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Source: Bulletin of the British Ornithologists' Club, 140(3) : 299-308

Published By: British Ornithologists' Club

URL: <https://doi.org/10.25226/bboc.v140i3.2020.a3>

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Martinet's engravings in Buffon (1770–83): variation in their hand-colouring and its implications for defining Echo Parakeet *Psittacula eques* (Boddaert, 1783)

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Received 27 March 2020; revised 21 June 2020; published 21 September 2020

<http://zoobank.org/urn:lsid:zoobank.org:pub:D70FE3C2-95AF-43DE-8A33-1B32E6B4ED46>

SUMMARY.—As explained in the Code (ICZN 1999), an illustration cannot be considered a type, which remains the physical specimen depicted in the photograph or depiction. Complexity arises if the illustrated specimen was unique and is no longer extant, meaning that the illustration is the only available visual representation of the lost type. In such cases how should we treat the illustration? As part of a wider study of the taxonomy and history of the Echo Parakeet *Psittacula eques*, we attempt to answer two questions pertaining to the specific case of Boddaert's (1783) naming of a new species, *P. eques* from Réunion, which is now extinct there, namely: (1) were the published hand-coloured engravings by François-Nicolas Martinet on which Boddaert based his name illuminated by one hand?, and (2) how reliably do they represent the type? We conclude that the published illustrations were hand-coloured by different persons, and they vary too much to use them to ascertain the true appearance of the lost type. We suggest that only original drawings or the coloured original artwork (preparatory drawings) for the engravings or lithographs can be used to establish the appearance of a type, if the specimen itself is missing.

François-Nicolas Martinet illustrated two important taxonomic works, Brisson (1760) and Buffon (1770–83). The hand-coloured plates in the latter, the *Planches enluminées* by Martinet, gave the world a view how rich were, for example, the Cabinet Aubry and Réaumur's collections, both long since dispersed or destroyed. Much weight is nowadays placed on the illustrations, as the descriptive text was often not as detailed as it is today. As part of a wider study of the taxonomy and history of the Echo Parakeet *Psittacula eques* in Réunion and Mauritius (Cheke & Jansen 2016, Jansen & Cheke in press), especially the taxonomic status of the extinct Réunion population, we analysed five hand-coloured copies of the same printed outline illustration by Martinet of the 'Perruche à collier de l'isle de Bourbon', originally issued c.1766 (Cowan 1968) as fascicle 3 of Daubenton (1765–80) to be inserted into Buffon (1770–83, pl. 215).

Subsequently Boddaert (1783) published a book of Linnean names for birds illustrated in the *Planches enluminées*, coining new ones for those species he considered to be lacking a Linnean binomial. His book contains no descriptions, the names being predicated explicitly on the plates (Walters 2003); *Psittacula eques* was based on *Planches enluminées* 215. From 1764, Boddaert worked at Utrecht University and either he possessed his own copy of Buffon or Daubenton, or he used one in the university's library. Unfortunately, there is now just one copy anywhere in the Netherlands (at Naturalis, Leiden) (WorldCat.org, accessed 14 June 2020), so we do not know which copy Boddaert used. The entire edition of Martinet's plates, either the original fascicules (Daubenton 1765–80) or as incorporated in Buffon's encyclopaedia (1770–83) depict the holotypes of Boddaert's names, of which probably no specimens now survive (Jansen 2015). It bears mention that a handful of types

illustrated in the *Planches enluminées* and named by others (Linnaeus, J. F. Gmelin) do still exist (Hume 2007, Jansen 2015).

Although all the copies published represent the same original specimen drawn or painted by Martinet, there is considerable variation in the published hand-coloured plates, and this is where problems can arise. Buffon (1770–83) wrote in his introduction to the first volume ‘more than 80 artists and workers have been employed continuously at this work for [the last] five years’ to illuminate the printed outlines (see also Jackson 1999, Schmitt 2007). However, we do not know how the work was apportioned, i.e. were all copies of one species coloured by the same or different persons? Although Buffon insisted on colour accuracy, Schmitt (2007) noted that the large numbers of colourists ‘specifically explains the differences, sometimes palpable, that exist between examples of each species, which are never rigorously identical’, which is hardly surprising when the print run was 450 (Schmitt 2007), meaning that 450 plates of the same bird all had to be coloured.

