Priya Mishra | Palak Thakor | Devna Arora



Baby crow gape and gape flange

Tejas Katdare | Palak Thakor | Devna Arora

General guidelines for hand-rearing corvids

Jungle crow nestling
Photograph clicked by Sujaya Ghormade

Hygiene

The chicks must be kept in hygienic conditions until they are ready to fledge as younger chicks can be highly susceptible infections. 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 time, although it will be absolutely unnecessary to touch the chicks even when feeding them.

The chicks will defecate several times through the day. Their bedding must be kept clean and changed as often as required to prevent the droppings from sticking to the chick's skin and feathers. [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.]

To remove any dried food particles or droppings that have stuck to the skin or feathers of the baby birds, wet the area with a drop of warm water and allow it to soak for a minute or two before attempting to remove it with your finger or with a piece of wet cloth. The procedure must be repeated if the particle doesn't completely come out in the first attempt.

Housing

Housing babies in a box – fresh rescue
Amruta Ubale

Baby birds can be housed comfortably in a basket or a cardboard box while new born chicks may be kept in an incubator. A nesting cup (which is simply a shallow bowl or cup-shaped basket lined with soft tissue or cotton cloth) must be used for smaller chicks as it supports their bodies better. To prevent splayed legs, the chicks must not be kept on a smooth surface; they will benefit from a rough base which could be a layer of straw or sticks at the base of the basket which is then covered with paper towels or cotton cloth. The sticks/straw will give will give them adequate gripping while the paper towels or cloth will be easy to change when soiled. Younger chicks must never be placed on the cotton towels (Turkish 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 soaks the droppings and sticks to the baby birds, making it painful to be removed.

Housing baby crows in a basket
Palak Thakor

Weaker babies (until stronger) must be kept separate from the stronger ones so they don't get bullied or pushed aside while being fed.

In nature, the young birds tend to move away from the nest and remain on adjoining branches prior to fledging. Similarly, the chicks may ideally be shifted to smaller enclosures with some low perches for the chicks to move around and sit on. On fledging, the chicks must be shifted to an aviary for adequate flight exercise before release. Crows are large-winged birds and must be shifted to an aviary of at least 12 ft. X 30 ft. and 12-15 feet high. The aviary must be equipped with several perches at different levels and some foliage (preferably at least 1 large tree in the case of crows) but must also allow the birds to fly about freely and exercise their fight muscles.

Inter-species interactions

The chicks must never be housed in close proximity to predatory species like cats, dogs, or larger birds of prey or other predators. 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 a method of instilling the appropriate behaviour and survival traits in young animals.

Under unnatural conditions of captivity, the chicks may imprint on humans and other animals they are constantly exposed to – since parental learning is higher in corvids, they seem to be more prone to malimprinting. To prevent this, they must never be handled excessively or exposed to too many people and animals, and handling must cease as soon as they chicks are able to eat on their own. This also keeps them from becoming excessively dependent on the caregivers. Especially in the case of corvids, they must be housed with other corvids or somewhere where they can observe and learn from members of the same species.

Warmth

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. Since crows are primarily summer nesters, it's important to find a balance between providing heat and avoiding overheating. 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 completely discontinued upon fledging. Baby birds found in the warmer months of the year will require little additional heat when kept at room temperatures but those found in the colder months of the year will require additional warmth throughout the day and will need to be monitored closely.

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.

Heating lamps adequately serve the purpose of providing heat for nestlings. The distance of the heating lamp from the box will depend upon the local weather conditions, 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. Excessive heat will also result in dehydration and the temperature must therefore be monitored and maintained closely. The box must be covered with a dark 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 you must ensure that the chicks cannot come in direct contact with the bottle as they will scald if 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. Severely dehydrated chicks must only be fed 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 in naked hatchlings. 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 sounds and movements around them than are dehydrated chicks.

Feed and formulas

Crows are omnivorous birds that consume a high amount of animal protein (birds, mammals, chicks, insects, road kills, etc.) along with some grains and some fruits and vegetables. Chicks are fed high amounts of animal protein: At least 40-50% animal protein for younger chicks and 30-40% animal protein for older chicks. Diet in captivity primarily includes shredded chicken or fish (deboned), infant (human) foods – chicken, fish or turkey, pinkie mice, cat food jellies or puppy food pouches, boiled or scrambled egg, caterpillars, crickets, nuts, some fruit, berries and vegetable, corn, oats, dough made of *sattu* (flour made of roasted pulses and cereals) and maybe some cooked rice or chapattis. Babies are fed ad libitum from sunrise to sunset but naked babies may be fed until 10 pm or midnight. 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.

