



A new genus for the tiny hawk *Accipiter superciliosus* and semicollared hawk *A. collaris* (Aves: Accipitridae), with comments on the generic name for the crested goshawk *A. trivirgatus* and Sulawesi goshawk *A. griseiceps*

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Abstract

Multiple molecular phylogenetic studies have demonstrated that two Neotropical raptors, tiny hawk *Accipiter superciliosus* and its sister species semicollared hawk *A. collaris*, are not closely related to core *Accipiter*, and that *A. superciliosus*, at least, possesses osteological characters not replicated in the remainder of the genus. Based on these data, there is a need to recognise their distinctiveness at generic level. However, as recently noted in two global bird checklists, no name is available to accommodate them, so we provide a new *nomen* here. Furthermore, two Asian accipitrids, crested goshawk *A. trivirgatus* and its presumed closest relative Sulawesi goshawk *A. griseiceps*, are also phylogenetically distinctive; in this case the genus-group name *Lophospiza* is applicable. We also designate type species for two genus-group names (*Hieraspiza* and *Eusparvius*) currently in the synonymy of *Accipiter*, and, as an aid to future workers, we provide a synonymy of the genus *Accipiter* and a list of species currently included in *Accipiter* for which published molecular phylogenetic data are apparently lacking.

Key words

Accipitriformes, *Eusparvius*, *Hieraspiza*, nomenclature, phylogeny

Introduction

Accipiter Brisson, 1760, is a large, virtually cosmopolitan and morphologically variable genus. Recent studies based on mitochondrial and nuclear DNA sequences have shown that *Accipiter* (*sensu* Dickinson and Remsen 2013) is not monophyletic. These studies provide strong evidence that the harriers (genus *Circus* Lacépède, 1799) form part of the *Accipiter* clade (Kocum 2006, 2008; Griffiths et al. 2007; Lerner et al. 2008; Hughall and Stuart-Fox 2012; Nagy and Tökölyi 2014; Jiang et al. 2015; Oatley et al. 2015; Mindell et al. 2018). The genera *Erythrotriorchis* Sharpe, 1875, and *Megatriorchis* Salvadori & D'Albertis, 1876, have also been recovered within the *Accipiter* clade (Mindell et al. 2018). Conversely, several studies have shown that the Neotropical tiny hawk *A. superciliosus* (Linnaeus, 1766) occupies a position outside the *Accipiter* clade (Kocum 2006, 2008; Hughall and Stuart-Fox 2012; Oatley et al. 2015; Mindell et al. 2018). Another Neotropical species, semicollared hawk *A. collaris* P. L. Sclater, 1860, was found to be its sister species (Mindell et al. 2018). In all studies, the precise position of *A. superciliosus* and *A. collaris* proved unclear, due to low nodal support, but these species are clearly not part of the *Accipiter* mega-clade (including *Circus* + *Erythrotriorchis* + *Megatriorchis*), which itself was supported by high posterior probability (Kocum 2006, 2008; Hughall and Stuart-Fox 2012; Oatley et al. 2015; Mindell et al. 2018). Even more distantly related to *Accipiter* is crested goshawk *A. trivirgatus* (and presumably Sulawesi goshawk *A. griseiceps*), which is sister to a clade comprising all other species of Accipitridae and Buteoninae (Mindell et al. 2018; Choi et al. 2021). For an overview of these relationships, see Fig. 1.

Genus-group name of *A. superciliosus* and *A. collaris*

Olson (2006) pointed out that *A. superciliosus* shows several unique osteological characters in the context of *Accipiter* and recommended that it be placed in a separate genus, *Hieraspiza* Kaup, 1844. Olson (2006) based himself on Hellmayr and Conover (1949: 48, footnote), who reported that ‘*Hieraspiza* Kaup was originally created for several “East Indian species” to which, the author says, *virgatus* might possibly belong. A few years later (in Oken’s *Isis*, 1847, col. 169) Kaup specifically listed *A. tinus*, *A. minullus*, and *A. virgatus* as pertaining to the genus, among which Gray, in 1855, selected *Falco tinus* as genotype.’ *Falco tinus* Latham, 1790, is a junior synonym of *A. superciliosus* (Stresemann and Amadon 1979). Subsequently, Mindell et al. (2018) considered that genetic and morphological data indeed support the recognition of a separate genus for *A. superciliosus* and *A. collaris*, and followed Olson (2006) by using *Hieraspiza*.

