

On the identification and provenance of some early specimens of grasswrens (Maluridae: *Amytornis*) and their significance for taxonomy and nomenclature

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SUMMARY.—The identity and provenance of four 19th-century *Amytornis* grasswren specimens in the Naturalis Biodiversity Center (Leiden) collection are reviewed. Three identified as Thick-billed Grasswren *Amytornis modestus inexpectatus* enable a revised diagnosis for the extinct subspecies from New South Wales. One of these and one Striated Grasswren *A. striatus* were acquired from John Gould in, or soon after, December 1840. The other two came via the Frank dealership in 1858 and 1873, but are probably also from Gould's collections. Leiden's *A. striatus* specimen and another in Philadelphia are identified here as paralectotypes of *Dasyornis* [= *Amytornis*] *striatus* Gould, 1840. Evidence is presented that Gould's brother-in-law, Charles Coxen, collected both *A. modestus* and *A. striatus*, including type material of the latter, before Gould visited Australia in 1838.

While investigating morphological and genetic diversity within Western *Amytornis textilis* (Quoy & Gaimard, 1824) and Thick-billed Grasswrens *A. modestus* (North, 1902) (Black *et al.* 2010, Black 2011a, Austin *et al.* 2013) just one specimen of the extinct far eastern (New South Wales) subspecies *A. m. inexpectatus* (Mathews, 1912) was found in an Australian museum collection and it proved uninformative genetically. Following an enquiry concerning early grasswren specimens in collections outside Australia, it became apparent that four mounted 19th-century specimens were housed in the Naturalis Biodiversity Center (hereafter NBC, formerly Rijksmuseum voor Natuurlijke Historie, RMNH), Leiden, the Netherlands. Three were listed as *A. textilis* (i.e. either *A. textilis* or *A. modestus*, see below) and one as Striated Grasswren *A. striatus*. Documentation at NBC suggested that at least two of the '*A. textilis*' specimens were from New South Wales and might be *A. m. inexpectatus*. It was also evident that a specimen of each species ('*textilis*' and *striatus*) had been sent to RMNH by John Gould, presumably from his own collection. Gould (1840) was the author of *A. striatus* but, while he collected just one specimen himself, he referred to other specimens from New South Wales (Gould 1848) and claimed to have collected both species on the lower Namoi River, although Schodde (1982) doubted that *A. striatus* could have been taken there, citing a lack of suitable habitat. The NBC specimens have the potential to contribute to unresolved questions of grasswren taxonomy and nomenclature, including a reappraisal of the phenotype of *A. m. inexpectatus* and of the type material and type locality of *A. striatus*.

Methods

Known specimens of *A. m. inexpectatus* were examined by ABB at the Academy of Natural Sciences, Philadelphia (ANSP) (Gould's collection) on 8 April 2013 and at the American Museum of Natural History, New York (AMNH) (Mathews' collection) on 10 April 2013. Gould's two *A. striatus* specimens were also examined at ANSP and the four

NBC specimens were examined at NBC, Leiden, on 16 April 2013. Measurements taken were: bill = length (total culmen to skull insertion) × depth (at level of frontal feathering), wing = flattened chord and tail = central rectrices from tip to base.

Results

NBC specimens.—**RMNH.AVES.172018.** Label: '*Amytis striatus* [crossed out] *Malurus* [crossed out] *textilis* Gould auct pl Uranie Zool. pl 67 f 2. Australie.' Under the socle (base of stand): '*Amytis textilis* Gould auct *Malurus textilis* Uranie Zool. Pl 67 f 2 Australie.' On examination, an *A. modestus* mount in good condition, female with bright flank patches; slightly convex lower mandible, rather dark and heavily streaked on throat and upper breast for *modestus*. Bill 12.5 × 5.1 mm, wing 57 mm, tail 80.2 mm (Fig. 1). **RMNH.AVES.172019.** Label: '*Amytis textilis* ♂ (Quoy & Gaim) Frank 1873 N. S. Wales.' Under the socle: 'mas Frank 1873 N. S. Wales.' On examination, a male *A. modestus* mount showing moderate disturbance to plumage, similarly dark and relatively streaked below for *modestus*, biconvex bill profile. Bill 12.4 × 5.9 mm, wing 64 mm, tail 84.8 mm (Fig. 2). **RMNH.AVES.172020.** No label. Under the socle 'Frank 1858.' On examination, a male *A. modestus* mount showing slight disturbance to plumage; similar to RMNH.AVES.172018 and 172019, moderately convex lower mandible. Bill 12.3 × 5.4 mm, wing 58 mm, tail 80.2 mm (Fig. 3). **RMNH.AVES.172021.** Label: '*Amytis striata* (Gould) Avant 1850 Australie.' Under socle: '*Amytis striatus* Gould auct pl *textilis* pl 67 f 2 Lesson. Australie.' On examination, an *A. striatus* mount in good condition with rufous underparts merging laterally into brighter flanks, and thus female. Bill 12.8 × 4.2 mm, wing 63 mm, tail 89.4 mm (Fig. 4).