Although naked babies may be given a formula (pureed foods), they do very well on soft mashed food which can either be fed by hand or preferably with a pair of blunt-tipped forceps. Soft boluses must be made appropriate to the size of the bird and simply be dropped further into the mouth behind the tongue. Babies typically gape on sight but may be coaxed if the gaping reflex isn't strong. Once fledged, the chicks will eat on their own and will only require supplemental hand feeding till they are independent.

Blunt-tipped forceps for feeding older chicks
Devna Arora

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.

The chick must be given a warm feed just as mammalian young are given warm milk. Formula that is too hot will scald the baby bird's crop causing crop burn – which 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.

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. You can also feed the chick when he/she's in the basket but all spilled food must be picked up immediately, often necessitating the bedding to be changed after feeds.

The chicks gape as soon as the feeder approaches them. If not, you may gently tap on the chick's beak to stimulate a begging and feeding response. The chick must be given time to swallow the first morsel before the second one is offered. The chicks will only have a couple of morsels at a time and refuse to gape once they are full. Feeding must be stopped immediately.

Baby crow gaping to be fed
Palak Thakor

The baby must not be forced to feed when it is reluctant to accept food. Force feeding or over feeding can cause the feed 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.

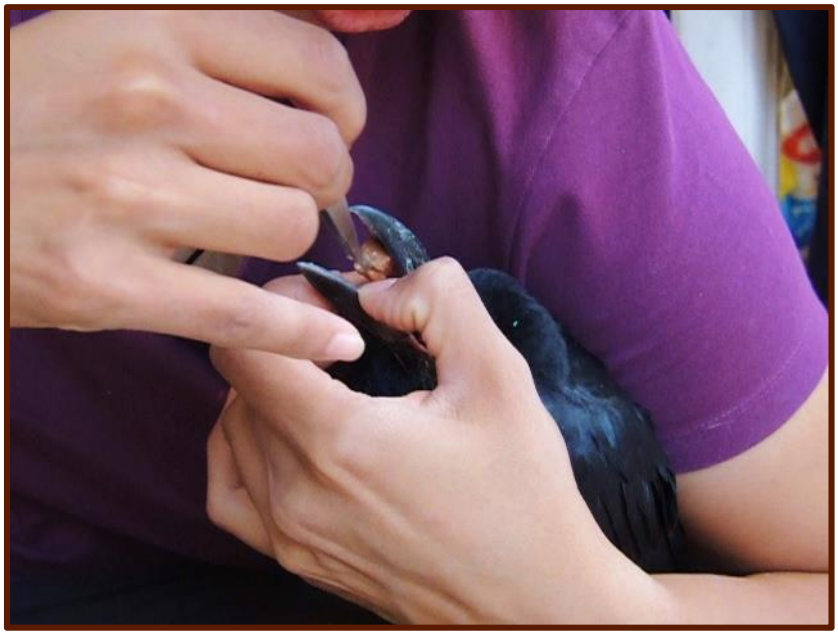
Younger babies gape and beg for food at the slightest of movement around them but older babies, fledglings particularly, show recognition and newly rescued birds will not readily gape and ask for food until they have settled down with you. They will need to be handled gently but may

also need to be force fed until they begin eating on their own – this process must be very calm and gentle without giving the bird a chance to struggle in any way yet handling must be minimal. The better you handle them, the sooner the lil' guys will settle down.

For larger-sized fledglings like those of corvids, the moment you try and open their beak, they will uneasily start fluttering and immediately back away. So the easiest way to feed them is by placing them on your lap (it helps if you squat in this case) or a table, wrapping your arm around them (without applying any pressure – this will simply act as a barrier the bird cannot further back into) and using an underhand grip to open the lower mandible of their beak. A small morsel of food can then be dropped deep into their mouth behind the tongue. The bird must be given a few minutes to swallow and settle down before the next morsel is offered – you must loosen your grip around the bird in the meanwhile. Once the bird has settled down (hopefully over a day), he/she will slowly start asking for food.

You must resort to minimal handling once that happens and holding them in this manner will no longer be necessary and **must not** be continued.