In contrast, Mathews (1920: 67) erroneously considered *Falco caerulescens* Linnaeus, 1758 (= collared falconet *Microhierax caerulescens*) to be the type species

of *Hieraspiza*, whereas Friedmann (1950: 141) listed *Falco virgatus* Temminck, 1822 (now *Accipiter virgatus*) as its type species. Wolters (1975) used *Hieraspiza* as a subgenus name for *A. nanus*, *A. gularis* and *A. virgatus*, and grouped *A. superciliosus* and *A. collaris* in an unnamed subgenus. From this, it is clear that Wolters did not consider *A. superciliosus* the type species of *Hieraspiza*. Dickinson and Remsen (2013: 248, footnote 7) and del Hoyo and Collar (2014) stated that *A. virgatus* is the type species of *Hieraspiza* and that either a new genus must be erected for *A. superciliosus* or an existing genus name must be discovered.

The name *Hieraspiza* was first used by Kaup (1844: 116), where it is a *nomen nudum*, because there is no description and no valid ‘indication’ (ICZN 1999, Art. 12). The relevant text, in its entirety, reads: ‘Falkenweihesperber, die ich Hieraspiza nenne, scheinen einige ostindische Arten zu bilden, zu welchen vielleicht *virgatus* gehört.’ In other words, Kaup stated that some East Indian species seem [our emphasis] to form a group, to which *virgatus* perhaps [our emphasis] belongs, and he applied the name *Hieraspiza* to this group. As the inclusion of *virgatus* is only tentative, this species is deemed not to have been originally included (Art. 67.2.5) in 1844, *contra* Friedmann (1950) and others, so it cannot serve as an indication. Subsequently, Kaup (1845) listed this genus again, this time explicitly including just two species, *virgatus* and “*Dussumieri*” [= *Accipiter badius dussumieri*], thus providing a valid indication (Art. 12.2.5)¹. As a result of its exclusion from the originally included species, the possible case for *superciliosus* as the type species is unsustainable (Art. 67.2) because Kaup did not link it with this genus until 1847. This makes G. R. Gray’s (1855) subsequent selection of “*Falco tinus*” as the type for *Hieraspiza* irrelevant. To stabilize this name, we hereby select *Falco virgatus* Temminck, 1822 (= *Accipiter virgatus*) as type species of the genus-group name *Hieraspiza*.

In searching for an existing name to accommodate *A. collaris* and *A. superciliosus*, we assembled a list of synonyms of *Accipiter* (*sensu* Dickinson and Remsen 2013), which is based on multiple sources but principally Friedmann (1950) (see Appendix 1). Although only 33 of the 49 species of *Accipiter*, *Erythrotriorchis* and *Megatriorchis* (*sensu* Dickinson and Remsen 2013) were included in the most comprehensive phylogenetic study to date (Mindell et al. 2018)², these represent all but one of the type species of the available genus-group names current-

¹ For those who might seek to recognise *Hieraspiza* as having been validly introduced in 1844, invoking Art. 12.2.5 to suggest that use of the species name *virgatus* under the genus name is sufficiently clear, despite Kaup’s evident double uncertainty, it nevertheless remains the case that the type species of *Hieraspiza* is *virgatus*. In other words, the case against *Hieraspiza* being an available genus name for *Accipiter superciliosus* is unambiguous.