ANSP and AMNH specimens of *A. m. inexpectatus*.—**ANSP 16887.** Label: 'Gould Coll ♂ *Amytis textilis* (Quoy et Gaim.) New South Wales T. B. Wilson.' Male, bill 13.6 × 5.4 mm, wing 62 mm, tail 82.5 mm. **ANSP 16888.** Label: 'Gould Coll ♀ *Amytornis textilis* (macrourus [sic]) New South Wales Thos. B. Wilson.' Female, bill 12.2 × 5.4 mm, wing 61 mm, tail 87.2 mm. **ANSP 16889.** Label: 'Rivoli [sic] Gould Coll Thos. B. Wilson.' Male, bill 13.6 × 5.6 mm, wing 62 mm, tail 79.5 mm. **AMNH 598073.** Labels. '*Diaphorillas textilis inexpectatus* ♂ New South Wales TYPE Mathews 1912 etc.' Male, bill 12.6 × 5.0 mm, wing 63 mm, tail 80.3 mm. **AMNH 598072.** Labels. '*Diaphorillas* — ROTH Exc GMM juvenile ♂ New South Wales.' Male, bill 13.5 × 5.4 mm, wing 63 mm, tail 91.2 mm. All the specimens above are relatively dark for the species and possess moderate to heavy underparts streaking.

ANSP specimens of *A. striatus*.—**ANSP 16890.** Labels. 'Gould Coll TYPE ♂ *Amytis striatus* (Gould) New South Wales T. B. Wilson. 379 ♂ N S Wales 16890 *Dasyornis striatus* Gld. P.ZS. 1839. P 143 etc.' Male, bill 12.3 × 4.9 mm, wing 60 mm, tail missing. **ANSP 16891.** Labels. 'Gould Coll TYPE ♀ *Amytis striatus* (Gould) New South Wales T. B. Wilson. This has no type sig.' Female, bill 13.0 × 4.9 mm, wing 63 mm, tail 88.4 mm.

Discussion

Identification and provenance of the '*A. textilis*' specimens.—RMNH.AVES.172018 appears to have first been identified as *Amytis striatus* and later as *A. textilis*. While these two species are very distinct, their identification was not made consistently by all early workers (see below). RMNH.AVES.172018–020 are all identified here as *Amytornis modestus*. Until the latter was described (North 1902), all such specimens were generally included under *A. textilis*. Failure to recognise *A. textilis* and *A. modestus* as separate (but sister) species commenced with Gould himself (1848, 1865) who believed that grasswrens he collected in north-eastern New South Wales were the same species, *A. textilis*, as described by Quoy and Gaimard (1824) from Shark Bay, Western Australia, on the opposite side of the



Figure 1. RMNH Aves 172018: female *Amytornis modestus inexpectatus*, from the collection of John Gould 1840–41, the plains bordering the lower Namoi, northern New South Wales (Justin J. F. J. Jansen)

Figure 2. RMNH Aves 172019: male *Amytornis modestus inexpectatus*, from Frank, dealers, 1873, New South Wales (Justin J. F. J. Jansen)

Figure 3. RMNH Aves 172020: male, probable *Amytornis modestus inexpectatus*, from Frank, dealers, 1858, provenance uncertain (Justin J. F. J. Jansen)

Figure 4. RMNH Aves 172021: female *Amytornis striatus striatus*, from the collection of John Gould 1840–41, probably collected by Charles Coxen; paralectotype of *Dasyornis striatus* Gould, 1840, Liverpool Plains, northern New South Wales (Justin J. F. J. Jansen)

continent. North (1902) subsequently described *Amytis modesta* from central Australia and included Gould's New South Wales birds in his new species (see Fig. 5).

Despite much instability in the taxonomy of this genus in ensuing years, our present understanding (Black *et al.* 2010) is as follows. Briefly, *A. textilis* is darker, more heavily streaked and has a longer tail and more slender bill profile than *A. modestus* but there is variation in all of these characters among populations of both species (Black 2011a,b).

