

The House Sparrow *Passer domesticus*: Nesting, Orphan Care and Rehabilitation

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The House sparrow

The house sparrow (*Passer domesticus*) is a small passerine bird widely distributed across old world countries in the northern hemisphere and is now also commonly found in several other countries, both in the northern and southern hemisphere, beyond its native range. The species is commonly found in rural and suburban landscapes and lives in close proximity to and dependency upon humans. However, the species has been on a steady decline throughout its native range and populations have reduced to half or less in many of its native ranges.



House sparrow eating seeds
Devna Arora

House sparrows are primarily granivorous birds and forage on the ground for fallen grains and seeds of grasses but will also readily consume cooked grains, biscuit crumbs, cultivated seeds, crushed nuts and animal protein including caterpillars, butterflies, moths and other small insects.

Nesting behaviour

House sparrows are highly gregarious birds and it is not uncommon to see hosts of them flocking together. Pairs fiercely defend their nests but don't mind other sparrows nesting a foot-or-so away from them as long as there are sufficient nesting spaces. Sparrows typically mate for life and both parents are actively involved in rearing the chicks. They also show high nest fidelity and return to the same nests every year to breed. The life expectancy of house sparrows is 6-10 years on average while individual birds have been known to live longer.

The species mostly breeds between the summer months of February and June in tropical countries and April to August in temperate zones, and has been known to have raised 2-3 broods of chicks in good seasons. Nests are made in small cavities like eaves of houses, holes in brick walls, dense trees and bushes and other natural and man-made cavities.



Female house sparrow carrying nesting material
Palak Thakor

Although sparrows have been known to lay 4-5 eggs per clutch, recent observations have indicated a steady decline in the numbers of eggs per clutch in many places. Comparisons of broken egg shells also indicate noticeable thinning of the shells over the years (personal observations over two decades). Even though people have been making a conscious

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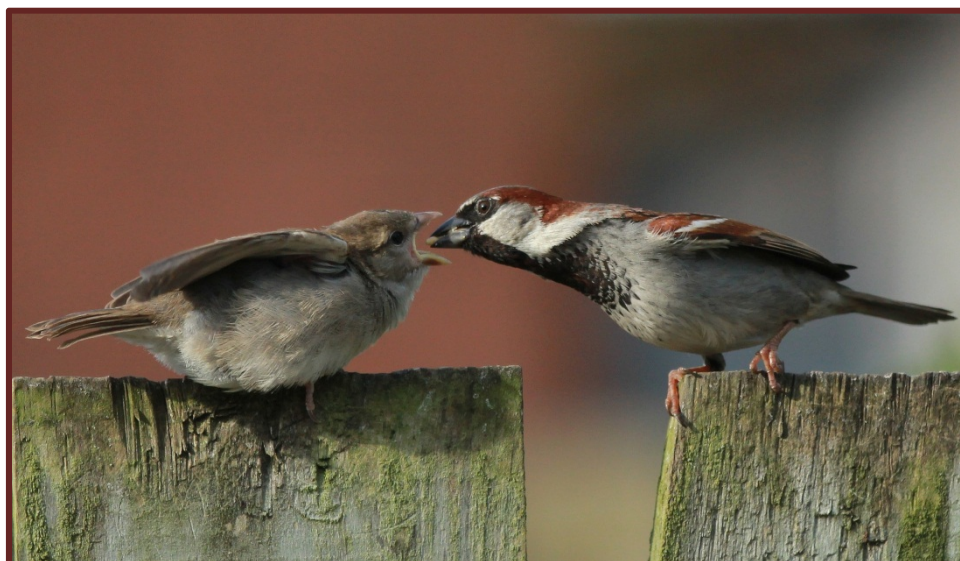
effort to encourage breeding by placing artificial nest boxes for sparrows, only 1-2 chicks have fledged in cities like Pune (Maharashtra, India) in recent years.

