

A high price to pay: new light on the extinction of the Pink-headed Duck *Rhodonessa caryophyllacea*

JULIAN P. HUME

The Pink-headed Duck *Rhodonessa caryophyllacea* has always appeared to be mysterious and rather uncommon, and has not been reliably recorded since the 1940s; it is now almost certainly extinct. Comparatively few specimens were taken in the first two decades of the twentieth century. In 1923, Sir David Ezra, resident in Calcutta, offered a reward for live specimens and during the next six years at least 16 live birds were sent by him to his brother, Alfred, who owned a menagerie at Foxwarren Park, England. This increased collecting pressure on the remaining population may have been the ultimate reason for its extinction. I suggest that the last claimed observations of wild birds, between 1947 and 1949, are open to considerable doubt as no specimens were preserved. Although there was the offer of another substantial reward from 1930 onwards, this was never claimed and it is more likely that the last observation of the species in the wild occurred over a decade earlier, in 1935. This means that the last probable record of the species, that of a captive bird held in Calcutta, was in November 1948.

INTRODUCTION

In an article about the Pink-headed Duck *Rhodonessa caryophyllacea*, Ali (1960) wrote:

Since it was first described in 1790 the species has at no time been recorded as common anywhere. In fact it was always considered rare enough to be taken notice of, even by such sportsmen as seldom bother to vet their bags and to whom the significance of a duck is merely how it tastes!

The Pink-headed Duck (Plate 1) was formerly widely distributed in South Asia, but was never common. Most records were from India, especially the north-east, but it was also reported in small numbers in Myanmar (five records), with a handful of records from Bhutan, Bangladesh and Nepal (Hume 1879, Hume & Marshall 1879, BirdLife International 2001). Although the data are somewhat

contradictory, it appears to have always been uncommon and generally solitary or found in pairs, only occasionally in small groups (Hume & Marshall 1879, BirdLife International 2001) and rarely in large numbers (Hume 1879). The species has always been associated with lowland areas and descriptions of habitats where it has been found invariably link sightings to freshwater tanks, pools and nullahs fringed by tall aquatic vegetation, marshy swamps with dense beds of reeds and, in winter, lagoons adjoining larger rivers, regenerated by seasonal flooding. It was not found on rivers or running water of any kind (BirdLife International 2001).

In India the duck was shot in small numbers in the last 20 or so years of the nineteenth century (Ali 1960), and suffered year-round persecution, even though it was almost universally considered to be not particularly good to eat (e.g. Simson 1884), although the respected authority Jerdon (1864) held the opposite opinion. That it survived for so long is probably because in the centre of its range were the vast low-lying plains of northern India, areas with a large

Plate 1. Pink-headed Ducks *Rhodonessa caryophyllacea* painted from life at Foxwarren Park by Roland Green.



Tiger *Panthera tigris* population, crossed by deep, crocodile-infested rivers, inundated by floods and with a sparse human population (Baker 1908). However, the human population burgeoned as the land was drained and turned over to cultivation during the colonial era, with the consequent almost complete destruction of the native habitat. This severely affected the bird's numbers and appears to have been the main reason for the Pink-headed Duck's relentless decline (BirdLife International 2001); hunting is also likely to have been a factor. Bucknill (1924) reported that the species seemed to have virtually disappeared by the early 1920s, and spoke of a number of known wildfowling in the Indian state of Bihar and Orissa who had attended big duck shoots in Bengal for more than 20 years and had never seen a Pink-headed Duck, although they were always on the look-out for it. He quotes a number of other accounts of the bird, and gives his reasons for its decline as follows:

It is non-migratory and confined to India, and consequently was shot at all the year by those to whom a close season is a dead letter. There are probably many more fowling pieces in use among the ryots than there were forty years ago. Then too, vast areas of swampy ground have been brought under cultivation within the last half-century . . . it [probably] moults in the autumn and for a short period completely loses its power of flight – a circumstance which would be another serious disability to its economy.

SIGHTINGS IN THE WILD DURING THE TWENTIETH CENTURY

The Pink-headed Duck had thus seemingly become extremely scarce by the early twentieth century, and Ali (1978) remarked that an accelerated decline occurred after 1923, although he provided no explanation. Records of physical specimens are few and far between for the first two decades of the twentieth century (see Table 1). Ali (1960) believed that the last preserved skins of wild-collected birds were a drake and duck supposedly shot on 7 April 1923 in Darbhanga district, north Bihar, by Inglis (1940) and now

Table 1. List of all post-1900 preserved wild-caught Pink-headed Ducks I have managed to trace.