As noted above, the three NBC specimens are relatively dark and heavily streaked for *A. modestus* and closely resemble the ANSP and AMNH specimens of the New South Wales subspecies *A. m. inexpectatus*. Mathews (1912) first listed New South Wales birds, including Gould's specimens, as *Diaphorillas textilis inexpectatus*, but subsequently (Mathews 1922–

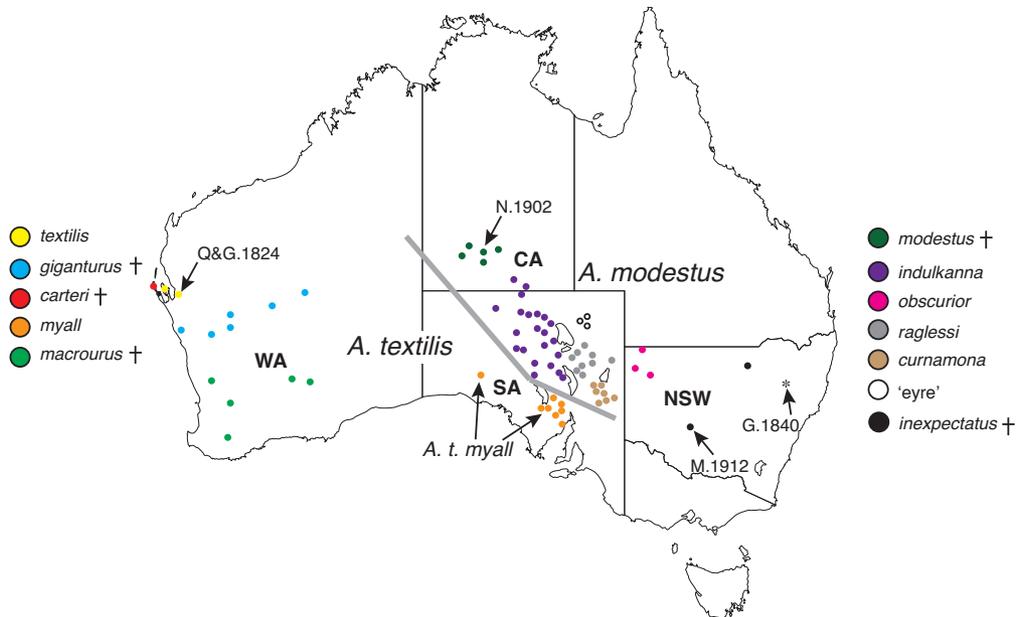


Figure 5. Map showing distributional records of Western Grasswren *Amytornis textilis* and Thick-billed Grasswren *A. modestus*. Subspecies are indicated by individual colours; † signifies extinct subspecies. 'Q&G 1824' represents the type locality of *Malurus textilis*, Shark Bay, Western Australia (WA); 'G 1840 *' shows an approximate type locality of *Dasyornis striatus*, Liverpool Plains, New South Wales (NSW), east of the lower Namoi, where Gould collected '*A. textilis*'; 'N 1902' represents type localities of *Amytis modesta* in central Australia (CA); 'M 1912' represents the probable type locality of *Diaphorillas textilis inexpectatus*; '*A. t. myall*' indicates the population of Western Grasswren occurring on the Eyre Peninsula and in the Gawler Ranges, South Australia (SA) (modified from Austin *et al.* 2013).

1923) elevated eastern populations to species status, distinguishing them from the much paler isolate in north-western New South Wales, which he included in *A. modestus*. He also included birds from the Gawler Ranges, South Australia, in *D. inexpectatus* under the trinomial *D. i. myall* (= *A. textilis myall*) (Fig. 5). By combining *inexpectatus* with a subspecies of Western Grasswren *A. textilis*, Mathews drew attention to its relatively dark and heavily streaked plumage compared to more typical *A. modestus*. A further attribute of the NBC specimens is that each has the tail >80 mm, thus within the range of *A. m. inexpectatus*, as shown, but above that for all other *A. modestus* subspecies apart from some specimens of the extinct nominate subspecies from central Australia (Black 2011a). Given that these three specimens are also relatively dark and heavily streaked for *A. modestus* an alternative is that they might be *A. textilis*. However, RMNH.AVES.172019 is documented as being from New South Wales and RMNH.AVES.172018 was acquired from Gould (see below) and therefore by implication is also from New South Wales. Furthermore, no specimens of *A. textilis* are known to have been taken in Western Australia between Quoy and Gaimard's visit and the late 1890s (Black 2011b) and, while some were collected in the Gawler Ranges, South Australia, in the 1870s (ABB unpubl.), this is too late to account for RMNH.AVES.172020.

Gould (1848) stated that he had 'killed and dissected many examples' of '*A. textilis*' from New South Wales. Three of his specimens are in ANSP (as above); one went to the British Museum (BMNH 41.2.1496), where it was mounted (Sharpe 1883) but has not survived; another is identified here (RMNH.AVES.172018) and it is possible that RMNH.AVES.172019–020 also came from Gould, since he disposed of many specimens via the

Amsterdam-based (later London-based) Frank family business. Documents reveal that many Australian bird specimens entered the Leiden collection between *c.*1831 and 1876 via the Frank agency, including known specimens from Gould's collections as well as the 1858 grasswren (RMNH.AVES.172020) (JJFJJ pers. data), but details of their origins and collectors are imprecise or lacking, and we have been unable to locate any documents that show from where the Frank dealership acquired them.