Records from temperate zones record an incubation period of 10-14 days and eggs are actively incubated by both parents. Chicks are actively fed by both parents and they fledge at the age of about 15-18 days. In contrast, observations in more tropical zones indicate an incubation period of 20-21 days and the chicks fledge at the age of about 20-25 days. It is the female that actively incubates the eggs while the male guards the nest and feeds the female while she sits on the eggs. Although the male provides the female with nearly half her daily requirements during incubation, she makes brief visits to feed, drink or defecate away from the nest. Meanwhile, the male moves closer to the nest and guards the nest until the female returns. Once the eggs hatch, both parents actively take turns in feeding the chicks.

Female sparrows noticeably lose weight during the nesting period. It is also interesting to note that the beak of female sparrows with chicks is visibly lighter than those of other female sparrows and females with active nests can therefore be easily identified.

N.B. There is a noticeable difference in the age of fledging of sparrow chicks in different latitudes. Sparrows in temperate zones, due to longer daylight hours of the summer months, feed their chicks from about 4–5 am to about 11 pm each day. This helps the chicks to develop and fledge at a faster rate than those in more tropical zones. Those living next to artificial light sources may enjoy similar benefits. Whereas sparrows living in tropical zones only begin feeding their chicks at about 6 am and will cease feeding for the day by approximately 7–8 pm.

Sparrow chicks are dependent on their parents for at least a week or two after they fledge and are continued to be fed by the parents until they start feeding themselves. It is now the male that primarily keeps an eye on the fledglings and accompanies them everywhere. The female, in the meanwhile, replenishes the lost energy and prepares for the second brood of chicks.



Fledged young being fed by the male
Aaron

Need for assistance

In the event of the demise of one parent, sparrow chicks are less likely to be found in helpless situations as the other parent continues to care for them. The chicks therefore are most commonly 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. If the parents and the nest can be identified, such chicks must be placed back in their nests at the earliest. The chicks must not be returned to just any sparrow nest if unsure of the parents and nest of origin as non-biological parents are unlikely to care for them or feed them. Attempts to reunite the chick may be made in subsequent days if the chick appears to be able to keep up and if the parents still appear to be protective of him/her. In all other instances, the chicks must be hand-reared and released at an appropriate time.

Finding fallen nests too is not uncommon, but rare. The simplest thing to do when you find a fallen nest is to place the chicks in an artificial nest and place it as close to the location of the original nest. Sparrows readily nest in shoe-boxes or similar sized boxes with a small hole to the upper end of any of its sides. The nesting material of the original nest may be

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placed inside the artificial nest and then placed at an appropriate location. Disturbance around the new nest must be avoided in all instances so as not to scare the parents away.



**Artificial nest/Breeding box for sparrows
Devna Arora**

In most cases, the parents resume feeding the chicks in a couple of hours but if they don't accept the new nest and resume feeding, the chicks must be brought indoors to ensure adequate warmth for the night and may be fed while they are still indoors. A second attempt at reuniting the chicks must be made at first light. The artificial nest box must be placed back before dawn to allow an uninterrupted visit by the parents. Chicks/Nests that have not been accepted by the parents by noon must be shifted into human care for hand-rearing.

House sparrow readily nest in close proximity to humans as long as they feel safe and will tolerate familiar human movement within a few feet of their nests.

Sexing House sparrows

Sexing mature sparrows is rather simple. The female house sparrow is light buff-brown in colour with no markings on her light coloured chest. The male, on the other hand, is brightly coloured with an ashy crown extending to its forehead and a black bib running down its throat.



Female house sparrow: front and top view
Devna Arora



Male house sparrow: front and top view
Devna Arora

General guidelines for hand-rearing house sparrows

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.

Housing

New-born chicks must be housed indoors in small nesting boxes. The chicks may be placed in small nesting cups and then placed in boxes. A nesting cup is simply a rounded bowl, 6-10 cms in diameter, with some soft cloth towels and paper towels on it.



Nesting cup for new-born chicks
Devna Arora

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

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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 on the cloth towel which also makes it easier to clean and replace soiled bedding.

The nesting cup must be placed in a box, as this keeps warm air contained in the box, and placed under a heating lamp with the lid open. The distance of the heating lamp from the box will depend upon the wattage of the bulb. The chicks will require more warmth while they are unfeathered while the intensity of heat required will gradually reduce as the chicks become adequately feathered. 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.