Abbreviations: AMNH American Museum of Natural History; BNHS Bombay Natural History Society; NHMUK Natural History Museum, Tring; NRM Naturhistoriska Riksmuseet, Stockholm, Sweden; USNM United States National Museum; YPM Yale Peabody Museum.

*These individuals were almost certainly collected at an earlier date.

Institution and registration number (where known)	Sex	Collector	Date collected
BNHS (Abdulali 1968)	M	Unknown	1903
NHMUK 1949.WHI.1.6168	M	C. M. Inglis (H. Whistler)	11 July 1905
BNHS (Jardine 1909)	F	E. R. Jardine	25 December 1908
AMNH 732835	M	H. H. Harington	10 February 1910
NRM 572041	M	Col. F. M. Bailey	25 July 1910
NHMUK 1949.WHI.1.6167	F	C. M. Inglis (H. Whistler)	23 August 1910
BNHS (Anon 1921, Abdulali 1968)	M	Unknown	1921
YPM ORN 042022	M	C. M. Inglis	7 April 1923
YPM ORN 042023	F	C. M. Inglis	7 April 1923
USNM 309005	Unsexed	Vernay-Faunthorpe Expedition	*1924
AMNH 186625	M	Vernay-Faunthorpe Expedition	*1924
AMNH 186626	F	Vernay-Faunthorpe Expedition	*1924

housed in the Yale Peabody Museum, New Haven, Connecticut, USA (although there is doubt about the collection date of these individuals, as BirdLife International (2001) suggested that 1923 may have been a mistranscription of 1903 and also gives the date as 'either 7 March or 3 July 1923'). Similarly, two skins in the American Museum of Natural History from the north Kheri district, Uttar Pradesh, India, near the border with Nepal, were supposedly collected in 1924 (information from the catalogue) by the Vernay-Faunthorpe Expedition, but Ali (1960) considers this unlikely, as they were presented by the expedition's host L. W. Hearsey and probably obtained some years before. Another skin in the United States National Museum is dated 1924 and also attributed to the Vernay-Faunthorpe Expedition (information from the catalogue), but there is no further information. Therefore, almost all post-1910 wild-caught specimens have questionable dates of collection (see also Ali 1960).

A number of specimens were shot or observed, but not preserved, by trusted authorities (Inglis 1904, 1940, Jardine 1909, Higgins 1913, Whistler 1916, Marshall 1918, Bucknill 1924, Wright & Dewar 1925, see also BirdLife International 2001), with one of a presumed breeding pair shot by Higgins (1933) on 15 June 1932; another two birds were reputedly collected in Dhubri, Assam, India, in the early 1930s (Ripley 1950, BirdLife International 2001). The last accepted wild observation was a male trapped on 21 June 1935 in the Darbhanga district, Bihar, and given to Inglis (Inglis 1940, Ripley 1952, Delacour 1956, Ali 1960, Mehta 1960, BirdLife International 2001); however, the specimen was not preserved. A pair was reportedly seen in 1937 on the Belsiri River in the Balipara Frontier Tract, Assam, but this observation was treated with suspicion by Ripley (1950).

However, the most intriguing report was of a sighting by J. Jameson in 1939, first reported by his wife Sarah in *Newsletter for Birdwatchers* as late as June 1969 (Jameson 1969a); her letter reads:

Pinkheaded Duck on Chhora Beel, West Bengal

A letter received from my husband today contains a bombshell of which he is quite unaware! He casually mentions having seen a Pinkheaded Duck on Chhora Beel in Galsi Police Station area of Burdwan district, West Bengal, in 1939.

Salim Ali, in *The Book of Indian Birds*, revised 1964, writes: 'Distribution. The swampy jungles of the Himalayan terai and duars from Hepal to Assam; Manipur, Bt Pakistan; Burma (?). Obtained as far south as Nellore (Andhra) and Jalna (Maharashtra). Last authentic record from Darbhanga district, Bihar, June 1935. Apparently never common or abundant, but was occasionally seen amongst sportsmen's bags of wildfowl. Reduction in numbers noticed as early as 1878, although until about 1890 a half dozen or so still turned up in Calcutta bird market every season. Since 1956 its killing or capture is totally banned by law, but possibly the bird is already extinct.'