Diagnosis of *A. modestus inexpectatus*.—This subspecies from eastern New South Wales is distinguished by its heavily streaked underparts from the central Australian nominate, whose underparts are barely streaked, and from all other subspecies of *A. modestus* by tail length (range 79.5–91.2 mm, compared to 63.8–78.8 mm in other subspecies and 74.1–83.6 mm in the nominate).

Identification and provenance of the *A. striatus* specimen.—The fourth Leiden specimen (RMNH.AVES.172021) is certainly *A. striatus*. Its label proves that it was received in Leiden before 1850 and evidence for its provenance and that of RMNH.AVES.172018 is held in the NBC archives. These include a list of Australian specimens sent by Gould to C. J. Temminck, inaugural Director of RMNH, which accompanied two copies of Part 1 of Gould's *The birds of Australia*, published in December 1840. The list includes skins and skeletons of mammals, and specimens, skeletons and eggs of birds; 114 species are listed among the birds, including one *Amytis textilis* and one *A. striatus*. From the list of then recently named and yet-to-be-named species in Gould's list, as well as the inclusion of Gould's *The birds of Australia* Part 1, it is evident that these specimens were sent to Temminck in December 1840 or early 1841. With little doubt, Gould had returned from Australia with them but was able to dispose of any material surplus to his immediate needs.

Documentation accompanying both RMNH.AVES.172018 ('*A. textilis*') and RMNH.AVES.172021 (*A. striatus*) refers to 'pl 67 f 2' [i.e. Plate 67 figure 2 of Lesson (1831)]. Reference to 'Uranie Zool' (RMNH.AVES.172018) acknowledges Quoy & Gaimard's (1824) zoological account in *Voyage autour du monde sur les corvettes de l'Uranie et la Physicienne*, including the description of *A. textilis*, which they figured on Pl. 23. Pl. 67 fig. 2 of Lesson (1831) also illustrated *A. textilis* but Gould did not believe that this was the case. He observed (Gould 1848, 1865) that 'the bird figured in the "Voyage de l'Uranie" doubtless represents the present species [*Textile Wren Amytis textilis*'], while that figured by Lesson in the Atlas to his "Traité d'Ornithologie," ... as clearly belongs to *A. striatus*.' Even in his initial description of '*Dasyornis [=Amytornis] striatus*' Gould (1840) wrote that it is 'nearly allied to the *Amytis textilis* of Lesson' (but by inference not to *Malurus (=Amytis) textilis* of Quoy and Gaimard). Gould was mistaken; while Lesson's figure shows a more rufous-plumaged bird than is depicted in Quoy & Gaimard (a distinctive feature to which Gould correctly attributed significance), it is still recognisably *A. textilis*, since it lacks the distinctive white throat and black moustachial stripe of the other species.

Possible alternative early specimen sources of *A. modestus* and *A. striatus* in New South Wales.—While it is almost certain that Gould supplied two of the NBC specimens and possibly all four, potential alternative 19th-century suppliers must be considered. Sharpe (1883) listed among specimens of '*A. textilis*' in the British Museum a mount supplied by Governor George Grey of South Australia, and another by Sir Thomas Mitchell who explored New South Wales, which then included Queensland and Victoria, in 1831–36 and again in 1845. Grey's specimen was received by the museum in July 1843 (BMNH 1843.7.14.230) and Mitchell's in August 1847 (BMNH 1847.8.14.135) (ABB pers. obs.) but both are long lost (M. Adams & R. Prŷs-Jones pers. comm.).

Samuel White and his brother William collected extensively in eastern Australia during 1867–68 and three '*Amytis striata*', purportedly from those excursions, were presented to

the South Australian Museum, Adelaide (SAMA) in 1870. Two '*A. striata*' were forwarded from SAMA for the Paris International Exhibition of 1878, of which one, when examined in September 2011 (the other is lost), proved to be *A. modestus*. It is possible that this is one of White's specimens which, if taken in New South Wales in 1868, would represent *A. m. inexpectatus* (Black *et al.* 2013, Horton *et al.* in prep.).

Much of John T. Cockerell's large collection was acquired by F. D. Godman and donated to the British Museum in 1881. Two birds identified as '*Amytornis textilis*' (BMNH 1881.11.7.1229, female, and BMNH 1881.11.7.1230, male) were said to be from South Australia (Sharpe 1883). Later, probably during preparation for the Harold Hall (1962–68) expeditions to Australia, they were labelled *A. modestus inexpectatus*, evidently by curator D. Goodwin, who provisionally assigned all New South Wales and most South Australian examples to that subspecies (R. Prŷs-Jones pers. comm.). In June 1870 Cockerell had acquired via SAMA at least one specimen of what is now *A. m. raglessi* Black, 2011, from the Flinders Ranges, South Australia (Horton *et al.* in prep.). Measurements of the male, but not the female, are consistent with such an origin (Black 2013), so the identity and provenance of both are open to question.