Feeding baby crows that refuse to feed
Photo clicked by Sujaya Ghormade



Feeding baby crows that refuse to feed
Photo clicked by Sujaya Ghormade

Baby bird droppings

Baby bird droppings can vary considerably depending upon the food offered although droppings tend to be darker coloured when using dog/cat food. As long as the droppings are well-formed and not runny, I guess it is okay. I truly apologize, I'm not able to elaborate on this at this time and don't have more photographs of baby crow droppings to share.

Baby crow droppings
Palak Thakor

Internal and external parasites

Baby birds are highly prone to heavy infestations of external parasites until they have begun to groom themselves effectively as their parents perform this task till the babies are fairly independent. To keep the fleas/lice under control, 0.1 ml of external use Ivermectin may be dabbed behind the neck of each bird or a spray containing Fipronil (for example, Frontline or Protector) may be dabbed behind the neck and under the wings of each bird. The bedding of the chicks must be replaced to prevent any fleas/lice from climbing back on them.

Due to their habit of scavenging and their high dependence on raw meats, crows are also highly susceptible to internal parasites. Ivermectin may be used at a dose of 200 mcg/kilo body weight to deworm the birds (Stocker 2005). It is always a good practice to deworm them at least once prior to release (or *in-situ* acclimatization) to prevent the spread of any parasites to wild populations.

Handling young crows

Since they are large-sized birds, it is almost impossible to hold young crows with one hand. People normally resort to a two-hand grip with one hand over the bird and one hand under – in most cases, the grip is wrong if you don't know what you are doing. Please be extremely careful when handling to prevent damage or making the bird uncomfortable.

Never place your hand under the bird's crop when holding them. Undue pressure on the crop can result in damage and regurgitation and possible choking. The grip must always be closer to the legs when supporting the lower part of the bird's body.

Refrain from holding under the crop
Photot clicked by Amruta Ubale

Never lift the bird in a similar manner, i.e., with the hand under the chest or the crop. This can not only result in damage and choking but will also result in 'balling' of the feet. A bird's leg needs to grip something. The moment you lift them without supporting their feet, they tend to clench their feet/claws and the nails dig in to the flesh causing damage repeatedly. This can be a major problem with birds of prey and other

large birds with big nails and every care must be taken to prevent this. Birds are already prone to doing this when they are stressed and particular care must be taken to prevent any damage.

Refrain from lifting with a grip under the chest/crop
Amruta Ubale

Prevent balling of feet due to improper grip – seen to the left
Palak Thakor

The best way to hold baby crows is by supporting their feet. I personally prefer to let them rest their feet on my palm and then gently lift them. Once the baby bird feels safe and secure, it will stay put and not attempt to move or get away. The less you handle them, the more comfortable they feel. This works perfectly as the baby bird is secure, which is vital, and the feet are placed properly. If at all they must be lifted (not recommended), you can place a roll of newspaper or something between their feet to prevent the nails from digging in.

Supporting their feet
Photograph clicked by Sujaya Ghormade

Here's a lil' trick the baby birds may like: if you gently stroke them on the head, they will immediately submit to you and put their head down for you to preen them – this is what their parents do when they preen the younger babies. In fact, babies that don't obey are pecked and corrected – wouldn't recommend you do that though :o)

Baby crows respond to being gently stroked on the head
Photo clicked by Sujaya Ghormade

Hand-Rearing Corvids: Summary of Care

Age	Diet	Frequency	Quantity	Feed	Warmth
Pinkies	Infant foods – chicken, fish, turkey; cat food jelly or puppy food pouch; soft cooked chicken, fish or liver; boiled or scrambled egg; caterpillars, crickets, pinkie mice; some fruit or berries; cooked rice or oats or infant cereal without milk; introduce some nut butters.	Every ½ hour	Ad libitum	Sunrise to midnight	24/7
Partially feathered		Every 45 minutes	Ad libitum	Sunrise to 10 pm	Early morning, evening and night
Feathered	Infant foods – chicken, fish, turkey; cat food jelly or puppy food pouch; cooked chicken, fish or liver; boiled or scrambled egg; some fruit, berries and veg; cooked rice or oats; nut butters and crushed nuts; chopped mice and young chicks.	Every hour	Ad libitum	Sunrise to 8-9 pm	Night only
Fledgling	Introduce raw meats; boiled or scrambled egg; nuts and seeds; fruit and veg; cooked rice, oats or some bread; some dog food or cat food kibble; some dried fish or beef jerky; whole mice and young chicks.	Supplemental feeding every 2 hours	Ad libitum	Sunrise to sunset	No external heat
Sub-adult	Same as above. Some live prey may be introduced where legalities permit.	Supplemental feeding only	Ad libitum	Dry foods + Fresh food given 2-3 times a day	None
Adult		No hand-feeding	Ad libitum		None

Stage-wise care of corvid chicks

Stage 1: Nestling – unfeathered

Baby crows
Priya Mishra

Characteristics: Baby crows 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 require a source of external heat at all times. The chicks' eyes open by the time they are 7-10 days old. At the same time, the first pin feathers and insulating down feathers erupt and rapidly cover the chick in a small layer of feathers.

