# What is John Latham's Rose-fronted Parrot?

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# What is John Latham's Rose-fronted Parrot?

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Summary.—In 1822, John Latham gave the name Rose-fronted Parrot to a single specimen owned by Edward Smith Stanley. This specimen, now at World Museum, Liverpool, has never been given a formal scientific name but had been thought to be an undescribed, possibly extinct species, or an unusual young individual of the genus *Psittacula*. Based on a short mitochondrial DNA sequence obtained from the specimen that has 100% similarity with sequences on NCBI GenBank, we conclude that the most plausible identity of the Rose-fronted Parrot is a juvenile Plum-headed Parakeet *Psittacula cyanocephala*.

John Latham was England's leading recorder of 'new' bird species at the dawn of the 19th century (Jackson *et al*. 2013). Between 1781 and 1802, Latham published *A general synopsis of birds* in three volumes and supplements. This was followed by *A general history of birds* in ten volumes and an index between 1821 and 1828 (Jackson *et al*. 2013).

The Rose-fronted Parrot was included in *A general history of birds* (Latham 1822: 186) based on a single specimen owned by Edward Smith Stanley (the 13th Earl of Derby from 1834), but the putative species was not given a scientific binomial. Stanley annotated his personal copy of *A general history of birds* with: 'Query, if this bird may not in reality be the young of some of the long-tailed species, rather than completely distinct. Yet I do not remember to have seen any of those which had acquired the whitish tips to the two middle feathers of the tail, in the earlier stage of life' (Forbes & Robinson 1898: 18).

In the multi-volume register of the 13th Earl of Derby's collections, compiled by his curators Louis Fraser and Thomas Moore in the late 1840s (now at National Museums Liverpool; Largen 1987, Fisher 2002), Rose-fronted Parrot is entry number '765' with the locality 'East Indies'. Nothing else appears to be known about the specimen's provenance. It was bequeathed to the people of Liverpool on the Earl of Derby's death in 1851, along with most of his substantial natural history collections founding what became the Derby Museum, Liverpool Museums (Morgan 1978) and latterly World Museum, National Museums Liverpool. Salvadori (1891: 606) listed Rose-fronted Parrot under 'doubtful species' in an appendix to his catalogue of parrots in the British Museum noting that it was 'probably a young bird'. Henry Ogg Forbes and Herbert Christopher Robinson, the Director of the Liverpool Museums and his assistant respectively, published a catalogue of parrots in the Derby Museum in 1898, which included 'Rose-fronted Parrot Latham' still scientifically 'unidentified', with notes that the skin was 'much damaged' and 'a portion of the back is wanting'. The specimen was not included by Wagstaffe (1978) in his catalogue of avian type specimens in the Liverpool collection.

The specimen (now NML-VZ D765; Fig. 1) received little further attention until the early 1990s when CF and Michael Walters compared the specimen morphologically with the comprehensive collections of *Psittacula sensu lato* at the Natural History Museum, Tring. They were unable to identify the specimen as any known species, speculating it might be an undescribed, extinct species (see Hume & Walters 2012) closely related to Plum-headed Parakeet *P. cyanocephala*, Slaty-headed Parakeet *P. himalayana*, or Intermediate Parakeet



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Figure 1. Specimen in World Museum, Liverpool, used by John Latham for his description of Rose-fronted Parrot (NML-VZ D765) (John-James Wilson)

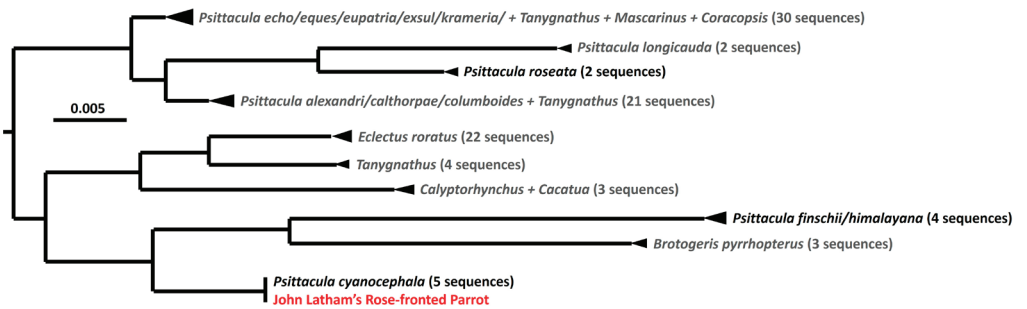


Figure 2. Sub-tree (of a larger tree produced by Neighbor Joining) showing the four putatively closely related *Psittacula* species (Blossom-headed Parakeet *P. roseata*, Grey-headed Parakeet *P. finschii*, Slaty-headed Parakeet *P. himalayana*, Plum-headed Parakeet *P. cyanocephala*) mtDNA cytochrome b sequences in NCBI GenBank aligned by BLAST with the 121 bp sequence obtained from John Latham's Rose-fronted Parrot (NML-VZ D765).