Mrs Sarah Jameson

Her letter was followed by a cautionary editorial footnote which reads:

[There had been many mistakes between the Pinkheaded Duck (*Rhodonessa caryophyllacea*) and the Redcrested Pochard (*Netta rufina*). It would be worthwhile getting further details of this observation since the writer of the note is reputed to be a careful and knowledgeable observer. No aspersions are cast, but one cannot be too careful in these matters. Ed.]

A few weeks later J. Jameson (1969b) wrote in the September issue of the same publication an account of his observation of a

Pink-headed Duck in 1939 (30 years previously) at Chhora jheel, Burdwan district, West Bengal, which has to date been generally regarded as the penultimate acceptable wild observation (BirdLife International 2001). The account reads:

PINKHEADED DUCK

J. Jameson

During the cold weather of 1939/40, I camped for a night on the bank of the Chhora beel*(jheel) along with two friends, Mr and Mrs Webb ... This beel had fairly dense sal jungle on three sides and lies about a mile or a little less, south of the Ajai river. The beel was rather shallow, with dense grass and reeds all round the comparatively small areas of clear water near the middle, and was infested with the largest buffalo leeches I have ever seen. In those days, the beel was extremely difficult to reach, and the duck on it could hardly have been disturbed at all. My friends and I hoped to get a shot at the duck on it by forcing our way through the grass and reeds, but without success; the leeches finally forced us to beat a retreat! One of us fired a shot in the air to get the birds to rise. Quite a number of them got up, amongst which I think I remember teal, pochard and mallard. A section of the birds flew fairly low over us and in the good afternoon light, I saw a bird roughly mallard size which had a dark body and a bright pink head and neck. The view I got was partly from underneath and partly from the side as the bird wheeled. I called out to my friends that I thought I had seen a Pinkheaded Duck which I knew to be rare. A few minutes later, as the bird wheeled again, we all saw this bird, and we agreed that it was almost certainly a Pinkheaded Duck. I used to be fond of shooting, and knew the commoner varieties of duck very well. I certainly know the Redcrested Pochard of which I have shot a number in the past, and the pink-headed bird I saw was certainly not the Redcrested Pochard.

*Chhora beel is in the Galsi Police Station area of Burdwan district in West Bengal, a mile or less, south of the Ajai river. The Ajai is on the border between Burdwan and Bhirbhum districts in West Bengal. The Ajai flows into the Bhagirathi, which in turn flows into the Hooglye. The beel is roughly 50 miles east of Asansol.

Unfortunately, no more details were obtained, so this observation remains open to question. All reports of wild Pink-headed Duck in the 1940s are in fact also open to doubt. A specimen was reportedly shot in 1948 near Barauni, Bihar (Mukherjee 1974), but was not preserved, while the final supposedly acceptable observation (BirdLife International 2001, Rahmani 2012) stems from a letter (Singh 1966) which reported birds at Manroopa Lake, Bakhtiarpur, Bihar, in 1948/9. The letter reads:

This is to inform the Bombay Natural History Society that, in the year 1947 on the 27th January in the afternoon, I shot a Pink-headed Duck at Manroopa Lake in Khagaria subdivision, Dist. Monghyr, in my estate area known as Bahadurpur Estate. The said duck, six in number, took off from Manroopa jheel and came over me and I shot only one. Sir Hugh Dow, Governor of Bihar, and Mr. E. O. Lee, i.c.s., Member of the Board of revenue, Bihar, were in the shoot. The latter gave me a letter of testimony which read that the Pink-headed Duck is rarely found in India and he congratulated me, but this letter is misplaced at present ... Again in 1948–49 I saw some Pink-headed Duck on Lake Manroopa, about 5 to 8 of them, but they did not come over me so I could not shoot.

LALITESHWAR PRASAD SINGH

An editorial response (Santapau *et al.* 1966) to the claim mentioned that the letter of testimony was not traced, E. O. Lee had died, and that Sir Hugh Dow remembered the shoot but not the shooting of a Pink-headed Duck, although Dow saw no reason to doubt the story. Furthermore, and unconnected to a reward offered for live birds in 1923 (see below), a very substantial monetary reward for physical evidence of the duck had been in place since 1930, and would be up to 1960, but was never claimed (Ali 1960), which seems extraordinary had any number of the species survived into this period. In the absence of a specimen, the supposed shooting must remain highly questionable, as must the supposed later observation in 1948/9.