Thomas Campbell Eyton's catalogue (Eyton 1856: 136) listed a specimen of '*Amytis striatus*', labelled only 'Australia'. Henry Baker Tristram's catalogue (Tristram 1889: 158) listed one '*Amytis striata*' from 'S. Australia – S. White' and one '*Amytis textilis*' from Australia, acquired from the Eyton Museum (perhaps the bird listed as '*Amytis striatus*' in Eyton's catalogue).

Of the specimens discussed above, Grey's and Mitchell's cannot be among those in Leiden since they were in the British Museum until at least 1883. White is not known to have obtained grasswrens other than the three identified as *A. striatus* and reportedly taken in New South Wales in 1868 (Horton *et al.* in prep.), but he might have had more than the three presented to SAMA. Indeed, Tristram (1889) attributed one to him (listed as *A. striatus*) and perhaps this was obtained when most of White's collection was sold by his executors in London in December 1885. It is unlikely that White sold any specimens earlier, since his will indicated a wish that his entire collection pass to his son Samuel Albert White (Linn 1989). The provenance and collector of the two Cockerell grasswrens at BMNH are unknown and it is not certain that he obtained any from New South Wales. Cockerell was the probable supplier of specimens sent to the Frank business around 1875, described as from Cape York (JFJJ pers. data), a locality name frequently used by Cockerell, sometimes misleadingly if not deceptively (Pigott 2004), but there is nothing to show that he supplied the Frank grasswren specimen received in 1873 (RMNH.AVES.172019). Other collectors active in New South Wales could have obtained grasswrens, but E. P. Ramsay (1878), who worked in the colony, though accepting that '*A. textilis*' occurred there, did not include *A. striatus*. Silvester Diggles (1865–70, 1877) painted 325 Australian birds for his never-completed monograph but could find no specimen of *A. striatus* anywhere, even in Eli Waller's extensive collection in Brisbane, Queensland. Diggles resorted to copying an image from one of Gould's plates held by Charles Coxen, who was by then also based in Queensland (Pigott 2004). Both Ramsay and Waller supplied lists of 'desiderata' for SAMA Curator F. G. Waterhouse, among them any '*Amytis*' species. A specimen of '*Amytis striata*' was sent from SAMA to Waller in December 1867, and two to Ramsay in May 1868 (Horton *et al.* in prep.), the latter two known to be *A. striatus* (ABB pers. obs.). The dearth of any grasswren specimens amongst these collectors makes it difficult to suggest an alternative to Gould as the supplier of the two Franks' specimens.

The specimen measured by Gould and the type locality of Amytornis striatus (Gould, 1840).—Stone & Mathews (1913: 166—'Type') and Meyer de Schauensee (1957:

208–209—‘Holotype’) collectively identified ANSP 16890, an adult male from ‘New South Wales’ at the Academy of Natural Sciences, Philadelphia, as the holotype of *Dasyornis striatus* Gould, 1840 [= *Amytornis striatus*]. They perhaps chose this specimen because it is a male and they thought it must therefore be the specimen Gould (1848, 1865) reported collecting himself. These authors recorded the type locality (which they took from Gould’s *Proceedings of the Zoological Society of London* account) as the Liverpool Plains, while Meyer de Schauensee further quoted Gould as taking his specimen while ‘traversing the Lower Namoi’. A designation of ‘holotype’ is only appropriate if there is certainty that Gould described the species from a single specimen but this is not the case and the question of syntypes must be considered; moreover, as will be shown, Gould’s own specimen cannot have been used in the description and therefore lacks type status. But the male (ANSP 16890) designated as the holotype by Meyer de Schauensee (1957) might not have been Gould’s and so could have been the specimen he measured; it will be recognised as the lectotype of *Dasyornis striatus* unless strong evidence can be presented to overturn the Philadelphia curators’ decisions. On the other hand it is far more likely that Gould’s personal specimen, retained and illustrated in *The birds of Australia*, is ANSP 16890.

Gould described *Dasyornis striatus* in a letter he sent to the Zoological Society of London, written on 10 May 1839, on returning to Tasmania from his first visit to New South Wales, read to the society on 8 October 1839 and published in January 1840 (Gould 1840: 143). In the same letter Gould wrote that the furthest he had journeyed into the interior of the continent was the Liverpool Range (part of the Great Dividing Range) north of Yarrundi, the property of his host and brother-in-law Stephen Coxen. In an earlier letter, dated 20 March 1839, to his wife Elizabeth (who, heavily pregnant, had been left with the Franklins in Hobart), Gould recounted that he had climbed one of the highest peaks in the Liverpool Range and had seen the Liverpool Plains below him (Sauer 1982: 111). He did not go there, however, until later in the year and so cannot have collected any specimen with type status himself.