Feed: The chicks are extremely delicate at this stage and must only be fed soft-cooked and easily digestible, mashed foods. Chicks require a protein-rich diet at this stage comprising of 40-50% animal-based proteins. Half of the chick's diet will comprise of soft boiled or scrambled egg, infant (human) baby foods – chicken, fish, baby beef or turkey; puppy or cat food pouches; soft boiled chicken, liver and fish (deboned); some green caterpillars (do NOT use any hairy caterpillars as they can be extremely toxic) or grasshoppers (preferably after the second week). The

remaining diet can comprise of infant cereal like Nestum which is without milk (can be used as a formula or rolled into a soft dough), cooked rice or oats, some dough made of *sattu* and some soft fruits like banana, and home-made nut butters (without salt/sugar) using sesame seeds (a personal favourite as its rich in calcium), peanuts and cashew nuts.

Once the chicks have settled and are accepting the feed well, a drop of vitamin and calcium drops must be added to at least 2 feeds a day to begin with and gradually increasing to 2 drops in 3 feeds of the day by the end of the second week. Probiotic supplements too may be added as per the chick's requirements – a 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. 9-10 for further details.]

Feeding quantity and frequency: Feeding must begin at sunrise and continued till about 10-11 pm in the first couple of weeks of the chick's life. The chicks must be fed every half hour and must be given as much as they will readily have. Once the chick has had enough, it will refuse to gape and feeding must be stopped. Over-feeding must always be avoided.

Baby crow covered in down, pin feathers erupting
Palak Thakor

As a guideline, a new-born baby would consume roughly 1 ml of food per feed, a week-old baby would consume 2-3 ml or a teaspoon per feed, while a 2-week old baby would consume 5-6 ml or a tablespoon per feed.

Special care: Naked nestlings require additional warmth throughout the day even when housed at room temperatures. The surrounding temperature must be maintained at approximately 100°F for the first couple of weeks of the chick's life.

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

Stage 2: Nestling – feathered

House crow nestling (partially feathered)
Palak Thakor

Characteristics: The chicks are adequately feathered, covering the bulk of the body, by the time they are three weeks old. The eyes are noticeably blue at this young age while the pink beak begins to darken in colour.

Colour markings, indicative of the species, become visible at this stage. The chicks become active and strong by this stage and begin standing on their legs in a few weeks' time. They also now begin to respond to sounds and movements around them and begin to show recognition.

Jungle crow nestling (sleeping)
Amruta Ubale

Feed: The chicks are given a similar diet at this stage but do not require soft cooked or mashed foods any longer. Their diet must still be protein-rich and must comprise of a minimum of 40% of animal-based proteins. The chick's diet can now comprise of boiled or scrambled egg, infant (human) baby foods – chicken, fish, baby beef or turkey; puppy or cat food pouches; boiled chicken, liver and fish (deboned) and raw meats must be slowly introduced as the chicks age; some green caterpillars or grasshoppers. The remaining half of the diet can comprise of a combination of cooked rice or oats, some *chapattis*, some dough made of *sattu* and a little bit of all fruits. Vegetables, sprouted lentils, nuts and seeds must also be introduced at this stage – mostly shelled and crushed initially but introduce whole (and with shells) seeds and nuts gradually. Fresh drinking water must now be provided in a bowl for the baby birds.

2-3 drops 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 would suffice each chick.

Feeding quantity and frequency: The chicks may now be fed every 45 minutes until they are a month old and then every hour until fledging as they will now be able to consume larger quantities in one go. Babies should consume 1-2 tablespoons of food per feed. Feeding must begin by sunrise and continued until sunset or an hour or so later.

Baby crow sleeping
Amruta Ubale

Special care: Thermoregulation also develops by this age and as the chicks are now also feathered, they retain heat a lot better. External heat may be discontinued in the mid-mornings and afternoons [esp. on warmer days or depending upon the environmental conditions where you live] in the 3rd week and completely discontinued during the day once the chicks are a month-old. The chicks will still require some warmth at night until they fledge. The surrounding temperature can be maintained at approximately 98-100°F until fledging.