² Appendix 2 lists the 16 species included in genus *Accipiter* by Dickinson and Remsen (2013) unrepresented within the Mindell et al. (2018) phylogeny. All three species of *Erythrotriorchis* and *Megatriorchis* were sampled by the latter work.

ly listed within the synonymy of *Accipiter*. The exception is spot-tailed goshawk *Accipiter trinotatus* (Bonaparte, 1850), the type species of *Erythrospiza* Kaup, 1867, a name unavailable due to its being a junior homonym (see Appendix 1), but also, automatically, the type of its three derivatives: *Chirospizias* Sundevall, 1874, a replacement name³; *Erythrospizias* Gurney, 1875, an unjustified emendation but nonetheless an available genus-group name (Art. 33.2.3); and *Spilospiza* Salvadori, 1875, another replacement name. Nevertheless, the earlier name *Eusparvius* Bonaparte, 1854, is also available and can be used for this species, Bonaparte (1854: 538) having included *A. trinotatus*, *A. griseiceps*, *A. hiogaster*, and *A. rufitorques* within the original grouping (note that none of these has been screened molecularly; see Appendix 2). All four of these available genus-group names (*Eusparvius*⁴, *Chirospizias*, *Erythrospizias* and *Spilospiza*) might be considered *nomina oblita* as they have barely been mentioned, never mind used, since being introduced. No type species for *Eusparvius* Bonaparte, 1854, was originally designated or appears to have been subsequently fixed, and Art. 68 cannot be used to select one, so we hereby fix the type of *Eusparvius* as *A. trinotatus*, the first of the four species originally listed by Bonaparte for the oldest available genus-group name applicable to this species.

A. trinotatus is endemic to Sulawesi. It shares no diagnostic character state with *A. superciliosus* and *A. collaris*, and differs strongly from these two Neotropical species in various characters, including: tail pattern (large spots on the central rectrices in *A. trinotatus*, barred in *A. superciliosus* and *A. collaris*); tertial pattern (large white spots in *A. trinotatus*, plain in *A. superciliosus* and *A. collaris*); and the pattern of the underparts (plain in *A. trinotatus*, barred in *A. superciliosus* and *A. collaris*) (del Hoyo et al. 1994; Ferguson-Lees and Christie 2001). Despite the lack of phylogenetic evidence for the placement of *A. trinotatus*, we believe its morphology and biogeography provide no reason to suspect a close relationship with *A. superciliosus* and *A. collaris*.

We conclude that *A. superciliosus* and *A. collaris* cannot be isolated in any existing genus and that there are no

available genus-group names applicable to these species. Thus, it is necessary to provide a new genus-group name. We propose:

***Microspizias* gen. nov.**

<http://zoobank.org/B93BCE1C-E9B4-4C65-BD76-923F372621D0>

Type species. *Falco superciliosus* Linnaeus, 1766 (currently *Accipiter superciliosus*).

Included species. *Microspizias superciliosus* (Linnaeus, 1766), *new combination*, and *M. collaris* (P. L. Sclater, 1860), *new combination*.

Diagnosis. *Microspizias* differs from all species of *Accipiter* by a combination of (i) small size (total length <30 cm), (ii) white vent barred grey (in adult *M. collaris*) or chocolate-brown (in adult *M. superciliosus*), and (iii) juveniles dimorphic, rufous morph with distinct rufous fringes to feathers of upperparts (Ferguson-Lees and Christie 2001). In addition, Olson (2006) noted that in *M. superciliosus* the procoracoid process has a very distinct foramen. This foramen is invariably absent in *Accipiter* (Olson 1987). Olson (2006) further pointed out that the configuration of the skull, sternum and pelvis of *M. superciliosus* are very different from *Accipiter*, and that the hind-limb bones of *M. superciliosus* are much more robust than the extremely gracile elements of *Accipiter*.

Microspizias differs from *Kaupifalco monogrammicus* by (i) absence of black and white throat stripes (black central throat stripe bordered on each side by a white stripe in *Kaupifalco*), (ii) absence of a solid grey breast-band (present in *Kaupifalco*), (iii) presence of three grey tail bands (one white band in *Kaupifalco*), and (iv) yellow cere, tibia and toes (orange in *Kaupifalco*) (Ferguson-Lees and Christie 2001).

Microspizias differs from *Melierax* in (i) much smaller size (total length <30 cm; >42 cm in *Melierax*), (ii) much shorter legs (tarsus <50 mm; >81 mm in *Melierax*), and (iii) juveniles dimorphic, rufous morph with rufous feather fringes on upperparts (monomorphic, with brown upperparts in *Melierax*) (Ferguson-Lees and Christie 2001).