*P. intermedia*, which is now known to be a hybrid of the other two (Rasmussen & Collar 1999). This theory was retained by Hume (2017) who thought the specimen more likely to be an adult female than a young bird. Other species in this group are Grey-headed Parakeet *P. finschii* (often considered part of a superspecies with *P. himalayana*) and Blossom-headed Parakeet *P. roseata* (often treated as a superspecies with *P. cyanocephala*) (Rasmussen & Collar 1999).

Several full and partial mitochondrial DNA sequences for *Psittacula sensu lato* are now available on NCBI GenBank (Sayers *et al*. 2021), including *P. cyanocephala*, *P. himalayana* and *P. roseata* (e.g., from Groombridge *et al*. 2004, Braun *et al*. 2019, Dey *et al*. 2021). To establish the identity of the Rose-fronted Parrot we designed and trialled new pairs of primers (registered in the BOLD Systems Primer Database, www.boldsystems.org; Ratnasingham & Hebert 2007) specifically for the *Psittacula* mtDNA cytochrome b gene. By using a mtDNA gene, which are more abundant in cells, we maximised the chance of PCR amplification success from the >200-year-old specimen, but due to the uniparental inheritance of mtDNA could not preclude the possibility of hybridisation and introgression obscuring analyses.


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Figure 3. Ventral and dorsal views of juvenile specimens (from bottom) of Slaty-headed Parakeet *Psittacula himalayana* (NML-VZ D662b), Latham's Rose-fronted Parrot (NML-VZ D765) and Plum-headed Parakeet *Psittacula cyanocephala* (NML-VZ T2889 and NML-VZ T2890bis) (John-James Wilson)



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The primers were designed manually against sequences of *Psittacula* obtained from NCBI GenBank. A first PCR of 35 cycles was performed at annealing temperature 55°C using primers *Psit F2* and *Psit R2* producing a product of 170 bp. Two microlitres of the PCR product was used as a template for a second PCR of 35 cycles at annealing temperature 55°C with primers *Psit F1* and *Psit R2*. A 121 bp fragment was sequenced. Our molecular methods otherwise followed those of Senfeld *et al*. (2019). Sequences <200 bp are not accessioned by NCBI GenBank, but the sequence is publicly available on BOLD Systems under Process ID NMLVZ002-23.

The Rose-fronted Parrot sequence was compared to archived sequences of birds of known identity using NCBI BLAST (https://blast.ncbi.nlm.nih.gov/Blast.cgi) and possessed 100% similarity with five sequences of *P. cyanocephala* (KJ456434.1, NC_054153.1, GQ996508.1, GQ996501.1, AY220109.1). The next two most similar sequences (97.52%) were from Eclectus Parrot *Eclectus roratus* (KM372510.1, MG429727.1) (Fig. 2).

Using Juniper & Parr (1998) we compared the plumage features of the Rose-fronted Parrot with two juvenile *P. cyanocephala* (NML-VZ T2889, NML-VZ T2890bis) collected by George Frederick Leycester Marshall, and a single juvenile *P. himalayana* (NML-VZ D662b), held at World Museum, Liverpool (Fig. 3). The features are consistent with the specimen being a juvenile *P. cyanocephala*. The head is green tinged grey (Juniper & Parr 1998) although there is considerable variation in the brightness of the green in other specimens. The tail matches the length and plumage of the *P. cyanocephala* specimens, but not the larger *P. himalayana*, with the uppertail being bright blue and the tip white (see Rasmussen & Collar 1999).

We conclude that the most plausible identity of the Rose-fronted Parrot is a juvenile *P. cyanocephala*, which species has recently been moved to the genus *Himalayapsitta* (Braun *et al*. 2019) although this proposal has yet to receive widespread support.

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