

This month - That age: July 1986 Pheasant Breeding in the Kanpur Zoo

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Introduction

The Pheasant includes some of the most beautiful birds in the world and form a well defined group of the subfamily phasianinae, which also includes such closely related birds as snow-cocks, francolins, spurfowls, partridges and quails. Our national bird, the Indian peafowl is also a variety of pheasant. All the worlds pheasants originated in Asia, with one exception, the rare congo peacock. In Asia the pheasant is distributed from the steaming tropical rain forests of South-East to the damp and chilly weed-lands of the high Himalayas up to 10,000 feet.

In nature pheasants spend a great deal of their time on the ground searching for food. They have long and powerful legs and the ability to run far and fast. Their wings are short, rounded and curved to fit the body. They have unfeathered nostrils and there are no inflated air sacs in their neck. In nearly all the pheasants the male is far more brightly coloured than the female and this is one of the characteristics which helps to distinguish pheasants from other members of the family like partridges, francolins and quails.

There are sixteen genera comprising of 48 species of pheasants in existence today of which seventeen are on endangered list. In some cases there are numerous races or subspecies bringing the total number of forms listed by Jean Delacour to 150. Well known Indian peafowl is representative of pheasant family most commonly found in India. Some subspecies and species of pheasants namely Blood, White ear, Tragopan, Koklas, Monal, Cheer, Humes, Kalij and peacock pheasants are also found in various parts of Northern India like Assam, Manipur, Kumaun and Garhwal hills. Although very beautiful birds, pheasant are also large, good to eat and most of them have a highly restricted distribution in primeval forests. Therefore they are ominously threatened with extinction in many parts of Asia and Malaysia. Fortunately most pheasants with the exception of very few like Blood pheasants, thrive well in captivity if given suitable conditions and are not difficult to breed. If a number of them are to be saved from extinction, large scale propagation in captivity would appear to be the most practicable measure. It was for precisely this purpose that the PHEASANT TRUST was founded in Great Britain in 1959, which was known as Ornamental Pheasants Trust until April 1969. Species threatened to extinction can well be supplemented in their native surroundings or similar habitat elsewhere, by the stock of captive bred birds. In India one such scheme for cheer pheasant is being taken at Indian Veterinary Research Institute, Izatnagar, Bareilly.

It is unfortunate to note that the pheasants have by general usage fallen into the two sharply defined categories of GAME and ORNAMENTAL. The latter gives the impression of domesticated birds whereas they are truly wild species whose beauty and usefulness make them worthy of every endeavour to safeguard them in their native lands. Keeping them in captivity is in one way fully justified if the result helps to preserve them either directly by reinforcing them with captive bred specimens or indirectly by obtaining increased knowledge of their requirements. People are far more likely to take an interest in their preservation if they are familiar with living examples.

Zoological Parks are the best media to affect public attitude and awareness to naturalistic environments by exhibiting animals natural pattern of behaviour and place in nature. Pheasant exhibitions not only add beauty to the collection but in addition, develop familiarity with living examples of nature's beauty and also helps to obtain increased knowledge of their requirements and breeding.

Commonly reared and exhibited pheasants in various Zoological Parks are Golden, Silver, Lady Amherst's, Reeves, Cheer, Elliot's, Swinhoe's Mikado, Kalij and Caucasus pheasants. They are beautiful and easy to keep and breed. Various peacock pheasants are also kept but are delicate and difficult to breed. Most of the zoos exhibiting pheasants do not undertake the breeding programme simultaneously and some leave the eggs to parent pheasants for hatching. With certain species it may work up to the time of hatching then the problem starts with baby chicks who get through pen nettings or are attacked by cock bird. Their propagation by adopting proper breeding programme in Zoos will not only aid in replenishing the exhibition stock but will also help in long way to fetch other animals and birds in exchange from other Zoos.

Breeding at Kanpur Zoological Park

Pheasants were included in the aviary of this zoo since 1973 when one pair each of Silver, Golden and Caucasus pheasants were purchased from bird dealers. Soon after Humes bar tailed pheasants, grey peacock pheasants and Kalij pheasants were also added. Pairs of Hume's Bar tailed and Caucasus pheasants died by June 1981 and a subspecies of Caucasus pheasant group as Chinese ring necked pheasants was purchased in June 1982. Recently in August 1984 one pair of Lady Amherst's pheasant has also been introduced to the collection.

