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Author: Donegan, Thomas M.

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On the nomenclature of wild and domestic *Streptopelia* doves

by Thomas M. Donegan

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Summary.—Two competing names exist at species level for the Barbary Dove, Ringed Turtle-Dove or African Collared Dove: *Streptopelia risoria* Linnaeus, 1758, based on a domestic neotype, and *S. roseogrisea* Sundevall, 1857, on an ancestral wild African Collared Dove neotype. Van Grouw *et al*. (2023) confirmed that Barbary Dove is descended from African Collared Dove and that they are conspecifics, albeit rather different genetically; they proposed recognising a monotypic *S. risoria* for all populations. However, their taxonomy was rooted in the assumption that *S. risoria* pertains to wild African Collared Doves, domestics being referred to as '*S. risoria domestica*', a *nomen nudum*. I argue here that the outcome of ICZN (2008) and van Grouw *et al*. is instead that the senior name *risoria* applies at species rank for wild and domestic birds, but as a subspecies name solely to domesticates and introduced populations. It must be considered whether ancestral populations in Africa and the Middle East are sufficiently different from domesticates for subspecies *roseogrisea* and *arabica* to be recognised, which is the status quo and has some support in morphological and molecular data. This situation, where a domestic name is senior to one for phenotypically different wild populations is apparently unique in the animal kingdom. In a close vote, ICZN (2008) declined to give priority to the wild name *S. roseogrisea*, but some Commissioners were open to review the situation. The inconsistency between ICZN (2008) and ICZN (2003) and the disruption that the former implies to the previously uncontested name for wild populations, *S. roseogrisea*, appears to have led to widespread continuing recognition of *S. roseogrisea* at species rank and van Grouw *et al*.'s '*S. risoria domestica*', neither of which is Code compliant. A new ICZN proposal should therefore be considered.

Untangling the nomenclatural issues raised by the wild and domestic populations of *Streptopelia* doves has proven challenging, with two neotype designations (Donegan 2008, van Grouw 2018), an ICZN case (Donegan 2007, ICZN 2008; see Donegan 2019) and now a molecular study (van Grouw *et al*. 2023), but still no definitive resolution.

The senior name *S. risoria* Linnaeus, 1758, was originally described based on domesticates, which are today usually referred to as Barbary Dove or Ringed Turtle-Dove. These are widely considered to be derived from a wild North African and Arabian species that is usually referred to as African Collared Dove *S. roseogrisea* Sundevall, 1857, with subspecies *arabica* Neumann, 1904, frequently recognised for eastern populations. Because the type series of *S. risoria* was mixed, at least including individuals of differing morphologies and possibly different species, a neotype was designated—a paler old specimen of domestic origin (Donegan 2008). The senior name for wild populations of the ancestral African Collared Dove, *S. roseogrisea*, also had a mixed type series. A neotype was designated from Eritrea (van Grouw 2018). Sequencing of both types by a recent molecular study (van Grouw *et al*. 2023) found them consistent with other historic samples of domestic

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Barbary Doves and African Collared Doves, respectively. As a result, the two names are thought to be suitably anchored in terms of their type specimens.

The ICZN was asked (Donegan 2007, ICZN 2008) to apply the same principle to *Streptopelia* as it had to 17 mammal and fish species which include distinctive, named domestic breeds. In ICZN (2003), priority was afforded to numerous junior names for wild animals, where senior names were based on domesticates. The same approach was applied to *Columba* pigeons (ICZN 2018), conserving *Columba livia* J. F. Gmelin, 1789, over *Columba domestica* Linnaeus, 1758 (and other competing names based on particular domestic breeds). However, ICZN (2008) declined to give priority to *S. roseogrisea* in a close vote (see Donegan 2019).

Despite *S. risoria* and *S. roseogrisea* generally being considered conspecific (e.g. Donegan 2007; confirmed by van Grouw *et al*. 2023) with the former having been given priority (ICZN 2008), many ornithologists have continued to use *S. roseogrisea* (e.g. Dickinson & Remsen 2013, Clements *et al*. 2023). This is perhaps because the main Commissioner commentary in ICZN (2008) incorrectly stated that *S. risoria* and *S. roseogrisea* might not be conspecific, which was used by Dickinson & Remsen (2013), del Hoyo & Collar (2014) and others to justify not changing the name of *S. roseogrisea* for African Collared Dove. Establishment of neotypes by Donegan (2008) and van Grouw (2018) addressed some of the ICZN's other concerns. These neotypes do not follow ICZN's (2008) strange suggestion to make the two names objective synonyms via designation of the same neotype, since so doing would have infringed Arts. 73.3.5 and 73.3.6 of the Code which require 'evidence that the neotype is consistent with what is known of the former name-bearing type from the original description' and 'evidence that the neotype came as nearly as practicable from the original type locality … and, where relevant, from the same geological horizon or host species as the original name-bearing type', respectively.