Microspizias differs from *Micronisus gabar* in (i) shorter tail (males <117 mm; >150 mm in *Micronisus*), (ii) tail square-ended or notched (rounded in *Micronisus*), (iii) yellow cere, tibia and toes (orange in adult *Micronisus*), (iv) dark grey rump (white in *Micronisus*), and (v) juveniles dimorphic, rufous morph with rufous feather fringes on upperparts (monomorphic, with brown upperparts in *Micronisus*) (Ferguson-Lees and Christie 2001).

Microspizias differs from *Harpagus* in (i) presence of three grey tail bands (two or three white or grey bands in *Harpagus*), (ii) adult male without dark mesial throat stripe (present in *Harpagus*), (iii) greyish-banded underparts (plain grey or rufous, or rufous-banded in adult *Harpagus*), and (iv) juveniles dimorphic, rufous morph with rufous feather fringes on upperparts (monomorphic,

³ Sundevall specifically named as his type species '*Erythrospiza griseigularis*' (= *Accipiter hiogaster griseogularis*), but because this is a replacement name it has the same type species as the name it replaced, i.e. *Accipiter trinotatus* (Art. 67.8, '... the same type species ... despite any statement to the contrary').

⁴ This name was introduced in a manner identical to that in which Bonaparte (1854) introduced the genus-group name *Eunisus*, just seven lines earlier. *Eunisus* has been accepted as valid by authorities such as Richmond (1917) and Friedmann (1950), although both of them overlooked *Eusparvius*. Richmond (1917: 590) interpreted *Eunisus* as a replacement name for Bonaparte's own genus *Nisus*, preoccupied by Lacépède's *Nisus*. It is reasonable to treat *Eusparvius* identically, as it appears to be a replacement name for *Sparvius* Bonaparte, preoccupied by *Sparvius* Vieillot. Bonaparte's names *Nisus* and *Sparvius* do not appear to have been published elsewhere.