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Until the year 1980 no attention towards breeding of the pheasants was paid in this Zoo. It was in the year 1981 that a few eggs of silver and golden pheasant were incubated in the big electric incubator of a established poultry farm along with poultry eggs, but chicks produced could not survive more than a week. In the year 1981 one small incubator of 100 egg capacity run by kerosene oil was arranged and efforts to incubate pheasant eggs in the breeding season of 1981 and 1982 were made. The incubator could not maintain proper temperature and humidity and no success in hatching could be obtained. Incubation under bantams is described as the best way for breeding pheasants by various breeders and it was decided to follow this in the Zoo. Local breeders and keepers of birds were contacted and their aviaries and breeding programme attended for study and experience. It was since the year 1983 that the breeding programme in an organised way was started in Kanpur Zoological Park. Even with limitation of experience and means and diversities of local climatic condition, ample success was achieved in the years 1983, 84 and 85 and it is expected that further progress will be made in the coming years. The method followed in these years is outlined as following:

1. Preparation of broody hens and breeding stock

The foremost prerequisite of pheasant egg hatching programme under broody hens is a good ready stock of bantams. Cross of white Silkie bantams and Light Sussex was found as the best bantams for pheasant hatching at Pheasant Trust. To start with, light weight country fowls stock was taken for selection of broody hens. Later Japanese bantams were also reared and used as broodies. Recently some white Silkie bantams have also been introduced to prepare a flock of broody hens for future use.

Prior to breeding season each year in the month of February all the broody stock and pheasant breeding stock are treated for fowl pests and dewormed. A prophylactic course of coccidiostat is also given to both stocks. Some pheasants start to lay by the end of February and broody hens are to be kept ready by that time. To encourage and induce broodiness in broody stock, nest boxes are placed in their houses and some eggs are left each day in them. Their regular feed is reduced and replaced by some grain like wheat also. A separate quiet airy room is taken and setting boxes with lid fronts and wire netting floors are fixed there. Floors of each compartment of setting boxes are made of damp sieved earth about 2" deep with a saucer shaped depression to hold the clutch of eggs at the centre. A little-straw or dry grass is spread over it to induce the broodies to settle down better.

Pheasants have a natural tendency to make nest scrape in a dark quiet corner for laying eggs. Such shady dark places are provided in their houses by

the end of February, by putting additional bushy branches at suitable corners. They make nest scrapes on the ground at such corners themselves and we have never provided nest boxes to them. The high protein ration supplemented with additional vitamins and minerals is given to the breeding stock from the very start of February.

2. Egg laying and setting

Pheasants do not attain adult plumage in their first year normally and take two or more years to become sexually mature. In captivity due to artificial conditions of breeding and with high protein feeds, some are found to mature in their first year and lay larger number of eggs than their usual clutches. Time of start of egg laying varies in various species and is affected by hours of daylight, weather, age of stock, feed quality and health of birds, Number of eggs laid for each clutch and incubation period is also variable in different species. In some species if eggs are regularly removed after laying, much higher number of eggs than normal are laid. These variations as denoted in books and literature for the present species are as in Table 1.

In our present programme eggs laid are soon removed from the pheasant house and stored in a cool damp place in an egg tray with their pointed ends placed downwards. They are marked with soft pencil indicating house number, species and date of collection. They are turned daily if stored for longer period. Although they can be stored upto one week, efforts are made to set them for incubation as early as possible. The dirt over the eggs is scraped and they are wiped with a weak solution of formalin before setting for incubation.

The selected healthy broody hens are first allowed to settle well over dummy eggs in nest boxes in the hen house for a number of days. When sure of their perfect broodiness, each is shifted to the prepared setting box with the same dummy eggs preferably near to dusk. It is shut and left quietly for at least one night. A row of such broody hens are settled in separate setting boxes in readiness awaiting pheasant eggs.

It is essential that all eggs under one hen are due to hatch within a day or so of each other. To serve this purpose the dummy eggs of well settled broody hen in setting box are replaced and set with the pheasant eggs in such a serial that the eggs of species having longer incubation period are set first, followed by shorter incubation period species eggs at different days interval till the clutch is complete as illustrated in the examples in Table 2.

The number of eggs set in a clutch is varied according to the size of the broody hen. The hen in setting box is shut and left quiet after setting. A label is stuck over the door of setting box indicating set number, expected date of hatching and details of species of eggs set in the clutch.