The first major survey to search specifically for Pink-headed Duck in localities where it had been found historically, was in Bihar by Ara (1960), but he failed to locate the species. The American Rory Nugent (1991) searched areas along the Brahmaputra downstream from Saikhoa Ghat in north-east Assam, towards the border with Bangladesh. After sailing for 29 days, Nugent said that he saw the Pink-headed Duck in a flock of other waterbirds; his sight record has not been accepted by the authorities (Rahmani 2012). In 1998, the Wildlife and Wetlands Trust sponsored an unsuccessful expedition to Tibet by Peter Gladstone and Charles Martell; Tibetan Forestry Department staff had reported that the species survived in a remote area to the north of Bhutan, but no birds were found by the expedition (Ellis 1998). The main reason for the lack of success appears to have been the disappearance of suitable habitat. The duck was last reported with certainty in the 1930s, and as the destruction of habitat in India has substantially increased, it is no real surprise that the bird has not been recorded again. Ripley (1950, 1952), based on the above-mentioned letter (Singh 1966), thought it extinct since 1950, with a spate of observations made in that year all attributable to the Red-crested Pochard *Netta rufina*, which could be (and was) confused with the Pink-headed Duck at distance. This may have been true all of the 1940s reports as well. Myanmar had not been as extensively surveyed as India in the past and attention transferred there after the turn of the century. However, recent intensive surveys in Myanmar (Anon 2003, 2006, Eames 2005, 2008, Tordoff *et al.* 2008, Thorns 2017), have all been equally unsuccessful. Nevertheless, another expedition to Myanmar, led by Richard Thorns, departed in October 2017 (Global Wildlife Conservation 2017) but was unsuccessful (E. Fuller in litt. 2017).

CAPTIVE BIRDS

Pink-headed Ducks were frequently kept in captivity during the late nineteenth and early twentieth centuries. The first in Europe, a drake and duck, arrived at London Zoo, England, on 12 January 1874 (Hamilton 1874, Sclater 1875), with further arrivals in 1887 and 1892. All were supplied by a well-known dealer, A. Jamrach, and sold for the then princely sum of £40–£60 each (Hubbard 1907), the equivalent of £4,000–£6,000 today. The ducks were reportedly collected in the Goalpara district, Assam (Delacour 1956), but the exact location was never disclosed (Ali 1960). Thomas Littleton Powys, the fourth Baron Lilford, a prominent ornithologist and co-founder of the British Ornithologists' Union (Drewitt 1900), obtained three live birds, one drake and two ducks, of which two were purchased on 19 April 1892 from Jamrach (Prestwich 1974); these were housed in his aviary at Lilford Park, Northamptonshire, England (Drewitt 1900). The drake and one duck died in 1896 and were donated by Lilford to the British Museum (Natural History); the duck (Plate 2) is still held in the Tring bird collection (NHMUK 1896.4.2.2) but the drake has been missing since before 1986 (Knox & Walters 1994). The other female was still alive in 1900, and Lilford in 1896 had commented on the rarity of his surviving specimen (Drewitt 1900):



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Plate 2. The only surviving skin specimen of a Pink-headed Duck (NHMUK 1896.4.2.2) once owned by Lord Lilford. This female died in 1896.

A Pink-headed Duck from India in this part of the aviary, is one of the rarest birds in my collection. During my forty years of live bird collecting I have only obtained three of this species. The present survivor is a female, and by no means a handsome or conspicuous bird.

The last live birds to arrive in Europe in the nineteenth century were offered for sale in 1897 by a William Cross in Liverpool, England (Hubbard 1907), but further details are unknown. In 1901, Finn (1901) mentioned live Pink-headed Ducks held in the Calcutta Zoological Gardens, India (see below), and remarked that 'it has been not unfrequently sent home [to England]', which may be a reference to some of the birds mentioned above.