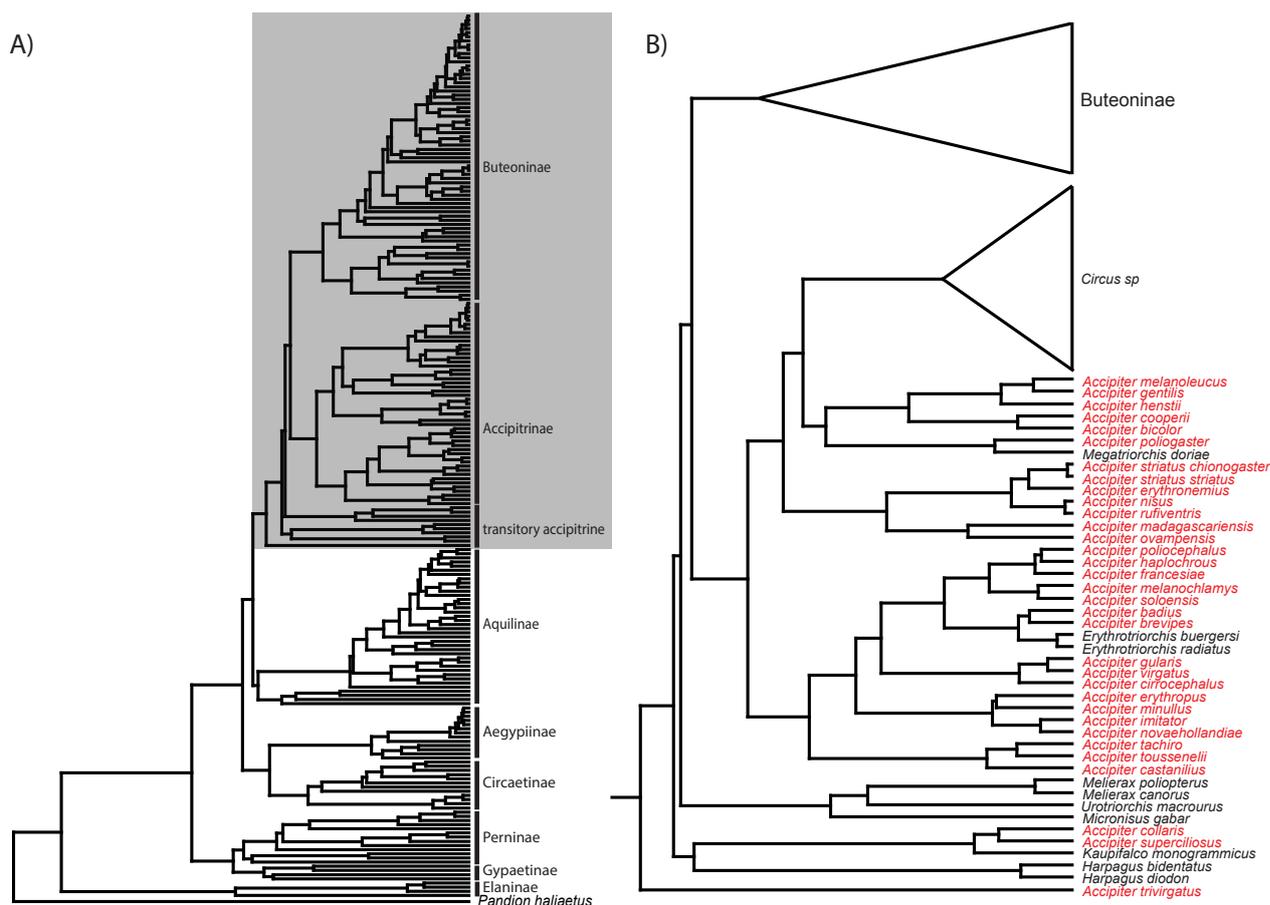


Figure 1. Overall phylogeny for the Accipitridae based on datasets from published DNA sequences (A) with detailed topology for the Accipitrinae and relatives (B), wherein all *Accipiter* species are shown in red to clearly demonstrate polyphyly of the group. *Accipiter trivirgatus* (at the base of phylogeny) and *A. superciliosus* + *A. collaris* are all clearly outwith the core *Accipiter*. Modified from Mindell et al. (2018), which see for further information.

with brown to black-brown upperparts in *Harpagus*) (Friedmann 1950; Ferguson-Lees and Christie 2001).

Microspizias differs from *Urotriorchis macrourus* in (i) much shorter tail (males <117 mm; >305 mm in *Urotriorchis*), (ii) tail squared or notched (strongly graduated in *Urotriorchis*), (iii) underparts with greyish bars (in *M. collaris*) or chocolate-brown bars (in *M. superciliosus*) (plain grey or rufous in *Urotriorchis*), (iv) dark grey rump (white in *Urotriorchis*), and (v) juveniles dimorphic, rufous morph with rufous feather fringes on upperparts (monomorphic, with black-brown upperparts in *Urotriorchis*) (Ferguson-Lees and Christie 2001).

Etymology. The name is derived from the Greek words μικρός (small, tiny) and σπιζίας (hawk). Its gender is masculine. The name refers to the small size of both species, especially that of *M. superciliosus*.

Genus-group name of *A. trivirgatus* and *A. griseiceps*

Placement of crested goshawk *A. trivirgatus* in a separate genus from *Accipiter* is warranted based on its phylogenetic distinctiveness (Mindell et al. 2018; Choi et

al. 2021). *Lophospiza* Kaup, 1844, is available as a genus-group name for this species and its presumed closest relative, Sulawesi goshawk *A. griseiceps*. Its gender is feminine. Crested goshawk and Sulawesi goshawk thus become *Lophospiza trivirgata* and *Lophospiza griseiceps*, respectively. Morphologically, they differ from all species of *Accipiter* by their well-developed crest (Ferguson-Lees and Christie 2001).

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References

- Bonaparte CL (1854) Tableau des oiseaux de proie. Revue et Magasin de Zoologie pure et Appliquée 6: 530–544.
- Breman FC, Jordaens K, Sonet G, Nagy ZT, Van Houdt J, Louette M (2013) DNA barcoding and evolutionary relationships in *Accipiter* Brisson, 1760 (Aves, Falconiformes: Accipitridae) with a focus on

- African and Eurasian representatives. *Journal of Ornithology* 154: 265–287. <https://doi.org/10.1007/s10336-012-0892-5>
- Choi EH, Enkhtsetseg G, Baek SY, Hwang J, Park B, Jang KH, