Short Communication

Intersex plumage in Plum-headed Parakeet (*Psittacula cyanocephala*)

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Abstract - This note reports the first documented case of intersex plumage in a Plum-headed Parakeet from India.

Key words: intersex plumage, *Psittacula cyanocephala*, Aravalli Hills, sexual dimorphism.

Riassunto - Piumaggio intersex nel parrocchetto testaprugna (*Psittacula cyanocephala*).

Questa nota riporta il primo caso documentato di piumaggio intersex nel parrocchetto testaprugna in India.

Parole chiave: piumaggio intersessuale, dimorfismo sessuale, *Psittacula cyanocephala,* India.

INTRODUCTION

Birds exhibit some of the most remarkable sexual dimorphisms among vertebrates (Major & Smith, 2016). In species with distinct sexes, abnormal individuals with a combination of phenotypically male and female body parts are referred to as gynandromorphs, while organisms with intermediate sexual phenotypic features are referred to as intersexes (Fusco & Minelli, 2023). Intersex plumage in birds is a rare but unique occurrence in which individuals exhibit both male and female plumage traits. Birds with mixed plumage may be misinterpreted as hybrids, especially in parks, zoos, and other bird-breeding facilities where numerous species coexist (Johnsgard, 1960; Reeber, 2015). Although birds with intersex appearance are occasionally observed, descriptions are rarely comprehensive (Chiba & Honma, 2011). Intersex birds appear to be quite infrequent. Obviously, they will only be discovered in sexually dimorphic species, where the males are morphologically distinguishable from the females.

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The Plum-headed Parakeet (*Psittacula cyanocephala*) is a native bird species to South Asian countries such as India, Pakistan, Nepal, Bhutan, Bangladesh, and Sri Lanka (Grimmett *et al*., 1998). Plum-headed Parakeets are dimorphic as adults (Perry & Perry, 1996). Males grow a rich red head that brightens over the forehead and turns bluish-purple on the hind crown, nape, and lower cheeks. In females, a more moderate lavender-grey replaces the red-plum hue on the head (Rubin, 1990).

OBSERVATION

This note documents the record of intersex plumage in a Plum-headed Parakeet in the Aravalli Hills of Ajmer (26°29’31.0’’N 74°38’34.8’’E), India (Fig. 1). The individual was observed in early June 2024 among the usual adults on the *Leucaena leucocephala* tree. The observed individual had a lavender-grey head and other female characteristics such as the absence of a maroon shoulder-patch on the shoulder region and a dominant black ring in the neck, which are present in male (Ali, 2002), but it also had a noticeable red coloration on its forehead region, which only occurs in males, and had the size comparatively larger than females nearby.

DISCUSSION AND CONCLUSIONS

Several factors contribute to gynandromorphism and intersexuality in other organisms, including genetic disorders, poly-spermic fertilization, interspecific hybrids, disturbed cleavage of fertilized cells, sex-determining genes in racial intercrosses, chromosomal aberrations or mutations and environmental factors (Grant & Masteller, 1987; Narita *et al*., 2010; Santos *et al*., 2019; Fusco & Minelli, 2023). The presence of red pigmentation in the forehead region, which is more often associated with males, along with the female-typical lavender-grey head, demonstrates the mixed expression of secondary sexual traits.

Previous records of intersex in birds were observed in ducks like mallard (Sjögren 9& Waldenström, 2021), and Northern Pintail (Chiba & Honma, 2011). While gynandromorphism was recorded in many instances, including Evening Grosbeak (Laybourne, 1967), Black Redstart (Weggler, 2005; Martinez, 2020), Northern Cardinal (Bohlen, 2006), Eastern Towhee (Brenner *et al.*, 2019), Green Honeycreeper (Murillo *et al*., 2023). Stępniewski & Surmacki (2023) recorded gynandromorphism in Bearded Reedling and summarized the phenomenon in about 43 bird species.

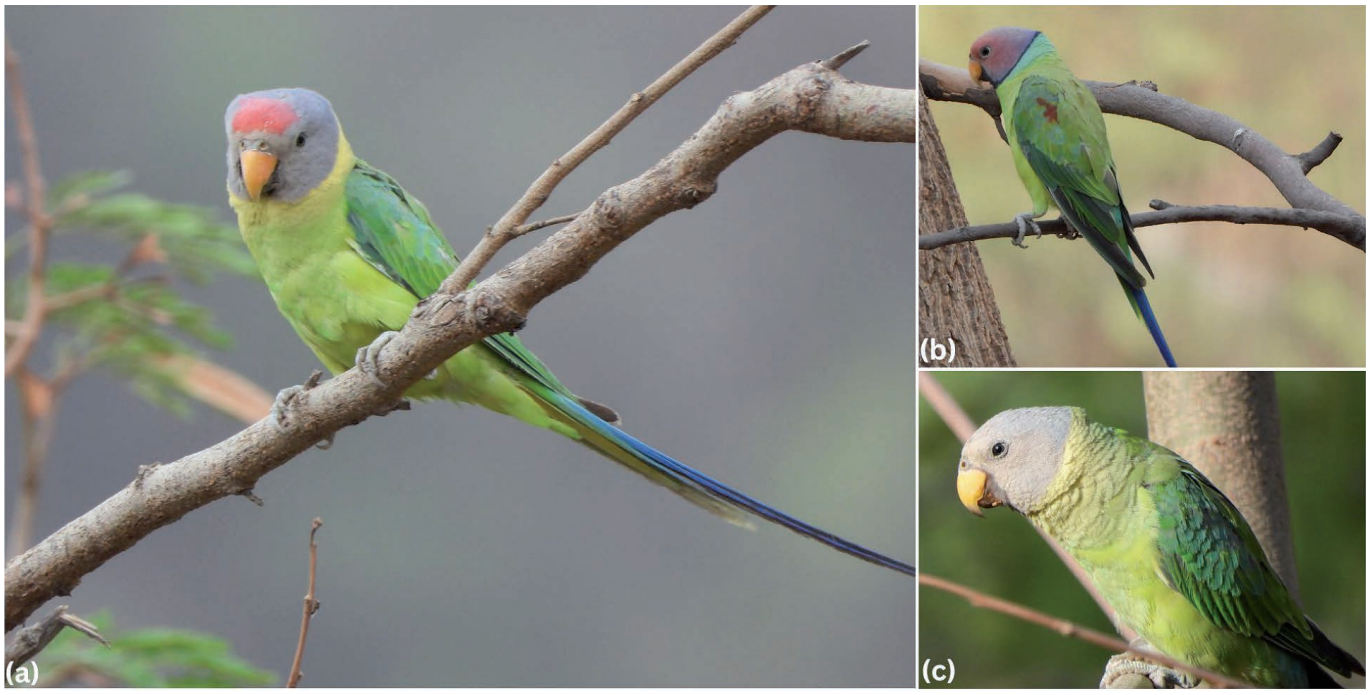

Fig. 1 – a) Intersex plumage in female Plum-headed Parakeet; b,c) male and female with normal plumages. / a) Piumaggio intersex nella femmina del Parrocchetto testaprugna; b, c) maschio e femmina con piumaggio normale.

This finding adds to the expanding information on intersex plumage in birds, emphasizing the need for more research into the genetic and environmental variables that influence this phenomenon. Understanding underlying mechanisms can reveal information about avian biology, sexual differentiation, and the effects of environmental stressors on wildlife. The one here documented is the first recorded case of intersex plumage in a female Plum-headed Parakeet and family Psittaculidae and adds one more species to the list of those presenting intersex plumage in the wild.

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