As much weight is now placed on the plumage details in the plate in Buffon of the now extinct population of Echo Parakeet on Réunion (e.g. Jones *et al.* 2018), here we seek to answer two questions, which also possess more general application: (1) are the published set of Martinet’s engravings for a given species coloured by one hand?, and (2) how reliably do they represent the type?

Material and Methods

We examined digital photographs of Buffon (1770–83, pl. 215) in the copies held in the United States National Museum, Washington DC (now National Museum of Natural History, Smithsonian Institution; USNM), American Museum of Natural History, New York (AMNH), Naturalis Biodiversity Center, Leiden (Naturalis), and Zentralbibliothek Zürich, together with a colour-printed plate in Schmidt (2007), derived from a loose plate in the Muséum Buffon in Montbard, France. As the Schmitt compilation, prepared from loose and never-bound plates in excellent condition, is intended as a definitive re-issue of the *Planches*, we believe the colour rendering to be very accurate; the identifications however can be wrong, notably the Mascarene *Zosterops* spp. also discussed below. The Smithsonian collection of original fascicles of the plates is online at <https://www.biodiversitylibrary.org/>.

In addition, we examined uncoloured printed illustrations by Martinet (*in* Brisson 1760, vol. 4: 328, pl. 27, fig. 1), from copies held in USNM and Pennsylvania Hospital, Philadelphia. Coloured versions of the Brisson plates exist, but his book was published with uncoloured copperplate engravings (Schmitt 2007; S. Schmitt *in litt.* 2020).

Review of the illustrations

There is every reason to believe that the Brisson / Buffon descriptions and Martinet’s images of the Echo Parakeet were taken from the same single specimen labelled as from Réunion in the now lost Cabinet Aubry (Cheke & Hume 2008, Cheke & Jansen 2016), *contra* Cheke (1987; ‘3 specimens’) as still cited by Hume (2007, 2017) and Jones *et al.* (2018). Martinet redrew the specimen on his plate, using Brisson’s name, which was presumably on the mounted specimen’s stand. It appears that Buffon then renamed the bird (as *perruche à double collier*) and apparently described it from a version of the plate (Levaillant 1801, Cheke & Jansen 2016). We, therefore, must take Brisson into account, as he provided the only description directly from the specimen.

Brisson.—Although coloured versions (Jones *et al.* 2018, copy online on www.gallica.bnf.fr) exist of the plate by Martinet (*in* Brisson 1760, vol. 4: 328, pl. 27, fig. 1), and

some date from the 18th century (Bureau 1907), they bear no relation to each other in colouring, and are inaccurate to varying degrees, as they were made without access to the specimen described by Brisson and drawn by Martinet (Bureau 1907). The Gallica series is particularly egregious. All coloured versions of Martinet's *perruche à collier de l'isle Bourbon* in or extracted from Brisson's volumes were illuminated at a later date and cannot be considered representative of the type specimen drawn by Martinet. C. Jones (*in litt.* 2020) has confirmed to ASC that the example he published is a detached plate in his own possession.

The monochrome plates in Brisson are inferior to the later (pre-colouring) prints in Buffon, and for the Réunion Parakeet show one collar instead of two; other subtleties of the plumage are necessarily missing, although Brisson's text is extremely detailed (see below).

Buffon.—The illustrations, drawn and engraved by Martinet (Daubenton 1765–80, and *in* Buffon 1770–83), were copperplate engravings printed in black ink (Rookmaker 2004: 127). If there was a master set for guidance it has not survived or not been identified (S. Schmitt *in litt.* 2020). These plates were published separately (between 1765 and c.1780), before the corresponding (folio) text (Schmitt 2007). They had to be inserted in the text, but this was not always done. We compared five versions of *Planches enluminées* 215 (see Table 1) from copies around the globe. The photographs of plates available to us were not uniform in lighting and background, which ideally would be necessary to compare colour tones, but most differences are nevertheless readily apparent. In Table 1 we compare the various plates to Brisson's detailed description taken directly from the type specimen; the variation is such that they must have been coloured by different individuals, not by one person using a master version and repeatedly colouring copies of the same plate. As Hume (2007) noted, 'the type illustration is a poor rendition' of the actual bird.