Chicks will defecate several times through the day. Their droppings are 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.

Feathered chicks/nestlings may be shifted to small cages. They must still be housed indoors but may be exposed to mild sunlight for a couple of hours every day. They may or not require additional warmth during the day which will be dependent on the prevailing weather conditions at your place, but will most likely still require mild heating at night.

On fledging, the chicks must be shifted to an aviary for adequate flight exercise before release. An aviary that is roughly 10 ft. X 10 ft. and 10 feet high is adequate for sparrow chicks. The aviary must be equipped with several perches but must allow the sparrows 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

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 do not imprint on sparrows as they have never been exposed to any but on other humans and animals they are exposed to.

I am embarrassed to admit that I (Devna Arora – personal experiences) have, in the past, had a sparrow chick that had imprinted on palm-squirrels as they were housed in the same room. She would follow them everywhere, try and behave like them, squeeze into tiny spaces along with them, and attempt to eat the foods that the young squirrels were eating. Although she was independent by the time she fledged, she was turning out to be more of a squirrel dressed in a pair of wings. Fortunately, this behaviour was recognized and corrected immediately and the first step towards her rehabilitation was to break her contact with the squirrels and expose her to more birds and luckily for us, it worked and she adapted beautifully to normal sparrow behaviour. But, such behaviours must never be allowed to manifest in the first place.

The first rule of hand-raising an animal that is to be released is to prevent imprinting by the wrong species. The youngster must therefore never be housed with animals of other species. Handling of younger birds must be restricted to 1-2 caregivers. The chicks must only recognize the primary caregiver and not depend upon humans for care. This will prevent it from approaching humans for food and begging.

Warmth

Birds, especially smaller sized birds like house sparrows, have higher basal metabolic rates and higher body temperatures. The average body temperature of small passerines is between 39°C – 43°C (102°F – 107°F). The chicks therefore require additional warmth to maintain higher body temperatures in the initial few 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.

Most breeding centres and rescue centre nurseries 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 are required.

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. Although it is difficult to monitor the heat produced by heating lamps, they adequately serve the purpose of providing heat for nestlings. 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.

Hot-water bottles are also used to provide external heat 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 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. They may therefore not be ideal for use with nesting cups but convenient instead for bigger housing boxes.

Water and hydration

Baby birds are seldom given water orally. They receive adequate water through their feeds. Birds have no means of carrying back water for their chicks nor can they lead their chicks to water and lead them back to their nests. It is in extreme cases when the temperatures rise very high that the parent birds may dip themselves in water so the chicks can lick the water off their feathers – however, this behaviour has not been documented in house sparrows.

Baby birds must be offered soft and moist foods both assist digestion and ensure 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, rehydration electrolytes may be added to the water that is used to soak the chick's food in. 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

The chicks need to be fed every half hour until they fledge and will consume about 5% of body weight in each feed. Feeding must begin at dawn and continue for the next 15 hours or so until later in the night. 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 sparrows can be given a vast variety of foods which include cooked rice, boiled egg, moistened glucose or maize biscuits, bread dipped in little milk, cake or pancake crumbs, whole-wheat dough, *sattu* or roasted chickpea flour (*besan*) dough, dry cat food soaked in water, flaked rice (*poha*), rolled oats, broken wheat porridge, *chapattis*, peanut butter, crushed seeds, fresh sprouts, soaked grains like rice, millet (*jowar*, *bajra*), bird seed and cereal mixes. 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 18.

Caterpillars are an excellent source of nutrition and, if feasible, must 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. Caterpillars must nonetheless be picked carefully as some species can be poisonous and harmful for young birds. Grasshoppers and crickets may also be added to the chick's diet.

Avian vitamins and calcium like Avitron, Avimix, Zolcal-D, etc., if available, are ideal supplements for baby birds. The next best choice to avian supplements would be other veterinary or paediatric combinations such as Zincovit, Sancal pet or A-Z drops. Most multivitamin combinations do not include calcium and this may be supplemented in addition to the brand available. We also recommended the addition of probiotics to the chick's feed. Avian probiotics like PetAg's Bene-Bac Plus or human preparations like Vibact or Bifilac may be used for the chicks. The exact doses may be obtained from an avian veterinarian.