Stage 3: Fledgling – dependent upon parents

Characteristics: Chicks fledge at the age of about 6-8 weeks in captivity. Newly fledged chicks have a visible pink gape flange and although their feathers appear fresh, they are duller in plumage than adult birds. Baby birds stay close to their parents at this stage and do not range much

further away from the nesting site. The chicks are able to eat on their own by the time they are a month-old but continue to beg and require supplemental hand-feeding until 2-3 months of age.

Jungle crow fledgling
Devna Arora

Feed: Baby foods and puppy/cat food pouches may be completely discontinued at this stage. The young birds will instead be consuming raw meats – chicken, fish, mice, chicks (poultry), etc. Since crows are highly opportunistic in nature, live mice and chicks may be given occasionally as hunting practice for the young birds (where possible and legally permitted). They may be given dog or cat food kibble and are particularly attracted to multi-coloured foods. Diet will also include cereals, nuts, seeds, fruits and vegetables. Diet must also include some human foods since the birds will likely often scavenge for left-overs. The birds must always have a bowl of fresh drinking water.

Feeding enrichment must begin at this stage and the young birds must be given a complex of foods that require both skill and mental expertise to acquire. Food must also be placed in several different places at different times of the day to encourage the birds to search for food.

Feeding quantity and frequency: Dry foods must be available at all times for the young birds and a plate of fresh foods must be given to the chicks

about 3-4 times a day. To encourage eating on their own, offer a plate of chopped foods and draw the chick's attention to it by tapping on the place and giving them a few morsels from the plate. Every time the chicks beg, offer a plate of food instead of hand-feeding them – they learn to pick up pieces of food faster this way. Intermittent hand-feeding must be continued for about a month after fledging until the chicks are consuming adequate quantities themselves but will have completely ceased by the time the chicks are 2½ - 3 months of age. The chicks must also be offered whole fruits (i.e., complete with the skin) so they can learn to eat foods as they are found in nature.

Special care: The chicks must be shifted to an aviary at this stage as they need flight practice before release. Although they do not require external heat anymore, the aviaries must have a nest box or some sheltered space that cuts off the breeze as the chicks may still prefer a warmer space for the night. Alternatively, they may be shifted indoors for the night for the first couple of weeks after fledging. The aviaries must have large trees so the chicks get habituated to sleeping under covered branches.

Stage 4: Fledgling – independent

Young crows start becoming independent by the time they are 4-5 months of age and require minimal intervention and looking after thereafter. They must have gone through active rehabilitation after fledging and the soft release process must have now begun. If opting for a hard release (not advisable as hand-reared crows are likely to fare better with a soft release), they can be released after 5-6 months of age.

Feeding: The chicks will consume a similar diet as in the previous stage but hand-feeding will have completely ceased. Dry food and water must be available for them at all times with fresh foods provided 2-3 times/day.

Special care: The chicks are now completely independent and must be readied for release. If they were shifted to smaller enclosures at the time of fledging, they must now be in larger aviaries for adequate flight exercise prior to release.

Rehabilitation and Release

Jungle crow fledgling
Devna Arora

Important considerations when rehabilitating young crows:

1. Space

Crows are large sized birds and require more space than the average passerine for adequate flight practice. Although babies may be hand-reared at home, they must ideally be shifted to larger outdoor aviaries for at least a couple of months prior to release.

Young crows may be shifted to smaller enclosures by the time they are 5-6 weeks old. Even if they haven't fledged yet, they are quite adept on their feet and can begin exploring their space. Perches must be closely connected so the babies can climb with ease, yet none must be very high to prevent physical injuries from falling off. Once the birds fledge, higher perches must be offered to encourage the birds to hop between higher branches.

By the time the birds are 2 - 2 ½ months old, they must be shifted to a larger aviary of at least 12 ft. X 30 ft. and 12-15 feet high. The aviary

must have at least a couple of tress so that the young birds get accustomed to sleeping under tree cover. Tress must be placed towards the edges of the aviary so as to leave adequate flying space for the birds. Although the young birds will prefer to sleep in the open, there must always be a couple of nest boxes in case the birds prefer to use them.