The precise translation of Brisson's (1760) original description, taken from the Cabinet Aubry specimen, is very full (square brackets used to clarify where appropriate):

The head, the neck, the back, the rump, the uppertail-coverts, the scapulars and the chest are a fine green. Below the occiput is a narrow band coloured rose-pink, which extends on each side around the neck, becoming wider when approaching the throat, forming a sort of collar, above which the green is mixed with a little blue. Under the throat there is a horizontal yellow band, whose two ends meet those of the pink collar. Under this collar, solely on the sides of the neck, there is a narrow black band, which curves [up] on each side of the throat, rising up to the lower mandible. The belly, the flanks, the legs and the coverts on the underside of the tail are green tending to yellow. The lesser coverts on the underside of the wings are yellow-green, the greater are a clear ash-grey. The lesser [coverts] on the upper side, as well as the greater closest to the body, are the same green as the back; the greater [coverts] further from the body are dark green. The wing feathers [= flight feathers] are ashy below, but above on the outer side [= vane] and at the tip they are a darker green than the back, their inner side ashy black; their shaft is black. The tail is composed of twelve feathers [= rectrices], ashy-yellow underneath and green above; they also have black shafts. The central two are longer than those at the side which get shorter by degrees up to the outer ones on each side, which are three inches nine lines shorter than the two in the middle. The upper mandible is a bright red, except for the tip of its hook which is blackish; the lower mandible is a dull red at the base, and blackish towards the tip. The feet are ash-grey tending towards the colour of lead, and the claws blackish (Brisson 1760, vol 4: 328–330, list of overall body measurements omitted; translation by ASC).

TABLE 1

Variation in the hand-coloured printed illustrations by Martinet (*in* Buffon [Daubenton], 1770–83, tome 3: 13, no. 215) held in four libraries and in one modern republication of the plates, compared to Brisson's text description. All illustrations lack black lores, the other morphological features vary in each bird, showing that the colourists, even if they had the specimen in front of them, interpreted the features differently – possibly some copied from previously coloured plates. As the basic image shows the bird facing slightly forward, the full hindneck, and thus the complete collars, are not visible (Figs. 1–5). The last three points are not specific features, but show clear differences in general coloration.

| | AMNH | Naturalis | USNM | Zentralbibliothek Zürich | Muséum Buffon, Montbard (in Schmitt 2007) | Brisson's description (1760) |
|---|--|--|---|---|--|---|
| Colour of the cere | greyish / blue | greyish | white | white | pale greyish blue | [not mentioned] |
| Bill coloration: maxilla | pale pinkish (including tomia), tip black | dark pinkish (including tomia), tip blackish | dark pinkish fading to pale pink on lower edge; tip blackish | dark pinkish with pale spots; tip blackish | cerise (dark pink) fading to pale pink on lower edge; tip blackish | bright red, except tip of hook blackish |
| Bill coloration: mandible | dark – blackish | dark – with reddish central part | dark – blackish | dark – blackish | dark – blackish | dull red at base, blackish towards tip |
| Black lores | absent | absent | absent | absent | absent | [not mentioned] |
| Orbital ring coloration | yellowish | white / yellow | yellow | yellowish | yellow | [not mentioned] |
| Black throat patch and shape (triangle shape is narrow under the bill, broader below) | a hint of darker area (triangular) under the mandible | black, triangular to midway along neck-sides | absent (= green) | present to neck-sides (triangular) | a hint of darker area under the mandible | [unclear] 'solely on the sides of the neck a narrow black band curves up to lower mandible' |
| Length and shape of blue neck-ring | narrow neck-ring, extending halfway around the neck from the black throat patch towards the nape | narrow neck-ring around most of the neck-sides; towards the nape | narrow neck-ring around most of neck-sides towards nape, broadening towards latter | narrow neck-ring on only a small part of neck-sides towards nape | narrow neck-ring on only a small part of neck-sides towards nape | Green mixed with a little blue above pink collar [extent not given] |
| Length and shape of the pinkish neck-ring | narrow neck-ring, from throat towards nape | narrow neck-ring, from throat towards nape | narrow neck-ring, extending around most of neck-sides towards nape (equal to blue neck-ring), broadening towards nape | narrow neck-ring, from throat towards nape | narrow neck-ring, extending around most of neck-sides towards nape | complete rose-pink collar around hindneck, widening on neck-sides |
| Presence of yellow on upper breast | slightly paler (yellowish) spot visible, around where coloured neck-ring starts | absent | absent | broad, triangular patch to halfway around neck-sides from throat (like an extension of the pink ring) | small triangular patch centred where coloured neck-ring starts | horizontal yellow band, whose ends meet pink neck-ring |