Baby bird formula, like Kaytee's Exact hand feeding formula or Hagen's Tropicana baby hand-feeding formula, available in most pet stores, may be used in combination with other foods for hand-rearing baby sparrows. However, as these are not easily available in many parts of India, other foods and infant cereals like Cerelac, Farex or Nestum (Stage I or Stage II – Rice, Wheat and Wheat-Apple) may also be used for baby birds.

Only boiled water must ever be used to prepare the feed. Refrain from preparing the feed in plastic containers as they are concerns over

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chemicals like BPA leaking into the formula if stored and heated in plastic containers. A fresh batch of feed must be prepared for every feed and all leftovers must be promptly discarded as using stale feed can lead to bacterial infections.



**Feeding the nestling with a syringe
Devna Arora**

The formula must however be fed using a feeding syringe whereas the other foods can be fed to the chicks using a pair of blunt-tipped forceps or tweezers. 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.

Note of caution on the use of milk for feeding the chicks

Milk is in no way a natural part of any bird's diet. Baby birds do not require milk for growth and do not readily digest milk. Providing an inappropriate diet will disturb the microbial balance of the gut flora and can result in severe diarrhoea.

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Infant cereals that contain milk have however been used successfully for hand-rearing several species of birds. Studies and experiences of aviculturists indicate that baby birds may tolerate up to 5% of milk in their diet without it causing them any harm. Nonetheless, wild sparrows have often been observed preferring bread and milk to feed their chicks over other available alternatives but this may simply be due to the palatability of the feed. Although we personally do not propagate the use of milk for baby birds, observations of wild sparrows indicate that milk may be used in minute quantities for baby birds.

Feeders



Blunt-tipped tweezers for feeding baby birds
Devna Arora

A pair of blunt-tipped forceps or tweezers is ideal for feeding baby sparrows. 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.



Disposable syringe to feed baby birds
Devna Arora

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Feeding syringes are required for feeding formulas as formulas are much too soft to be picked up with tweezers or forceps. Syringes however have to be sterilized after every use. The syringe 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.

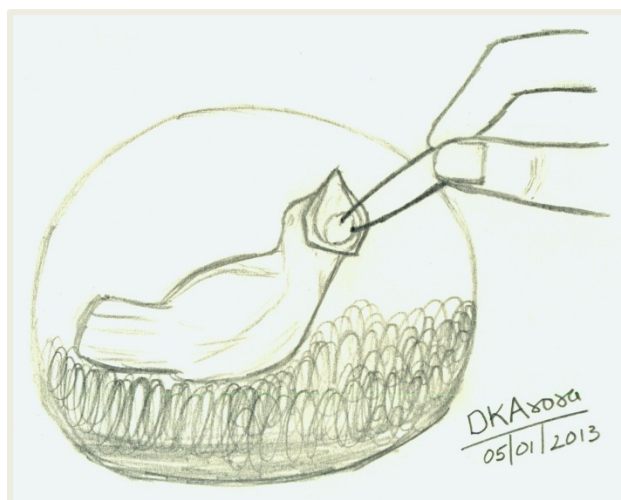
Feeding instructions

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 she's in her basket but all spilled food must be picked up, necessitating the bedding to be changed after feeds.



Nestling begging for food
Gaurav Kavathekar

Our aim is to emulate the parent bird as much as possible when hand-feeding the chicks. Parent birds tap on the chick's beak to encourage a feeding response. Gently tap the chick's beak with the feeding instrument in a similar manner to encourage the feeding response. The feeding response is when the chick senses food and gapes, bobbing her head up and down and begging for food. Older chicks also flutter their wings vigorously to attract the attention of the parents when begging for food.



Feeding the baby bird with a pair of forceps
Devna Arora

Parent sparrows then feed their chicks by inserting their beaks into the chick's mouth and dropping the food deep into its mouth. The chicks will only have a couple of morsels at a time. If using a syringe, feed the chicks the equivalents of a couple of bite-sized morsels for that chick. The chick must be given enough time to swallow the first morsel before the second one is offered. There will be a noticeable bulge in the chick's crop once it has been feed. The crop is a muscular pouch near the throat of the baby bird where excess food is stored for subsequent digestion.