Van Grouw *et al*. (2023) have now published a molecular study confirming the history of domestication of Barbary Doves. They dealt impressively with taxonomic matters and the ancestry of domestic *Streptopelia* populations, but their proposals for nomenclature seem misplaced. My purpose here is to set out a revised taxonomy and nomenclature for these birds and to draw attention to the desirability of the ICZN reconsidering its 2008 decision.

Names and taxonomy for wild and domestic *Streptopelia*

In van Grouw *et al*.'s (2023) molecular study, 'three groups' were identified, as (i) the Eurasian Collared Dove *S. decaocto*, (ii) 'domesticated Barbary Doves (*S. r. domestica* [*sic*])'; and (iii) 'both putative subspecies of African Collared Dove (*S. r. risoria* [*sic*] and *S. r. arabica*)'. Their main taxonomic conclusions were that the named wild subspecies of African Collared Dove are closely related to each other and are subjective synonyms; and that domestics, whilst descended from African Collared Dove, are genetically differentiated, with some introgression of Eurasian Collared Dove alleles over time. Since this introgression has been relatively minor overall, it does not prevent African Collared Dove and Barbary Dove being considered conspecific.

Any nomenclatural scheme for these *Streptopelia* must start with the senior name *S. risoria* Linnaeus, 1758, and recognise its universal usage for domestics and its neotype as a bird of domestic origin. Unfortunately, van Grouw *et al*.'s (2023) nomenclature operated in reverse, with the name *S. risoria* as a starting point for wild populations. They referred to wild African Collared Dove as 'nominate *risoria* (former *roseogrisea*)' on p. 156, worded the legend accompanying a photograph of the neotype of *roseogrisea* as 'Adult male African Collared Dove *Streptopelia risoria*' and then on p. 157 asked 'are the two currently recognised subspecies of African Collared Dove, *risoria* and *arabica*, genetically distinct or not?'. The

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authors then introduced the trinomial '*S. r. domestica*'—an apparent *nomen nudum*—for domestics, repeated a dozen times in their fig. 12A and used to denote domestics in the phylogeny in their fig. 7B, as well as being mentioned in the results, other figure legends, appendix and supplementary materials. In correspondence, I was informed that '*domestica*' was deployed to distinguish domesticated from wild samples (H. van Grouw *in litt*. 2023) but, as *risoria* is based on domestics and *roseogrisea* on wild birds, introduction of this name was unnecessary and confusing.

The name '*Streptopelia domestica*' does not seem to have been formally described (it does not appear in Sherborn 1922 or Richmond 1992), although it has been used several times, e.g., as: *Streptopelia risoria* var. *domestica* (Stagni *et al*. 1976, Brichetti & Gargioni 2005: 71); *Streptopelia roseogrisea* var. *domestica* (von Detlef 2000: 150, Andreotti *et al*. 2001: 146, pl. 8, who considered *S. risoria* a junior synonym of that name); *Streptopelia roseogrisea f. domestica* (Mey 1992: 22, Baumgart 2001: 668); and *Streptopelia roseogrisea domestica* (van Grouw 2008: 12). All these usages appear to be *nomina nuda*. If not, they would be junior synonyms of *S. risoria* Linnaeus, 1758, and other names that have been previously established for domestic breeds in the genus, such as *S. alba* (Temminck, 1808).