In August 1904, Inglis (1904) received a live drake and commented on its unfortunate fate: '...one I kept in my aviary for some time with a pair of mandarins, but it did not thrive, so I killed it.' It must be presumed this was the same individual he said was taken in Benoa Chaur. He also mentioned a live-caught female that had laid an egg during transit and lived for some considerable time in captivity, up to 23 July 1910 (Inglis 1940). In the first two decades of the twentieth century, there were only two records of live birds being shipped out of India. In 1907, Berlin Zoo, Germany, received a drake from the dealer Hagenbeck, but it died in August 1908 or shortly after (Kolbe 1999), and a single bird was received in 1912 by a G. D. Tilley at Darien, Connecticut, USA, but it only survived for a few days (Phillips 1922).

Plate 3. Sir David Elias Ezra, aged around 55. It was the inadvertent actions of Sir David that may have sealed the fate of the Pink-headed Duck.



Plate 4. Alfred Ezra at Foxwarren Park in 1940, holding his favourite pet Red Kangaroo *Macropus rufus* 'Jemima'.



DAVID SETH SMITH

Pink-headed Ducks were also kept at the Calcutta Zoological Gardens on an unknown number of occasions (Lonnberg 1924, Prestwich 1974, van der Ven 2007). The first record is of a single bird held captive prior to 1897, and now held at the Bombay Natural History Society (Abdulali 1968). The Calcutta Zoological Gardens and a large private zoo at the residence of Sir David Ezra (Plate 3) in Calcutta were used as holding facilities for live Pink-headed Ducks prior to export (Delacour 1955, Roland 1989). Sir David was Sheriff of Calcutta, director of the Reserve Bank of India, a prominent citizen and head of many industrial organisations (Roland 1989). The Calcutta Zoological Gardens was founded in 1875 and received collections of birds via donation, exchanges and purchases (Mittra 1996). It also probably received rarer specimens from the Calcutta market (Plate 5), which was opened in 1874 and became the main trading centre in India for waterfowl and other birds (Finn 1900, van der Ven 2007). Around the turn of the twentieth century, millions of waterbirds were shot or captured during hunting trips in the vast delta of the Ganges and Brahmputra (van der Ven 2007). Thousands of live birds arrived almost every day in the peak seasons at the Calcutta market, most of them ending up as culinary items (Hume 1879). Because of their rarity, Pink-headed Ducks were particularly sought after as ornamental birds (Finn 1915), but even as early as the 1870s A. O. Hume (1879) remarked: 'It very seldom comes into the Calcutta Market – rarely I should think more than half a dozen specimens in a season'. A. M. McGregor, the Honorary Secretary of the Calcutta Zoological Gardens, mentioned that a pair of drakes were present in 1923, as did Delacour (1924) after visiting the collection. Both birds were supplied by a local dealer in animals and captured in the Purnea district, Bihar, with the most recent arriving in 1919 (Bucknill 1924); presumably it was one of these birds that died around 1930 (Ali 1960).

Alfred Ezra (Plate 4), the brother of Sir David Ezra, was an avid aviculturist and from 1919 until the 1950s owned a menagerie at his home, Foxwarren Park, Cobham, England, which held an impressive collection of birds and animals, including Pink-headed Ducks (Plate 6) (Ezra 1925, 1941, Delacour 1926, Seth-Smith 1932, Fuller 2013). Ezra received his Pink-headed Ducks from Sir David, who had offered rewards to Indian bird-catchers (Ezra 1925). A repeated advert appeared in the leading Indian newspapers in the winter of 1923 (Bucknill 1924, Inglis 1940), which stated:

Wanted – TO BUY. PINK-HEADED ducks and drakes, Hindi name "Golabi Seer" (not red-crested pochards). Rs. 100 each, delivered sound Calcutta. Apply Box 0649, Advt. Dept., 'Statesman.'

In 1923, an unskilled worker averaged Rs. 0.5 per day, a skilled worker around double this amount (Sivasubramonian 2000), so Rs.

Plate 5. Calcutta (Kolkata) market around 1904. Hundreds of thousands of waterfowl passed through the market every winter.



100 per bird was lucrative indeed. Bucknill (1924) remarked that the advert was inserted 'by a well-known Calcutta Fellow and supporter of the Zoological Society of London', which could only have been Sir David Ezra, as not only was he a prominent businessman in Calcutta, but he had also been a fellow of the Zoological Society since 1909.

In 1925, Alfred Ezra received his first batch of live Pink-headed Ducks, three drakes and two ducks, from his brother (Ezra 1925, 1926), with one duck arriving in July and the rest on 10 August (Prestwich 1974); therefore, the three pairs frequently reported elsewhere appears to be incorrect (e.g. Delacour 1956, Kear 1990, Todd 1996). However, there are 16 preserved skins (see Table 2), so this number may indeed be accurate. Ezra's live birds were collected in southern Goalpara, Assam, and in eastern Rangpur, now in northern Bangladesh, near the confluence of the Tista (Teesta) and Brahmaputra rivers (Ripley 1952, Delacour 1956), but they have not been recorded subsequently in these regions. Of Ezra's Foxwarren ducks, two (a male and a female) died almost immediately, but by 1926 the others had settled well (Ezra 1926). Another 10 birds arrived in 1929 (Ezra 1930) (Plate 7). These were reported by Prestwich (1974) as being mostly male, which cannot be correct as the Foxwarren collection comprised roughly equal numbers of males and females (see Table 2). Of these, Ezra sent two pairs to his friend, the renowned ornithologist Jean Delacour, at the Chateau de Clères, Normandy, France (Delacour 1956), where Delacour had assembled a vast collection of animals and birds, including many rare species, housed in a zoo in the grounds of the castle (Fuller 2013). Delacour's Pink-headed Ducks failed to produce young, and Delacour remarked to Todd (1996) that 'they were very stupid

birds because they refused to breed'. Both Ezra (1941) and Delacour (1956) observed that the ducks were long-lived, stating more than 10 years and more than 12 years respectively, but neither Ezra's nor Delacour's birds attempted to breed, despite being kept under seemingly excellent conditions.

Despite literature comments that the last of his ducks died in 1936 (Kear 1990, Todd 1996), Delacour (1932) himself remarked that his birds had already gone by 1932. The Chateau de Clères was virtually destroyed by bombing at the start of the Second World War in 1939, with most of the animals killed during the raids or by looting during German occupation, especially the ducks and pheasants (Delacour 1941). Had they still been alive, the Pink-headed Ducks would no doubt have disappeared at this time in any case.

Seth-Smith (1932) noted that when he wrote (in that year) only one female and several drakes remained at Foxwarren, and any chance of breeding Pink-headed Ducks in captivity ended during the winter of that year, when the last supposed female at Foxwarren succumbed (Stokes 1933). Ezra regularly sent specimens to the then British Museum (Natural History) (NHMUK Archives Ezra to Pocock DF ZOO/232/6/14/4/8 S), and consequently, after their death, seven of Ezra's ducks were passed to NHMUK, including one that arrived in 1949 via Hugh Whistler, to whom it had been given by Ezra (Plate 8). The other nine are also preserved (Table 2). Rather confusingly, the dates of death recorded on some of the specimens do not entirely tally with the above-mentioned events recorded at Foxwarren. For example, the specimen labels of two female individuals recorded the dates of their deaths as 4 April 1933 (NHMUK 1933.4.2.1) and 8 May 1936 (NHMUK 1936.5.9.1) respectively (see also Knox & Walters 1994) (Table 2). Based on this information, Ali (1960) gave 1936 as the date when the last Foxwarren captive bird died, but Sir Peter Scott (1973) and Alexander Wetmore (1938), ornithologist and later the secretary of the Smithsonian Institution, both remarked that they saw live Pink-headed Ducks during visits to Foxwarren in 1937 and in May 1938. A specimen held at the Wildfowl and Wetlands Trust (WWT) has a 'pre-1939' date of acquisition (details on label), which strongly suggests that Scott may have received the bird in 1937 after his visit. Further support for there being a living bird post-1936 came

Plate 6. Mrs Muriel Helene Ezra, wife of Alfred, with several Pink-headed Ducks amongst flamingos and other waterfowl, about 1933.

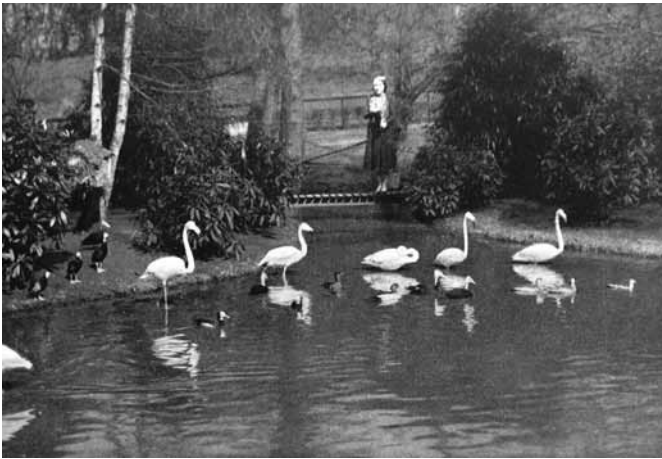


Plate 7. A photograph taken in 1929 at Foxwarren shows all 10 live Pink-headed Ducks shortly after their arrival from Sir David Ezra in Calcutta.