Once the crop is full, not over-extended, and 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 or feed to flow into the throat and down its windpipe, which can be life threatening. The beak and feathers of the chick must be wiped gently with a warm, damp cloth after feeding.

Bathing

Sparrows love taking baths, be it water baths or dust baths, as it helps them keep their feathers clean and free of parasites. By the time a chick fledges, it will be eager to take a bath. A bigger, shallow dish of water (preferably mildly warm water if available) must be placed for the chicks

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during the warmer parts of the day and the chicks will readily hop in. The chicks must be allowed to dry in normal sunlight after their baths.



Sparrows bathing
Andrey

If housing young birds in an aviary, at least one third of the aviary must be covered in mud or sand so as to allow the chicks to take a dust bath.



Wild sparrows taking a dust bath
Devna Arora

Stage-wise care of house sparrow chicks

N.B. The exact age for the stage may differ depending on the latitude – temperate vs. tropical zones. [Please refer to page 3 for the explanation.]

Stage 1: Nestling – unfeathered



5 days old house sparrow chick
Kate Vincent

Characteristics: Sparrow 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.



Pin feathers erupting
Alistair

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The chicks' eyes begin to open by the end of the first week. At the same time, the first pin feathers begin to erupt. The feathers, both down and pin feathers, rapidly erupt in the second week of the chick's life and the chick is adequately 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. Cooked rice, moistened biscuits (glucose or marie), mashed boiled eggs – particularly egg yolk, or bread dipped in a little milk are appropriate for chicks of this stage. Baby bird hand-feeding formulas, where available, are also excellent for baby birds. The feed may be rolled into teeny boluses and fed to the chicks with a pair of tweezers or blunt-tipped forceps. The chick's diet in the first week is primarily carbohydrate-based with roughly 25% of egg yolk.

Alternatively, the chicks could be fed infant cereal formulas like Nestum or Cerelac (Stage 1 or 2 formulas like Rice, Wheat or Wheat and Apple) but this must be done with the help of a feeding syringe. Nonetheless, we recommend that the chicks be given the diet mentioned in the paragraph above and be fed with a pair of tweezers or blunt-tipped forceps.

The chicks do not require any additional water at this stage as they get the required amount through their feed. Giving the chick's water or liquid feeds (like Cerelac or Nestum – mentioned above) can be particularly dangerous as it can lead to aspiration of the feed if not carefully administered and must be strictly avoided. Water will only be essential for dehydrated chicks that have been in the sun for too long. [Please refer to note on 'Water and Hydration on pg.11 for further details.]

Many more foods can be introduced to its diet in the second week of the chick's life, i.e., once the feathers start to develop. The chicks may now also be offered whole-wheat dough, rolled oats or broken wheat porridge (*dalia*), and moistened cat food in small quantities. Foods such as smooth peanut butter, crushed sunflower hearts or sesame seeds, cake and pancake crumbs, cooked flaked rice (*poha*) and sprouts may also be introduced in minute quantities to the chicks' diet. Dough made of *sattu* or baked/roasted chickpea flour (*besan*) is an excellent source of protein for the chicks and may be introduced in the second week. Caterpillars

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(only if you can identify the ones that aren't toxic!), grasshoppers and crickets may now be added to their diet if you can source some. The proportion of biscuits, soaked bread and cooked rice must be reduced to 50% of the feed in the second week while egg can comprise of 25% of feed and the new introduced foods can make up the remainder of the chick's feed.

A quarter drop of vitamin drops added to their feeds thrice a day for new-born chicks and half a drop in their feeds thrice a day for week-old chicks should suffice their needs. Calcium supplements and probiotics may be dusted on their feed accordingly.

Feeding quantity and frequency: Feeding must begin at about 6 am and continued late into the night, preferably till 10 pm. The chicks must be fed every half hour. They may consume a couple of morsels at each feed. 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.

Special care: Nestlings require additional warmth throughout the day even when housed at room temperatures. The surrounding temperature must be maintained at 104°F – 106°F for the chicks at this stage. Additional warmth will be essential to maintain the temperature once the temperatures dip at night.

