

An unusually prolific breeding season in the Bornean great argus pheasant

Argusianus argus grayi

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In November 1972 the National Zoo acquired a pair of Bornean great argus pheasants *Argusianus argus grayi*. It was one of five pairs captured from the wild in 1969 and owned by the private breeder, Charles Sivelle of Huntington, Long Island – the first of the subspecies to be imported into the United States.

The birds are accommodated in an L-shaped corner aviary (Fig. 1), well planted with *Bambusia*, *Howea* (Kentia palm) and *Ficus* shrubs to simulate the dense tropical forest of their natural habitat. An area approximately 3×1.5 m beside the pool has been left open for the ♂'s use as display arena. This, the 0.6 m wide gravelled path and the concrete rim of the pool which he has also adopted are a particularly satisfactory choice of courting ground as visitors are able to view him at close range through the stretched piano wire cage front. Lighting is provided by four 150 W incandescent bulbs and four 40 W fluorescent lamps timed to give 12 hours of light daily.

Eighteen other birds of ten species share the aviary with the argus pheasants. The roulrouls *Rollulus roulroul* and King quail *Coturnix chinensis*, the other galliforms, offer little competition for ground space on account of their relatively small

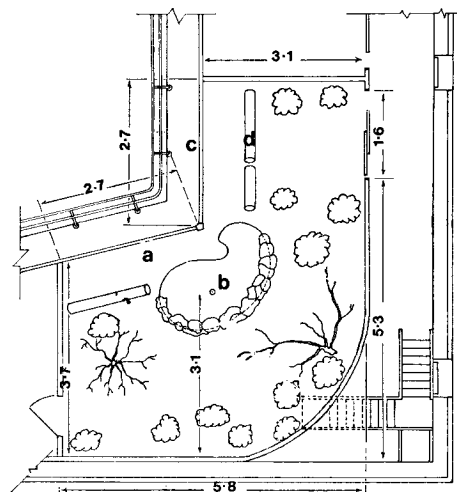


Fig. 1. Ground plan of exhibit. a. ♂'s display area. b. pool. c. cage front. d. logs. Measurements in metres.

size. Nor have the Turquoise parrots *Neophema pulchella*, Orange-headed ground thrushes *Zoothera citrina*, White-crowned pigeons *Columba leucocephala*, Emerald doves *Chalcophaps indica*, Pekin robins *Leiothrix lutea*, Silver-eared mesias *L. argentauris*, Indian pittas *Pitta brachyura* or

Strawberry finches *Amandava amandava punicea* created any problems of coexistence.

During 1972 one of the pairs which had remained at the Sivelles aviaries laid four eggs in two clutches, the resulting young being the first of the subspecies reared in this country. Our hatchlings were the second. Records indicate that two clutches – rarely three – of two eggs each per season are the norm for the species in captivity (Beebe, 1936; Delacour, 1951; Lint, 1965; Anon, 1969).

On 5 and 6 March 1973, barely three months after she was introduced to her new quarters, the National Zoo ♀ laid her first clutch of two. Although she made some attempt at building a nest, she showed no interest in incubation and the eggs were removed for artificial hatching. They were incubated in a Lyons glass-sided, forced-air cabinet incubator, but for later clutches we have used a Petersime Model 4

forced-air, self-turning unit, as employed in commercial hatcheries. The machine is operated at a temperature of 37.65°C (dry bulb) and a humidity of 30–30.56°C (wet bulb reading). The eggs are rotated in an arc of 90° every two hours.

In the next 12 months the ♀ laid a total of 30 eggs in 15 clutches (Table 1). All but two clutches consisted of two eggs, the remainder of one and three respectively. The minimum interval between clutches was two weeks; the maximum a month. The greatest time lapse between eggs of the same clutch was five days, but most often the interval between first and second eggs was only 48 hours. In one instance two eggs were found on the same day. It was not until March 1974, when the ♂ began to moult, that the ♀ stopped laying.

Twenty-six of the 30 eggs (86.7%) were fertile. Incubation varied between 23–25 days,

CLUTCH	DATE LAID	DATE HATCHED	INCUBATION PERIOD (days)	SEX
1	3 Mar 1973	dead in shell		
1	6 Mar	30 Mar 1973	24	♂
2	23 Mar	16 Apr	24	♂
2	25 Mar	18 Apr	24	♀
3	19 Apr	13 May	24	♀
3	21 Apr	15 May	24	♀
4	22 May	14 June	23	♂
4	23 May	14 June	22	♂
4	23 May	15 June	23	♂
5	8 June	2 July	24	no info
5	13 June	7 July	24	♀
6	8 July	1 Aug	24	died 6 Aug
7	28 July	22 Aug	25	♀
7	30 July	dead in shell		
8	17 Aug	10 Sep	23	died 18 Nov
8	18 Aug	dead in shell		
9	13 Sep	dead in shell		
9	16 Sep	dead in shell		
10	8 Oct	infertile		
10	10 Oct	infertile		
11	1 Nov	24 Nov	23	♂
11	2 Nov	26 Nov	24	♀
12	21 Nov	15 Dec	24	♀
12	23 Nov	17 Dec	24	died 17 Dec (accident)
13	12 Dec	5 Jan 1974	24	♀
13	18 Dec	11 Jan	24	♀
14	9 Jan 1974	2 Feb	24	♀
14	11 Jan	4 Feb	24	♀
15	1 Feb	25 Feb	24	died 31 Aug
15	4 Feb	infertile		

Table 1. Results of the first breeding season in a pair of Bornean great argus pheasants *Argusianus argus grayi* at the National Zoological Park, Washington.

with 24 the most frequent period. Altogether 21 young hatched, a hatchability rate of 80.8%.