TABLE 1 continued

| | AMNH | Naturalis | USNM | Zentralbibliothek Zürich | Muséum Buffon, Montbard (in Schmitt 2007) | Brisson's description (1760) |
|------------|---|--|---|---|--|--|
| Underparts | mostly brownish green, but darker part on lower breast, paler around legs | largest part dark green centre with paler green edges, some parts with larger darker green centres | all dark green, with some paler edges (yellow / orange) on upper breast and around legs | all dark green, with some paler edges around the legs | mostly brownish green, but darker sooty-green band on lower breast | chest green, rest green tending to yellow |
| Wing | upperside: dark green / underside: grey / green | upperside: dark green with some darker patches / underside: grey / green | upperside: dark green with some darker patches / underwing: bright and dark green | upperside: dark green / underside: blue and green | upperside: green with brown-centred feathers / underside: blue | upperside: coverts and flight feathers outer vane dark green, inner vane blackish / underside: lesser coverts yellow-green, greater ash-grey ashy yellow |
| Undertail | yellow-green with greyish centres to feathers | bright yellow with greyish centres to feathers | bright yellow with greyish centres to feathers | bright yellow with darker centres to feathers | yellow with brown centres to feathers | |

TABLE 2

Variation in the plates (*Planches Enluménées* 35) of Mascarin Parrot *Mascarinus mascarinus* by Martinet *in* Buffon (1770–83); modified from Hume (2007), with the addition of Brisson's description.

| Location | Head | Body and wings | Tail |
|---|-------------|---|---------------------|
| Rothschild Library, Tring 14/G | Bluish grey | Chocolate-brown, wings blackish brown | Light grey |
| Rothschild Library, Tring 16/A | Grey-blue | Chestnut-brown washed rufous, paler below; wings dark chocolate | Mid grey |
| Errol Fuller [private collection] | Grey-blue | Greyish chocolate, paler below; wings blackish brown | Dark grey-brown |
| Bodleian Library, Oxford | Dove-grey | Medium brown, paler grey-brown below; wings dark blackish brown | Light grey |
| Muséum d'Histoire Naturelle, Réunion | Bluish grey | Chocolate-brown, wings blackish | Blackish grey-brown |
| Brisson (1760): text description [translation by ASC] | Pale grey | Very dark grey [throughout] | Very dark grey |



Note that the translation given by Hume (2015) is both abridged and contains inaccuracies—for example the yellow lower collar is omitted and the bill description ambiguously rephrased.

In contrast, the precise translation of Buffon's text (in vol. 7, 1779) (square brackets used to clarify where appropriate) is very skimpy, and almost certainly, as Levaillant (1801) pointed out long ago, taken from one of the coloured plates, not the specimen. Indeed there is much, even in the plate, that the description omits:

Two small ribbons, one pink and the other blue, encircle the entire neck of this parakeet which is the size of a Turtle Dove; for the rest, all the plumage is green, darker on the back, yellowing on the underbody, and in several places browner via a darker centre to each feather; under the tail a yellowish fringe borders the grey-brown trend [= centre line] of each feather; the upper half of the bill is a fine red; the lower [half] is brown (Buffon 1770–83, vol. 3: 13; translation by ASC).

Problems noted in the past

Colour variation is by no means confined to Echo Parakeets. In the 1980s a difference between ASC and the late K. C. Parkes of the Carnegie Museum of Natural History, Pittsburgh (Cheke 1983), in interpreting the nomenclature, authority and identity of white-eyes *Zosterops* spp. (*Z. borbonica*, *Z. olivacea*) from Réunion, as described and illustrated in Buffon (1770–83), proved in retrospect (ASC pers. correspondence) to be due to the version of *Planches enluminées* 681(2) seen by Parkes (copy in Pittsburgh) differing significantly in coloration from the two seen by ASC (in the Réunion Natural History Museum, and the Bodleian Library, Oxford). As the late M. Walters of the (then) British Museum (Natural History) wrote to ASC after publication 'there is one point I should make to you, this is the danger of placing too much importance on the actual colours in Daubenton's *Planches enluminées* ... while the original drawings may have been accurately coloured, the published plates were of course individually hand-coloured, and must have been done by a lackey rather than by Daubenton or Martinet, for they sometimes differ quite spectacularly in different copies of the same plate. We have two copies of Daubenton in the Rothschild Library in Tring, and I have found this on several occasions when checking old descriptions' (M. Walters *in litt.* 22 September 1983). Walters went on to check *Planches enluminées* 681(2) in both copies, and found they matched Parkes' Pittsburgh copy (as does Schmitt's 2007 reproduction), not those ASC had consulted; as with the parakeet, the text descriptions do not always match the plate colours. In a further letter, Walters (*in litt.* 4 October 1983) added 'it might be a useful job for a research student sometime to track down all the copies in the world's libraries and collate them'. But it would be a very long job to detail all the differences in the plates!