Stage 2: Nestling – feathered

Characteristics: Although the chick is adequately feathered by the third week of its life [tropical conditions – chicks in temperate latitudes develop faster], it is yet to develop its flight muscles and primaries (flight feathers) and hence unable to fly at this stage. Chicks develop rather quickly at this stage and will be ready to attempt short flights in another week to ten days. The chicks are quite active and strong by this stage.



**Nestling – feathered
Alistair**

Feed: The chicks can now be offered a varied diet. The proportion of moistened biscuit, soaked bread and cooked rice must be reduced to 25% of the feed as it will not give them adequate nutrition. Egg can comprise of 25% of the chick's diet whereas other food items like whole-wheat dough, *sattu* or roasted chickpea flour dough, moistened cat food, rolled oats, *poha*, sprouts, crushed seeds, peanut butter, cake, pancake, caterpillars, etc. can make up the remainder of the diet. New foods like *chapattis*, bird cereal mixes, breakfast cereal mixes and crushed, soft nuts like cashews may also be introduced to the chick's diet. Infant cereal formulas, if given previously, will no longer be necessary. A drop of vitamin drops and some calcium and probiotics may be added to the chick's meals thrice a day.

Syringe feeding, if it has been attempted, will be absolutely un-necessary at this stage. Chicks at this stage must be fed using a pair of tweezers or blunt-tipped forceps. Shallow bowls of water must be available for the chicks as they may now attempt to drink water.

Feeding quantity and frequency: The chicks must be fed every half hour to forty-five minutes as they will now be able to consume larger quantities in one go. Feeding must begin by 6-7 am and continued at least until 8-9 pm.

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Special care: External heat may be discontinued during the day on warmer days or depending upon the environmental conditions where you live but may be required at night. The surrounding temperature may now be maintained at 102°F – 104°F for the chicks at this stage. Thermoregulation also develops by this age and as the chicks are now also feathered, they retain heat a lot better.

Stage 3: Fledgling – dependent upon parents

Characteristics: The chicks fledge by the time they are less than 3 weeks old in temperate countries or a roughly 25 days old in tropical countries.



Fledgling – dependent upon parents
Paul Hillman

Feed: The chicks will now eat almost everything that adult sparrows eat. Moistened biscuits, soaked bread, peanut butter may now be completely discontinued. Their diet will now comprise of cooked rice, boiled egg, sprouts, *chapattis*, crushed nuts and seeds, whole-wheat dough, *sattu* or roasted chickpea flour dough and rolled oats.

The chicks must not be hand-fed with raw grains like millet (*jowar*, *bajra*), rice, soaked pulses and other bird seed mixes. These must be left scattered on the floor for the chicks to pick them themselves. This will prevent forcing hard to digest foods on the chicks if they are not ready for it.

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Feeding quantity and frequency: The chicks begin to start feeding on their own at this stage. They may now be hand-fed every hour to encourage them to feed on their own if they get hungry sooner. Feed must be available for them in small, shallow dishes at all times as they will attempt to pick a few morsels by themselves.

Special care: The chicks will not require any external heat at this stage but must be given warm roosting spaces nonetheless. If deemed necessary, they may be kept in temperature-controlled boxes at 102°F.

The chicks must be shifted to an aviary at this stage as they need flight practice before release. The aviaries must have adequate nest boxes for the chicks as they will prefer to roost in the boxes at night. The rehabilitation process must also now begin.

Two bowls of water must now be available for the chicks at all times: one large, shallow dish for the chicks to bathe in and a smaller shallow dish with drinking water. The chicks often jump into both the bowls and soil the drinking water as well which necessitates a change of fresh water every couple of hours.

Stage 4: Fledgling – independent



Fledgling – independent
Debbie Cooper

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Characteristics: The chicks are now completely independent and must be readied for release. The process of soft release begins.

Feeding: The chicks will now consume an adult diet and must be given an assortment of foods. The chicks should be completely independent and feed on their own by this age. Fresh food and water must be available for them at all times.