Table. 1

Species	Laying Starts From	Egg Clutch	Incubation Period
1. Silver pheasant	Mid March	4-6	25-26 days
2. Golden pheasant	End March	6-12	22 days
3. Kalij pheasant	Mid April	9-15	24-25 days
4. Grey peacock pheasant	Wide variation	2	22 days
5. Chinese ringnecked pheasant	3rd Week April	8-14	24 days
6. Lady Amherst's pheasant	Early April	6-12	22 days

Table. 2

Day One	Set two Silver eggs	Due 25 days later
Day Two	Set two Kalij and one ring-necked eggs	Due 24 days later
Day Three	Nil	
Day Four	Set two Golden, one Lady Amherst's and one Grey Peacock pheasant eggs.	Due 22 days later
TOTAL NINE EGGS-CLUTCH COMPLETE		

3. Incubation and candling of eggs

During incubation each broody hen is taken off her eggs once every day almost at the same time and allowed 10-20 minutes for exercise and food. She is fed wheat only and returned to the setting box while the eggs are still warm. While the broodies are out, eggs are turned, damped in dry weather and cleaned when found dirty. After the broody has returned to sit the sliding door of setting box is closed. The run is cleaned after outing of all incubating broody hens.

The fertile eggs after certain stage during incubation start to generate heat and the infertile eggs if present in the clutch lower the temperature affecting their hatching. It is therefore most necessary to detect as early as possible the infertile eggs and remove them without affecting hatchability of fertile eggs. This is accomplished with the aid of candling of the eggs of the clutch after 5-6 days of incubation. In candling bright light is passed through an egg and shade of forming embryo is seen. Dud eggs and state of humidity is also detected by candling. Infertile and dud eggs are removed and humidity is controlled with the frequency of damping of eggs.

4. Hatching and rearing

Before the first expected hatching date at least two brooders are kept ready with lamps for rearing newly hatched chicks. In one brooder the number and power of lamps is adjusted in such a way that the floor temperature is maintained at 90°F.

There are three methods commonly adopted for hatching under broody hens. In the first case, the eggs are taken three days before hatching is expected and put in an incubator for hatching. In the second case the eggs are allowed to hatch under broody but the chicks are removed to brooders before they are able to leave the box and start feeding. In the third case the chicks are left with the hen to herself take care of them. In the present breeding programme we preferred the

second method and removed the chicks from broody hen within 12-24 hours of hatching. The broody if behaving properly is used for incubating another clutch.

The chicks are removed and kept in the prearranged brooder having controlled floor temperature at 90°F. A black coloured sheet of 1' X 1' size is spread at the centre of the brooder and chick starter crumbs of high protein value is spread over it, In addition some chopped green food and crushed hard boiled eggs are also provided. Chicks usually start feeding on the second day. To instigate feeding live termites are also provided at times. Clean drinking water is provided in shallow bowls and some pebbles are placed in it so that the chicks do not drown themselves. Preventive doses of coccidiostat is also dissolved in drinking water. Chicks of different species and those hatched within one week are reared together in the same brooder. Those attaining two weeks are transferred to the next brooder in which the lamps are reduced in number and power. As the chicks are four weeks old, they are shifted to larger rearing pens, the floors of which are made of sand and gravel. At eight weeks of age they are shifted to their permanent rearing enclosures and different species are separated in separate houses. They are gradually changed to normal pheasant rations and carefully watched for health and infection.

Results

Great variations have been found in the egg laying records of various species of pheasants present in this Zoological Park in this last three years. Egg laying in pheasants started as early as middle of February and continued as late as third week of June. The number of eggs laid in one breeding season also varied each year as evident from the following table.

Average eggs laid per layer are maximum in silver pheasant ranging from 19 eggs in 1983 to 27 eggs in 1985. In Kalij the lowest average per layer comes to 4 eggs in 1985 and highest to 17 eggs in 1984, while in Golden pheasants it is lowest at 5 eggs in 1983 and highest at 9 eggs in 1984. Average eggs per layer of ring necked pheasants is 16 eggs in 1983 and 20 eggs in 1984, while no eggs were laid by the single female left in 1985. In case of grey peacock pheasants, one egg less to normal described clutch of 2 eggs per bird has been found in 1983 and 84 but two layers laid 9 eggs in 1985 indicating that each layer has laid at least two clutches in one season. Female of Lady Amherst's pheasant added lately, laid five eggs in its first year of laying in 1985. It is also evident from the above egg laying table that laying continued for longer period, up to end of June, in almost each species of pheasant in 1984 and except silver and grey peacock pheasants all others laid highest average eggs per layer in this year. Silver and grey peacock pheasants laid their best average in 1985.