Van Grouw *et al*. (2023) concluded that *S. risoria* can be treated as monotypic, which is a potential and convenient solution. It would also be consistent with taxonomies for some animals that have been domesticated or held in captivity for relatively short periods of time, so that they have not been recognised as phenotypically distinct, such as Common Quail *Coturnix coturnix*. However, lumping *risoria* and *roseogrisea* at subspecies level seems taxonomically unsupportable, for several reasons:

1. Such a proposal would contradict the *status quo* in ornithology, of two centuries of recognition of the name *risoria* for a morphologically distinct domesticated population descended from African Collared Dove *S. roseogrisea* (often as a species, not a subspecies). In any taxonomic study, we start with the current sequence and consider whether a change is required.
2. Synonymy of *risoria* and *roseogrisea* sits most uneasily with the van Grouw *et al*. molecular study, in which three distinct clusters for Eurasian Collared Dove, African Collared Dove and domestics were recovered (their fig. 6). A distinct clade for domestics appears in their phylogenetic tree (their fig. 7A).
3. Introduced populations in the Americas (Barbary Doves) would share the same subspecies name as wild African Collared Doves, potentially inconsistent with '75%' or similar subspecies concepts (e.g., Amadon 1949, Patten & Unitt 2022), as many individuals of introduced populations can be differentiated from wild birds by plumage.
4. It would be inconsistent with widespread usage of trinominals for other distinctive domestic animal populations. '*Columba livia domestica*', '*Anas platyrhynchos domestica*' and '*Anser anser domesticus*' are not widely used names in mainstream ornithological literature, but possess 5,320, 867 and 1,180 unique hits in Google Scholar, mostly in the periodical literature for biological or biomedical studies using captive birds.
5. Van Grouw *et al*. also suggested that the widely recognised eastern subspecies *arabica* is not taxonomically valid. This is a relatively weakly defined subspecies, so this is plausible. Their proposal was based largely on genetics, see their fig. 6, where *arabica* clustered close to, but nevertheless separate from, *roseogrisea*. There is little information on how shallow or deep the differentiation is between them, nor any indication if the morphological traits previously used to diagnose them are supported.

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Any attempt at a new taxonomy (assuming no ICZN intervention and recognising both *risoria* and *roseogrisea* taxonomically as subspecies) cannot start with *risoria* as the name for wild birds, as van Grouw *et al*. (2023) supposed, but with the name applicable to domestic populations. Van Grouw *et al*. (2023) noted changes in the genetics of domestic populations over time, raising questions as to whether today's domesticates are the same as the 1758 concept of *risoria*. However, since that name has a neotype, which was screened by van Grouw *et al*. (2023), that is no longer entirely relevant. The situation obviously requires monitoring and it may become necessary to have recourse to taxonomic methods used in palaeontology. In the Canary Islands and many parts of the Americas where Barbary Doves were previously introduced and became resident, Eurasian Collared Dove has subsequently expanded and is becoming dominant, with some insertion of Barbary Dove genes due to hybridisation (van Grouw 2022). On some Caribbean islands, these Eurasian Collared Dove populations exist alongside legacy Barbary Dove populations, increasingly intergrading and presenting taxonomic challenges not addressed here. In places, it is still possible to identify Barbary Doves in both domestication and the wild; many countries include *S. risoria* or *S. roseogrisea* in their national checklists as an introduced species (e.g. Chesser *et al*. 2023). The taxonomies below address such cases.

Subject to those qualifications, the correct sequence for these birds *sans* ICZN intervention is as follows:

Streptopelia risoria (Linnaeus, 1758). Domestic and introduced Barbary Doves descended from African Collared Dove. Synonym *S. alba* (Temminck, 1808). '*S. domestica*' (as used in various combinations with *risoria* or *roseogrisea*, by the authors mentioned above) *nom. nuda*.

—*S. risoria roseogrisea* (Sundevall, 1857) African Collared Dove. Possible synonym *S. risoria arabica* (Neumann, 1904). Synonym: *S. risoria bornuensis* Bannerman, 1931.

Relevant citations and taxa would then vary depending upon scope of the publication:

1. Publications that include names of wild subspecies but do not include named domestic or introduced populations (e.g., Dickinson & Remsen 2013; field guides to African or Middle Eastern birds but not the Canary Islands): *Streptopelia risoria* (Linnaeus, 1758). African Collared Dove. Subspecies *roseogrisea* (Sundevall, 1857) for wild populations (and *arabica* (Neumann, 1904), if recognised).
2. Publications including both wild and introduced or escaped populations (e.g. eBird 2023):
   Streptopelia risoria (Linnaeus, 1758). African Collared Dove.
   —*S. r. risoria*: introduced/escaped, e.g., in the Americas, Caribbean, Canary Islands and elsewhere;
   —*S. r. roseogrisea* (Sundevall, 1857): wild populations (and *S. r. arabica* (Neumann, 1904), if recognised).
3. Publications addressing only introduced or escaped populations, e.g., in the Americas or Canary Islands (e.g. Chesser *et al*. 2023): *Streptopelia risoria* (Linnaeus, 1758). Barbary Dove or Ringed Turtle-Dove. Nominate subspecies.