Stage 5: Sub-adult/Immature



**Sub-adult male
Devna Arora**

Their feathers are fully grown and adult plumage starts to appear. The male birds now begin to get the characteristic crown and bib. The colour of the beak is also an indication of maturity. At this stage, the yellowness to the base of the beak completely fades; yet, the beak is not the characteristic adult colour yet.

The chicks must have been released by this stage. If opting for a hard release, this is the right time to release them.



Fledged sparrow young with the parents
Palak Thakor

Stage 6: Adult birds

Adult sparrows will be completely independent, may have integrated with flocks of wild sparrows 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. Ultraviolet lights may be placed just outside the aviary to attract insects in the evenings – this will get the chicks accustomed to looking for and chasing after flying insects. 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 house sparrows
Devna Arora

The first step towards getting your bird ready for release is for it to go through a conscious process of rehabilitation. This process 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

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rehabilitation must actively start by the time the chick is ready to fledge and followed meticulously until release.

House sparrows are social birds and only live in flocks, or 'hosts' as they are called. Flock size may vary greatly with local environmental conditions and the availability of resources. An important consideration when releasing hand-raised young is to remember that house sparrows do not exit alone and must only be released where and when they can join wild sparrows. Sparrows are dependent on the safety and protection of the rest of the flock while young sparrows also benefit from the guidance of more experienced birds. For the similar reasons, it may be advisable to bunch young birds from various facilities or individuals and group them together prior to release. This in turn will increase the survival chances of each of the birds.

Important things to be kept in mind when releasing sparrows includes,

- 1. Place of release, possibility of reunion with existing flock 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 as they will again have the chance to unite with their own groups and flocks. Younger birds must be released in suitable locations where they have maximum chances of integrating with wild sparrows 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 2 months when opting for a soft release whereas those that are being hard released must only be released after 3 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.

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 sparrows 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 sparrow 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 as 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

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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, 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.

Attracting wild sparrows to the aviary will be of particular advantage to the young. A simple way of doing this is to ensure that the aviary is close to free ranging wild sparrows and then strewing grain in and around the aviary. This will bring wild birds closer in contact with the young and expose them to wild birds and their behaviours. This will also facilitate grouping with the wild birds once the youngsters have been released.

Birds may be released in a similar manner if hand-raising and releasing from home. They must have a room to themselves to fly about in and access to a window which attracts wild sparrows. Experience suggests that birds released from homes return for longer durations as they may have stronger bonds with both the homes and the caregivers. They are also known to visit every now and then well after the gain complete independence.

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.

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Hanging artificial nest boxes for house sparrows

Purchasing baby bird hand-rearing formulas

Hagen: Tropicana baby hand-feeding formula

<http://uk.hagen.com/Bird/Nutrition/Extruded/B2261>

<http://www.hagen.com/hari/docu/trophfad.html>

Kaytee: Exact hand feeding baby bird

<http://www.kaytee.com/products/exact-hand-feeding-baby-bird.php>

Photographs used

Aaron – Fledged sparrow being fed by the male

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Alistair – Pin feathers erupting in the second week

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Alistair – Feathered nestling

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Andrey – House sparrows bathing

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Debbie Cooper – Fledgling – independent

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Dr. Kate Vincent – 5 day old chick

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Gaurav Kavathekar – Naked nestling begging for food

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Paul Hillman – Dependent fledgling

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Excellent photographic progress of the growth and development of house sparrows

Photographs by Susan and David on Jackie Collin's *Starling Talk*

Growing up – Sparrow photo album 1

http://www.starlingtalk.com/growingup_album1.htm

Growing up – sparrow photo album 2

http://www.starlingtalk.com/growingup_album2.htm

Links to videos

Feeding Jack Sparrow

<http://www.youtube.com/watch?v=OCutT57cr0>

Female house sparrow feeding babies

<http://www.youtube.com/watch?v=IGZAw09xy6c>

Hand feeding house sparrows

<http://www.youtube.com/watch?v=pZskaxmYGRY>

Peanut – the rescued house sparrow

http://www.youtube.com/watch?v=m1aT_fPPK-Y

Spoggy the sparrow – raising a 1 day old baby bird

http://www.youtube.com/watch?v=7MovUzO_cpA