Yarrundi was situated near the Dartbrook, a tributary of the Hunter River draining south-east into the Pacific Ocean, thus prior to May 1839 Gould had collected only on the seaward slope of the Great Dividing Range. The Liverpool Plains lie north of the range and are drained by the Mooki and Peel Rivers (tributaries of the Namoi, which flows north-west and inland within the Darling River Basin—see map in Datta 1997: 123). Stephen’s brother Charles had established a property on the Peel (Datta 1997) and might have provided Gould’s first Striated Grasswrens from nearby, as well as type material of Yellow-throated Miner *Manorina flavigula* (Gould, 1840), which was reportedly taken on the banks of the Namoi itself. An alternative source for the grasswren measured by Gould in his type description was the Australian Museum, Sydney, if he had visited this institution during his first visit to New South Wales; certainly he spent much time there during his second in August–September 1839 (Datta 1997). Gould stayed with George Bennett, who had been appointed the museum’s curator in 1835 and had produced a catalogue of its collections (Bennett 1837). This included several bird specimens presented to the museum by Charles Coxen, among them examples of ‘*Malurus textilis*. The Mouse-bird of the Colonists, male and female. Hunter’s River’ [a probable error of location] and ‘*Dasyornis australis*. The Bristle-bird of the Colonists, male. Scrubs near Liverpool Plains’. *Malurus textilis* Quoy & Gaimard, 1824, is now *Amytornis textilis*, the bird that Gould believed he had collected near the lower Namoi later in 1839. *Dasyornis australis* Vigors & Horsfield, 1827, is a synonym of Eastern Bristlebird *D. brachypterus* (Latham, 1801), which occurs only on the coastal side of the Great Dividing Range, far to the east of the Liverpool Plains. It appears that a specimen Bennett had listed as a bristlebird *Dasyornis* was considered to be a grasswren by Gould,

despite which he used Bennett's genus name *Dasyornis* in his description of what is now *A. striatus*, an uncharacteristic error that otherwise appears inexplicable. These entries in Bennett's catalogue reveal that Charles Coxen had collected (or otherwise obtained) both grasswren species before Gould reached New South Wales in 1839. The three specimens, along with many others listed by Bennett, are no longer extant in the collection of the Australian Museum (W. E. Boles pers. comm., N. W. Longmore pers. comm.).

Gould crossed the Liverpool Range to the Liverpool Plains only during his second and longer journey in October 1839–January 1840, during which he travelled 200 miles down the Namoi (Datta 1997). Therefore, as recognised by McAllan & Bruce (1989), we find that the bird Gould measured in his type description cannot be the male he collected himself. This is not to say it is not ANSP 16890, even though it is a male; as noted earlier, another male presumably of this species, collected by Charles Coxen, was listed in Bennett's (1837) catalogue. Potentially, Gould's measured specimen could be either of the female specimens ANSP 16891 or RMNH.AVES.172021, a now lost or no longer extant specimen including the Coxen / Bennett example, or that acquired by Thomas Eyton. Eyton obtained many birds from John Gould, but his *A. striatus* specimen might have been misidentified as it was considered to be *A. textilis* after it entered the collection of Canon H. B. Tristram, whose primary collection later went to the Liverpool Museum. Unfortunately, Tristram's two grasswren specimens cannot be found in what is now National Museums Liverpool, having probably been destroyed when the museum was firebombed during World War II. The type locality of *A. striatus*, often given erroneously as the lower Namoi River, has been questioned because suitable habitat appears to be absent (Schodde 1982, Rowley & Russell 1997) and the species has not been reported there since Gould's time. Yet Gould's (1848, 1865) description of the habitat, 'a loose sandy soil studded with high rank grass, which, growing in tufts, left the interspaces quite bare', is perfectly typical and could only be bettered by naming the vegetation as porcupine grass of the genus *Triodia*. McAllan (1987) provided evidence that *Triodia* and sandy soils do occur relatively near the Liverpool Plains and listed a series of historical grasswren reports linking the present distribution of *A. striatus* with the lower Namoi c.600 km distant. These included one (possibly two) 19th-century specimens, a sighting from 1974 (Schmidt 1978, recently reaffirmed by the observer: L. Schmidt pers. comm.) and observations by A. J. North in the Coonamble district in 1905, <100 km from the Namoi and 150 km from the Liverpool Plains. Also of interest is that several reports raised uncertainty as to whether the species concerned was *A. striatus* or *A. textilis* (= *A. modestus*), but we concur with McAllan (1987) that the former was more likely. We also find support for the Liverpool Plains as the type locality of *A. striatus* (Fig. 5) and, while it is possible that Gould was mistaken as to where he collected his specimen, we cannot discount his claim to have found and collected the species on the lower Namoi.