2. Independence

This is a very important criterion for all hand-raised babies. All baby animals naturally come to depend upon their caregivers but when being hand-reared, it is important to minimize (and gradually wean off) human contact as soon as the birds become independent. Crows in the wild very well communicate with humans, in fact, many have their feeding rituals and readily take food from the hands of the people they recognize so handling is definitely not detrimental but they tend to tune in to their instincts better when human handling is minimal.

The young birds begin feeding on their own nearing fledging age. Supplemental hand-feeding may be continued for a few weeks after fledging to ensure intake of nutrition and adequate weight gain but hand-feeding must have completely ceased by the time they are 2 ½ - 3 months old. Handling too would be unessential at this stage and the birds must not get habituated to begging or demanding attention from humans.

3. Enrichment

Crows are very intelligent birds and require great amounts of stimulation to keep them occupied and to encourage them to investigate new spaces and things. They must be provided lots of toys and puzzles (some can easily be picked up at pet shops and food puzzles designed for dogs and cats may very well be appropriate for crows), food games and natural whole foods that require time, skill and expertise to obtain. The process of enrichment is gradual – introduce simpler puzzles and food games to begin with and gradually introduce complex puzzles. For example, if introducing whole groundnuts – the birds at first may have no idea what it is or what they are supposed to do with it so it will be a good idea to give them partially shelled nuts before introducing whole groundnuts.

Food must also not be offered only in one place, at a specific height or even at a particular time. The birds must not be habituated to expecting anything. They have to learn to be opportunistic and actively look for opportunities to gain. Hide foods in different puzzles, in different places and at different times of the day.

Crows are particularly sensitive to changes in the spatial gradient and may even stop eating when in unfamiliar and new places or conditions. It is therefore very important to prevent them from getting used to a particular surrounding (as this will be problematic at the time of release) and to continually make some changes to their living arrangements – this not only ensures that the birds have adequate enrichment but also that they remain adaptable to new living conditions and adjust better, with minimal stress, to the changes in their environment.

4. Socialization

Corvids are very social birds and the majority of their learning is learned through interaction (and correction) with other birds. It is very important for the young birds to be raised in the company of other young birds or be raised in close proximity to other (and preferably wild) birds. Where direct interaction may not be feasible (no other corvids in captivity) or beneficial (if the older birds are specifically attacking or harassing the younger birds), they may be placed in adjacent enclosures or rehabilitated through *in-situ* acclimatization. Different species of corvids may very well be housed and raised together as their range often overlaps in nature.

5. De-worming prior to release

Please refer to note on page 15.

6. Acclimatization and Release

Since crows are highly sensitive to spatial changes, they fare best when released through a soft release process with *in-situ* acclimatization. Acclimatization is a process where an animal is allowed to become familiar with the intended place of release for at least a couple of weeks prior to

release – this is typically done at the intended site of release. Unlike most other birds, crows tend to return closer to their nesting site until they are old enough to move away and such a release process gives them the security to do just that.

Ideally, young crows must be shifted to an *in-situ* aviary upon fledging and the aviary can be opened when the birds are 4-5 months old. Younger birds tend to get bullied by resident corvids and it is best to begin their release process only after 4 months of age. They may also be rehabilitated from home, in which case, their living arrangements must ideally be made in a large balcony or terrace which can be covered with net or wire (chicken wire is affordable and it works just fine) to prevent the birds from escaping while they are being hand-raised – this can be taken down at the time of release.

N.B. Being large birds, they benefit from the open space of an aviary and do not get adequate flying practice at home so I will not encourage you to keep the birds at home, rather, shift them to a rehabilitation centre prior to release. The species is also not shy in nature and readily approaches humans for treats. Birds that are habituated to living in the house might easily enter someone else's house after release – getting trapped or possibly flying into the ceiling fan resulting into disastrous consequences.

At four months of age, the aviary can be opened for the birds, allowing them to fly in-and-out at free will. They must initially be provided food both inside the aviary and outside, gradually shifting their feeding trays outside over the following two weeks. The young birds continue to return for treats and often to sleep at night until they are 5-6 months of age. Once completely independent, they will likely cease to return at night but may occasionally visit for treats. The aviary can then be used for the next lot of youngsters.

Photographs used (available online)

Priya Mishra – Baby crows
Available from:
<https://www.facebook.com/tuktuk19may/media_set?set=a.1015017401 4437949.310892.664612948&type=1>

Tejas Katdare – House crow feeding its chicks
Available from:
<https://www.flickr.com/photos/tejas_katdare/4879017576>

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Thanks a bunch guys, your photographs truly add value to words!

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