Table. 3

Sl. No.	Species of Pheasant	No. of Layers	Laying period	Eggs Laid	Average
Year 1983					
1.	Silver pheasant	2	09 March to 30 April	37	19
2.	Kalij pheasant	2	25 March to 22 April	14	7
3.	Golden pheasant	3	23 March to 13 May	15	5
4.	Grey peacock pheasant	4	24 Feb to 30 March	7	1.75
5.	Ring necked pheasant	2	22 March to 17 May	32	16
Year 1984					
1.	Silver pheasant	4	1 March to 25 June	89	22
2.	Kalij pheasant	2	29 March to 11 June	34	17
3.	Golden pheasant	2	28 March to 22 June	18	9
4.	Grey peacock pheasant	2	19 Feb to 21 April	3	1.5
5.	Ring necked pheasant	2	23 March to 25 June	40	20
Year 1985					
1.	Silver pheasant	3	28 Feb to 14 May	82	27
2.	Kalij pheasant	2	18 March to 9 June	8	4
3.	Golden pheasant	3	20 March to 14 May	24	8
4.	Grey peacock pheasant	2	14 Feb to 19 April	9	4.5
5.	Lady Amherst's pheasant	1	31 March to 11 May	5	5
6.	Ring necked pheasant	1	No Eggs Laid	-	-

Average sized and shaped eggs only were selected for incubation. Cracked and thin shelled eggs were rejected and as far as possible fresh eggs within 3 days of laying were set for incubation. 18 broody hens from country fowls were set with pheasant eggs in 1983 while country fowls and Japanese bantams both were used for 26 and 19 broody hens settings in the years 84 and 85 respectively. Incubation of pheasant eggs was started by the end of February in the years 83 and 84 while in 1985 it was started from beginning of March. Eggs set in the month of June in all the years gave very poor results of hatching due to excessive hot weather. Clutches of eggs set ranged from 5 to 11 according to the size of broody hens.

Bantam or fowl eggs were also included most of the times to complete the pheasant egg clutches in the manner illustrated in table 3 above. The results of incubation in three years for each species are tabulated as below.

Maximum number of chicks hatched are that of Silver pheasants. Next best results were with Kalij pheasants although with a slump in egg production in 1985. Highest percentage of infertile eggs and embryo deaths are seen in golden and peacock pheasants. In the year 83 all the eggs laid by ring necked pheasants were found infertile due to defective male. After changing male, two layers laid 40 eggs, hatching 13 chicks in the year 84 but only one female left in year 85, did not lay any eggs. All the five eggs laid by Lady Amherst's pheasant in year 85, in its first year of laying, were found infertile probably due to immaturity of the male

Rearing losses were found with maximum peacock pheasant ducks. Out of all 5 chicks hatched in three years none survived more than a week. Some chicks of golden and ring necked pheasants were also lost in rearing in all years. In others chick losses were not significant except in that of silver pheasant in 1984 when out of 33 chicks hatched only 11 could survive one month due to drowning in excessive rain water. Few chicks of silver and golden pheasants developed leg and neck deformities in the early stages of rearing, most probably due to

Table. 4

Sl. No.	Species of Pheasant	Eggs set	Infertile	Died in shell	Chicks hatched
Year 1983					
1.	Silver pheasant	36	7	8	21
2.	Kalij pheasant	14	1	1	12
3.	Golden pheasant	14	5	7	2
4.	Grey peacock pheasant	7	-	5	2
5.	Ring necked pheasant	28	28	-	-
Year 1984					
1.	Silver pheasant	80	20	27	33
2.	Kalij pheasant	32	5	10	17
3.	Golden pheasant	13	4	3	6
4.	Grey peacock pheasant	3	-	1	2
5.	Ring necked pheasant	37	16	8	13
Year 1985					
1.	Silver pheasant	71	20	27	24
2.	Kalij pheasant	8	1	2	5
3.	Golden pheasant	20	9	7	4
4.	Grey peacock pheasant	7	3	3	1
5.	Lady Amherst's pheasant	5	5	-	-
6.	Ring necked pheasant	-	-	-	-

excess heat in brooders in the end part of breeding season in May and June.

Conclusion

Incubation under broody hens selected from country fowls or bantams is the best and easiest way for their propagation. In Kanpur Zoo their exhibition although started in 1973 breeding in an organised way was undertaken only in 1983. Breeding results of last three years are not well upto the mark but looking at the limitations of experience, means and climatic conditions, they are quite inspiring and cannot be said to be discouraging.

Much fluctuation in egg production are observed in different species and in different years, although under the same climatic conditions and feeding standards. Silver and Kalij pheasants are found easiest to breed. Next are golden and ring necked pheasants while peacock pheasants are difficult to breed and rear chicks.

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