Table 2. Sex determination and chronological dates of death of the Pink-headed Ducks previously owned by Alfred Ezra at Foxwarren Park. I have traced all 16 individuals. *This is an ex-Rothschild Museum (Tring) specimen (data taken from label) sold to the AMNH in 1931. **Listed as unsexed, but identified to sex after my examination. *** Peter Scott visited Alfred Ezra at Foxwarren in 1937 (Scott 1973), so he may have received this specimen at the Wildfowl and Wetland Trust (WWT) in that year.

Registration number	Sex	Deceased
AMNH 211107	M	July 1925
AMNH 211108	F	July 1925
NRM 572040	M	October 1927
NHMUK 1929.12.8.1	F	7 December 1929
USNM 344802	unsexed	not recorded, but pre-1930
USNM 352773	unsexed	not recorded, but pre-1930
YPM 97867	M	c.1930
AMNH 732838	M	*not recorded, but pre-1931
NHMUK 1949.WHI.1.6165	M	21 May 1931
NHMUK 1932.10.8.1	**F (spirit)	12 October 1932
NHMUK 1933.4.2.1	F	4 April 1933
NHMUK 1936.2.17.1	**M (spirit)	18 February 1934
NHMUK 1936.1.16.3	**M (spirit)	28 January 1936
NHMUK 1936.5.9.1	F	8 May 1936
WWT 62	F	***about 1937 (pre-1939 in register)
USNM 352729	F	16 May 1938



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Plate 8. The NHMUK, Tring, UK, received seven of the Pink-headed Ducks once held at Foxwarren Park, including the drake shown here (NHMUK 1949.WHI.1.6165), previously owned by Hugh Whistler, the renowned Indian ornithologist (data taken from label).



Plate 9. A specimen of Pink-headed Duck (USNM 608914; dorsal and ventral views) which was a captive bird, probably held at Sir David Ezra's private zoo in Calcutta, and perhaps the last living member of the species.

from the secretary of the *Avicultural Magazine*, A. A. Prestwich (1968), who remarked that 'By 1938 there was but a sole survivor'. Another Foxwarren female (USNM 352729) is dated 16 May 1938, and it is interesting to note that this specimen was registered to the Smithsonian in the same month that Alexander Wetmore was at Foxwarren. A letter of gratitude (USNM 1129835) to Alfred Ezra dated 1 September 1938 from S. Dillon Ripley, then assistant secretary at the Smithsonian, finally resolves this issue and states:

Dear Mr. Ezra,

I am sorry indeed that your last pink headed duck is dead, and hope that you will be successful in getting others without too much delay. I still remember very vividly seeing your bird when I was with you at the end of May.

It has been very kind indeed of you to remember my desire for this specimen. The package containing the skin and the skeleton reached me yesterday from Rowland Ward. The skin is excellent. I have admired the markings very much indeed. The color of the head is most peculiar, entirely unlike anything else known to me in the family. I appreciate very much also having the trunk which is now in the hands of our osteologist to be cleaned.

I give you our best thanks for this contribution to our collections. With my kindest regards, I am

Sincerely yours,

Assistant Secretary

Dillon Ripley obviously accompanied Alexander Wetmore to Foxwarren in May 1938, and received the skin at the Smithsonian from Alfred Ezra in September of that year. Thus this individual is not only the last living bird from Foxwarren, but also the last held in Europe.

Ali (1960) further reported a letter by Herbert G. Deignan, curator of birds at the USNM and specialist on the avifauna of Thailand and adjacent areas, which stated that Sir David Ezra had a living male in his aviaries in Calcutta in 1945. A male specimen now held at the USNM (USNM 608914) (Plate 9), which was part of Sir David's captive Calcutta collection, was presented by Lady Rachel Ezra (widow of Sir David) to S. Dillon Ripley on 11 November 1948 (details from label); the bird was supposedly captured near Dhubri, on the Assam/Bengal border, in the early 1930s. If correct, this may have been the individual mentioned by Deignan (in Ali 1960), and the last record of a captive bird. It was also perhaps the last living member of the species.