On hatching the chicks are left in the hatcher tray for about 24 hours to dry off before transfer to starter brooders. These are 66 × 33 × 33 cm plywood boxes painted with vinyl enamel and divided into two cubical units by a removable plywood partition. Each unit has a 6.35 mm ($\frac{1}{4}$ in) mesh woven wire floor above a metal dropping pan, both of which slide out for easy cleaning. Heating is supplied by incandescent bulbs, recessed into 12.7 cm square metal hoods mounted over the rear of the brooder. By varying the strength of the bulb from 60 to 100 W and exchanging a wiremesh lid for one of plywood, the temperature can be regulated between 32.2–35°C. As the chicks grow larger, the brooder size can be doubled by removing the partition.

Being large, sturdy and fast growing birds, the argus chicks seldom remain in the starter brooder for longer than ten days. They need little prompting to begin feeding. Initial diet consists of Purina Game Bird Startena, sprinkled with a little hard-boiled egg yolk, a vitamin-mineral powder supplement (Vionate) and oyster shell flour. They are also relatively placid in temperament, so much so that we occasionally use them as companions and mentors for the highly nervous roulroul chicks. The roulrouls, normally beak fed by the parents, learn to feed more readily from such companions.

As they outgrow the starter brooders, the young argus are placed in regular chick battery brooders, 91 × 61 × 23 cm high and also with a removable 12.7 mm ($\frac{1}{2}$ in) mesh floor suspended 3.8 cm above a removable metal dropping pan. The standard metal heating unit at the rear of each brooder is adjusted to give a shut-off temperature of 35°C at 5 cm above the floor screen. The usual denim curtain enclosing the heated space is tied back at one corner to facilitate access and inspection.

At three weeks the chicks are transferred from Startena to Game Bird Finisher, and to Maintenance Chow at six weeks of age. These transitions are made gradually, by mixing the old and new diets for the first three days. The Maintenance Chow, which is pelleted, is first partially crushed to resemble the Finisher. Pellets are added to the crushed feed in increasing quantities over a ten-day period until completely accepted.

Chopped kale is offered every other day once the chicks have been moved to the battery brooders. At six weeks brooder heat is no longer necessary, room temperature being maintained at 22.2°C.

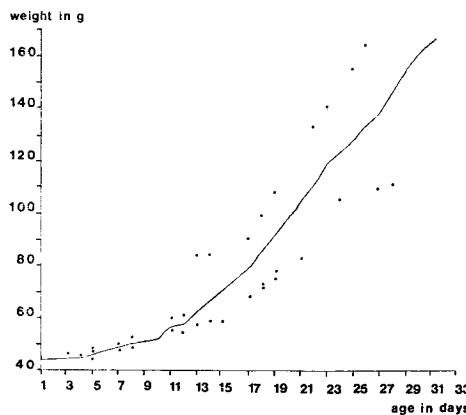


Fig. 2. Growth curve of three Bornean great argus pheasant *Argusianus argus grayi* chicks hatched at the National Zoological Park, Washington.

Fig. 2 shows the average gain in weight over the first 25 days for a sample of three chicks. Growth is slow compared to that of temperate zone pheasants, but fairly uniform. The two groups of chicks, argus and roulroul, grow up together quite peacefully sharing the same off exhibit aviaries. Argus ♂♂ begin to display at less than one month of age; the call of the adult ♂ is first heard at about 12 months, short and soft at the beginning, then progressively louder. If caged with other species he will quite often display to them, irrespective of the other bird's size or sex.

At three months the young birds receive the standard aviary diet, composed of Maintenance Chow, hen scratch, Trout Chow, chopped fruit, bread and milk, chopped hard-boiled eggs and chopped kale. All food is sprinkled with Vionate, and oyster shell flour or calcium lactate.

Seventeen young have so far attained adulthood, with almost twice as many ♀♀ as ♂♂ surviving. Eleven have been placed in other collections and more will be transferred shortly. After a prolonged moult beginning in March 1974, the ♂ was again calling by June, and early in July the ♀ laid the first egg of her second season.

During the remainder of 1974 she laid five clutches totalling ten eggs, eight of which hatched and seven of which were raised. This pair has already made a substantial contribution towards establishing a captive population of the Bornean subspecies in the United States.

PRODUCTS MENTIONED IN THE TEXT

Lyons model A-475 Glass Incubator: manufactured by Lyons Rural Electric Co., 2075 Moore Street, San Diego, California 92100, USA.

Petersime Model 4 Self-turning Incubator: manufactured by Petersime Incubator Co., Gettysburg, Ohio 45328, USA.

Purina Game Bird Startena, Game Bird Finisher, Maintenance Chow and Trout Chow: all manufac-

tured by Ralston Purina Co., St Louis, Missouri 63188, USA.

Vionate: vitamin-mineral powder supplement, manufactured by E. R. Squibb & Sons Inc., Princeton, New Jersey 08540, USA.

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