Identification of Gould's type series.—Gould (1840) described *Dasyornis* [= *Amytornis*] *striatus* among 18 other new species, each of which was given a short description in Latin, a single list of measurements, a type locality of varying levels of precision, comparative details in some and the name of the collector in 14. Benjamin Bynoe, surgeon aboard HMS *Beagle*, was named as collector of 12 of the new species from the north-west coast of Australia. Gould himself collected two of the 19 while one, *Graucalus phasianellus* [= Ground Cuckooshrike *Coracina maxima*] from the Liverpool Plains, was listed as being from the collection of (and implicitly collected by) Stephen Coxen. As discussed above, Charles Coxen, who had already sent specimens to Gould and who continued to do so subsequently (Datta 1997), was probably the collector of the first *Dasyornis striatus*. It should be observed that, while Gould (1840) gave just one set of measurements for each new species, he did not state that only one specimen was before him. His descriptions were certainly based on more

than one specimen in at least three cases, the two collected by him (*Cypselus australis* [= Fork-tailed Swift *Apus pacificus*] and Rose Robin *Petroica rosea*), where he stated as much, and at least one species collected by Bynoe (Striated Pardalote *Pardalotus [striatus] uropygialis*), as demonstrated by Meyer de Schauensee (1957). When describing *Dasyornis striatus* Gould might have had a single specimen but, equally, might have had others. Gould (1848, 1865) stated that he had procured only one specimen of *A. striatus* 'in a recent state'; this was his own male making it clear that no others were obtained during his journey to the interior in late 1839. He added (Gould *loc. cit.*) that 'all the specimens I have seen from New South Wales were [similar]', thus it is evident that those were collected earlier and that all could have formed the basis for his description earlier in the year. Since Gould disposed of RMNH.AVES.172021 within months of his return to London in August 1840, presumably retaining ANSP 16891 for illustration, it is probable that they were the earliest (or among the earliest) specimens he obtained and would have been included in the type series.

Gould's (1840) description reads: '*Dasyornis striatus*. *Das. fuscus*; abdomine cinerescente; plumis dorsalibus lineâ centrali albâ notatis; rostro pedibusque nigrescentibus. Long. tot. 6½ poll.; rostri, ⅝; alæ, 2⅝; caudæ, 3½; tarsi, 1. *Hab.* Liverpool Plains, New South Wales. This species is nearly allied to the *Amytis textilis* of Lesson.' An English interpretation of the Latin description is of a dark bristlebird (*sic*) with ash-coloured abdomen, dorsal feathers marked with a white central line, bill and feet almost black. These details do not permit identification of an individual specimen; indeed they would match specimens of several grasswren species (but certainly distinguish it from any species of *Dasyornis*). Measurements were compared with those of the three known, extant specimens that Gould might have measured, ANSP 16890, male, ANSP 16891, female, and RMNH.AVES.172021, female. Respective bill measurements were 12.3, 13.0 and 12.8 mm (Gould's measurement of ⅝ inch [=15.9 mm] is presumably erroneous), wing 60, 63 and 63 mm (Gould's = 60 mm), tail (missing), 88.4 and 89.4 mm (Gould's = 88.9 mm). It is impossible therefore to identify either female as the specimen Gould measured (or indeed unequivocally to dismiss the lectotype status of ANSP 16890) and ANSP 16891 and RMNH.AVES.172021 are better considered paralectotypes of the species and therefore of nominate *A. s. striatus*. Eyton's specimen from 'Australia' (1856: 136) could well have been obtained from John Gould, and could conceivably have been that Gould measured for his type description. However, its identity is in question and it is now lost, as is another possible candidate, the specimen listed by Bennett (1837) in Sydney at the time of Gould's visit.

Two other subspecies of Striated Grasswren are recognised at present, *A. striatus whitei* (Mathews, 1910) of the Pilbara, Western Australia, and *A. s. rowleyi* Schodde & Mason, 1999, which is restricted to central Queensland.