Priority of names based on domestic and wild birds—should ICZN (2008) be reconsidered?

Streptopelia presents a unique case in the animal kingdom, in that it is apparently the only example of a species whose senior name is based upon a distinctive domestic

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form, with phenotypically and genotypically distinct wild relatives that have historically borne a different name junior to the name for domestics. This has led to confusion and the proliferation of non-Code compliant or taxonomically incorrect arrangements even by experts, such as the widespread recognition of *S. roseogrisea* as a valid species name (e.g., Dickinson & Remsen 2013, Clements *et al*. 2023) and van Grouw *et al*.'s (2023) '*S. risoria domestica*'. Of course, the *status quo* in ornithology is for *S. roseogrisea* to be recognised as a wild species (Donegan 2007) and impossible but more intuitive combinations (that would be correct if ICZN 2003 had been extended to these birds) such as '*S. roseogrisea risoria*' remain commonplace in important publications and websites (e.g. Svensson *et al*. 1999, iNaturalist 2024), perhaps reflecting a reluctance to change long-standing usage, despite the ICZN (2008) opinion.

Use of '*domestica*' for these doves in van Grouw *et al*. (2023) and elsewhere may be based on incorrect assumptions about names for domestic forms in birds or widely used but non-Code compliant arrangements prevalent prior to ICZN (2003, 2018). As regards assumptions about names for domesticates, notably most distinctive, named domestic populations take the adjectival name, '*domesticus/a*', e.g. the chicken *Gallus gallus domesticus* Linnaeus 1758, domestic ducks *Anas platyrhynchos domesticus* Brünnich, 1764, domestic geese *Anser anser domesticus* Garsault, 1764, and Society Finch *Lonchura striata domestica* Flower, 1906. This is perhaps coincidence but it is not universal. The oldest names for distinct breeds of Swan Goose *Anser cygnoides* Linnaeus, 1758, are *A. c. australis* Linnaeus, 1758, and *A. c. orientalis* Linnaeus, 1758. In mammals, non-'*domestica/us*' names for domesticated populations are more commonplace. For example, the dog *Canis* (*lupus*) *familiaris* Linnaeus, 1758 is descended from the wolf *Canis lupus* Linnaeus, 1758. Other names for distinctive domesticates are listed in ICZN (2003). As regards alternative schemes, some authors have previously proposed that the rule of priority be suspended in general for names based on domesticated animals (Bohlken 1961) or that 'dom.' or '(domestic)' be a universal adjunct (see Groves 1971, Gentry *et al*. 2004). Some of these non-Code-compliant arrangements gained limited traction prior to ICZN (2003) and in birds might have influenced combinations involving '*Streptopelia domestica*'. However, the Commission instead introduced resolutions addressing specific priority issues for mammals, fish and a bird in ICZN (2003, 2018).

The close original vote at ICZN, developments since 2008 (i.e. neotype designations and the van Grouw *et al*. molecular study) and the undesirable exception from universality that these *Streptopelia* present suggest that the situation might best be reconsidered by the ICZN. Any new case (reversing ICZN 2008) would need to be based on preserving stability, rather than citing the precedent of previous ICZN Opinions. Whilst the Code itself eschews the concept of precedent (e.g. Art. 85), universality is also an important principle therein and rationality (including the notion of a decision-making body reaching similar decisions in the face of similar facts) is however also important (Donegan 2019). The continuing development and use of non-Code compliant taxonomies (see above) and impossible concepts from a priority perspective (e.g. *Streptopelia roseogrisea* [domestic type] in Clements *et al*. 2023 and eBird 2023) suggest that the current situation is resulting in confusion and instability. This paper provides a new taxonomic framework consistent with applicable ICZN Opinions. However, ICZN (2008) is based upon a flawed rationale (Donegan 2019), so authors may reasonably wish to maintain current usage if there is support for reconsidering that decision.

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Address: Thomas M. Donegan, Southmead, The Vale, London N14 6HN, UK, e-mail: thomasdonegan@yahoo.co.uk

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