More recently, Hume (2007), puzzled by inconsistencies in descriptions and images of another extinct Réunion parrot, *Mascarinus mascarinus*, examined five different copies of *Planches enluminées* 35, and noted considerable variation (Table 2). Like us, he decided that Brisson's description, which concurs with early travellers' accounts from Réunion, was more reliable than the plates. Hume commented that part of the problem with *Mascarinus* might be that in exposed or fumigated specimens greys turn to browns. Brisson described a live captive bird in the 1750s, whereas the Cabinet du Roi specimen of unknown provenance that Martinet used a decade or so later may have deteriorated. The two specimens that survive are very faded, and one possesses irregular white feathering (Hume 2007, Hume & van Grouw 2014). Cheke (1983) also commented on possible post-mounting alterations to explain colour inconsistencies in the *Zosterops* plates compared to live birds.

Conclusions

The five plates we examined all differ (Table 1), and none exactly matches Brisson's text; clearly, little weight can be placed on the details in these plates, making them useless for drawing firm conclusions as to finer features of the plumage (Figs. 1–5). Edme-Louis Daubenton's supervision of the hand-colouring was clearly not rigorous, and for the species discussed here, more than one colourist must have been involved over the set of 450 plates. It is unlikely that the colourists used the specimen, more probably there was a master plate by Martinet, used as basis by the colourists, but if it still exists its location is unknown.

We conclude that if it cannot be ascertained that the published illustrations accurately represent the physical specimen or preparatory drawings directly from it, we necessarily cannot establish the true appearance of the type (*contra* Jones *et al.* 2018). Hence only original drawings of a specimen or the coloured preparatory drawings by the original artists for subsequent prints can be used to establish the appearance of the type in the specimen's absence. In the case of the Echo Parakeet from Réunion, although named scientifically from a copy of Martinet's plate in Buffon, it is clearly safer to rely on the description by the meticulous Brisson (Farber 1982) for the fullest understanding of the plumage and bill coloration, although some details (lores, cere, eye-ring) are nonetheless missing. It is not tenable to rely on the plates, least of all a single example, for putative subtle plumage



Figure 1. Martinet illustration in Buffon (Daubenton) (1770–83) copy held in AMNH (© American Museum Natural History, New York)



Figure 2. Martinet illustration in Buffon (Daubenton) (1770–83) copy held in Naturalis (© Naturalis Biodiversity Center, Leiden)



Figure 3. Martinet illustration in Buffon (Daubenton) (1770–83) copy held in USNM (© Smithsonian Institution, Washington DC)





Figure 4. Martinet illustration in Buffon (Daubenton) (1770–83) copy contained in the Zentralbibliothek Zürich (© Zentralbibliothek Zürich)



Figure 5. Martinet illustration in Buffon (Daubenton) (1770–83) copy as in Schmidt (2007).

distinctions between the populations on Réunion (extinct) and Mauritius as used by Jones *et al.* (2018) as part of their argument to differentiate parakeets from the two islands.

Acknowledgements

The following curators kindly sent us scans / photographs of the plates in their care: Mai Reitmeyer (AMNH), Luigard Nuss (Württembergische Landesbibliothek, Stuttgart), Stacey C. Peeples (Pennsylvania Hospital, Philadelphia) and Sandra Weidmann (Zentralbibliothek Zürich). The online Biodiversity Heritage Library proved to be a wealth of information. Special thanks to Edward Dickinson, Murray Bruce and Ruud Vlek for their invaluable insights and advice. We are grateful to Stéphane Schmitt for answering several questions on Buffon, and to Robert Prŷs-Jones, Frank Steinheimer, Guy Kirwan and an anonymous referee for detailed and helpful comments which sharpened our paper.

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