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References:

- Austin, J. J., Joseph, L., Pedler, L. P. & Black, A. B. 2013. Uncovering cryptic evolutionary diversity in extant and extinct populations of the southern Australian arid zone Western and Thick-billed Grasswrens (Passeriformes: Maluridae: *Amytornis*). *Conserv. Genet.* 14: 1173–1184.
- Bennett, G. 1837. *A catalogue of the specimens of natural history and miscellaneous curiosities deposited in the Australian Museum*. Australian Mus., Sydney.
- Black, A. 2011a. Subspecies of the Thick-billed Grasswren *Amytornis modestus* (Aves-Maluridae). *Trans. Roy. Soc. South Austr.* 135: 26–38.
- Black, A. 2011b. Western Australia, home of the Grass-Wren (*Amytornis textilis*). *West. Austr. J. Orn.* 3: 1–12.
- Black, A. B., Joseph, L., Pedler, L. P. & Carpenter, G. A. 2010. A taxonomic framework for interpreting evolution within the *Amytornis textilis-modestus* complex of grasswrens. *Emu* 110: 358–363.
- Black, A. B., Schodde, R. & Préviateo, A. 2013. Early grasswren specimens in Muséum national d’Histoire naturelle, Paris, and the types of Western Grasswren *Amytornis textilis* (Maluridae). *Bull. Brit. Orn. Cl.* 133: 24–30.
- Datta, A. 1997. *John Gould in Australia*. Melbourne Univ. Press.
- Diggles, S. 1865–70. *The ornithology of Australia*. Diggles, Brisbane.
- Diggles, S. 1877. *Companion to Gould’s handbook; or synopsis of the birds of Australia*. Privately published, Brisbane.
- Eyton, T. C. 1856. *A catalogue of the species of birds in his possession*. Wellington, Salop.
- Gould, J. 1839 [=1840]. Letter from Van Diemen’s Land, accompanied with descriptions of some new Australian birds. *Proc. Zool. Soc. Lond.* 1839: 139–145.
- Gould, J. 1848. *The birds of Australia*, vol. 3. Privately published, London.
- Gould, J. 1865. *Handbook to the birds of Australia*. Privately published, London.
- Horton, P., Black, A. & Blaylock, B. in prep. Ornithology at the South Australian Museum, Adelaide: 1856 to 1938. In Davis, W. E., Recher, H. F. & Boles, W. E. (eds.) *Contributions to the history of Australasian ornithology*, vol. 3. Nuttall Orn. Cl., Cambridge, MA.
- Lesson, R. P. 1831. *Traité d’ornithologie*. F. G. Levrault, Paris.
- Linn, R. 1989. *Nature’s pilgrim*. South Australia Govt. Printer, Netley.
- McAllan, I. A. W. 1987. Early records of the Thick-billed Grasswren *Amytornis textilis* and Striated Grasswren *Amytornis striatus* in New South Wales. *Austr. Birds* 21: 33–43.
- McAllan, I. A. W. & Bruce, M. D. *The birds of New South Wales, a working list*. Biocon Research Group, Turramurra.
- Mathews, G. M. 1912. A reference-list to the birds of Australia. *Novit. Zool.* 18: 171–446.
- Mathews, G. M. 1916. [Notes and additions to his ‘List of the Birds of Australia’]. *Bull. Brit. Orn. Cl.* 36: 89–92.
- Mathews, G. M. 1922–23. *The birds of Australia*, vol. 10. H. F. & G. Witherby, London.
- Meyer de Schauensee, R. 1957. On some avian types, principally Gould’s, in the Academy. *Proc. Acad. Nat. Sci. Phil.* 109: 123–246.
- North, A. J. 1902. On three apparently undescribed species of Australian birds. *Victorian Natur.* 19: 101–104.
- Pigott, L. J. 2004. Silvester Diggles (1817–1880), Australian ornithologist. *Arch. Nat. Hist.* 31: 253–274.
- Quoy, J. R. C. & Gaimard, J. P. 1824. *Voyage autour du monde sur les corvettes de l’Uranie & Physicienne, zoologie*, livr. 3. Pillet Aîné, Paris.
- Ramsay, E. P. 1878. Tabular list of all the Australian birds at present known. *Proc. Linn. Soc. New South Wales* 2: 177–212.
- Rowley, I. & Russell, E. 1997. *Fairy-wrens and grasswrens Maluridae*. Oxford Univ. Press.
- Sauer, G. C. 1982. *John Gould the bird man*. Henry Sotheman, London.
- Schmidt, B. L. 1978. Birds of the Cobar region, New South Wales. *Austr. Birds* 12: 61–86.
- Schodde, R. 1982. *The fairy-wrens: a monograph of the Maluridae*. Lansdowne, Melbourne.
- Sharpe, R. B. 1883. *Catalogue of the birds in the British Museum*, vol. 7. Trustees of the Brit. Mus., London.
- Stone, W. & Mathews, G. M. 1913. A list of the species of Australian birds described by John Gould, with the location of the type-specimens. *Austr. Av. Rec.* 1: 129–180.
- Tristram, H. B. 1889. *Catalogue of a collection of birds belonging to H. B. Tristram D.D., LL.D., F.R.S. “Advertiser” office*. Durham.

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