DISCUSSION

The Pink-headed Duck may have always been rare, despite having a wide distribution, with continued drainage of its wetland habitat and incessant hunting pressure having, by the turn of the twentieth century, reduced the population to a critically low level. Humphrey & Ripley (1962) suggest that the rarity of this duck can be explained by its specialised habits and anatomy. Being closely related to pochards (Livezey 1996), the Pink-headed Duck seemingly took advantage of a changing environment brought on by geological changes during the Tertiary (Humphrey & Ripley 1962), when it shifted from a marine or inland sea littoral habitat to a more restricted, specialised one of marshy, freshwater ponds, a habitat that has been so devastatingly destroyed over the last two centuries. Of the tens of thousands of ducks shot every winter for decades in northern India and surrounding countries, fewer than 80 Pink-headed Duck skins exist (Ali 1960), most of which were collected between 1870 and 1900. The comparatively small number of collection records of live and dead birds between 1900 and 1922 was seemingly a reflection of the duck's rarity (Table 1). However, collection records increased considerably after 1923, when a financial reward was offered by Sir David Ezra. About 13 wild ducks are recorded as collected from 1900–1922, seven shot birds and six received in captivity (two in Europe, two in Calcutta, two owned by Inglis [1940]) (Table 1). This increased to more than 21 during the six-year period from 1923 to 1929, comprising at least five specimens destined for museums (see BirdLife International 2001 for a list of records; Table 1) and the 16 sent live to Ezra in England in 1925 and 1929. Moreover, apart from the previously mentioned two drakes captive in 1923, there was also an unknown number of additional captured birds held in the Calcutta Zoo during the next decade, which would have increased the total further. For example, two apparently live birds were received from Calcutta Zoo in Japan (date unknown); their final resting place was in the Yamashina Institute of Ornithology, but they were subsequently destroyed during the Second World War (Ali 1960).

The Pink-headed Duck was always sought after as a rarity and was much in demand by museums, but the spate of collections after 1923 compared to the previous two decades appears to have been a direct result of lucrative monetary rewards offered for live birds for the avicultural market. It is likely therefore that, as a high price was now on its head, hunters and professional bird-catchers were specifically looking for the species during this period, and such was the demand for specimens, especially in the years between 1925 and 1929, when 16 birds were collected, that by the mid-1930s the

duck had become effectively extinct in the wild. It is no surprise that a second reward offered from 1930 onwards was never claimed; all post-1930 records lack physical specimens. In summary, and based on present information, the last preserved wild-caught Pink-headed Ducks (a pair) were collected on 7 April 1923, the last unequivocal wild observation was in June 1935 by Charles M. Inglis, while the last living specimen at Foxwarren survived until 16 May 1938. The 1939 observation by Jameson (1969a,b) and the 1948/9 observation by Singh (1966) should now, in my opinion, be considered possible, but open to serious doubt. The last known living Pink-headed Duck, a captive bird held at the Calcutta Zoological Gardens or in Sir David Ezra's private zoo, survived until at least 1948. Ironically, protective legislation was put in place in 1956, with the capture or killing of birds and the taking of eggs prohibited by law (Ali 1960), but this came much too late to save the species.

Thus, the Pink-headed Duck suffered the same fate as that which beset a number of other now extinct bird species, such as the Great Auk *Pinguinus impennis*, Carolina Parakeet *Conuropsis carolinensis* and Stephens Island Rockwren *Traversia lyalli* (Hume 2017). The high demand for specimens of a charismatic species that had become rare, and the financial rewards offered to secure them, resulted in intense collecting pressure on the remaining population. It may therefore have been the inadvertent actions of Sir David Ezra, through advertising in leading Indian newspapers in 1923 and offering a financial reward for live birds, that triggered a rush to obtain specimens and thereby sealed the Pink-headed Duck's fate.

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Julian P. HUME, Bird Group, Department of Life Sciences, Natural History Museum, Akeman St, Tring, Herts HP23 6AP, UK. Email: j.hume@nhm.ac.uk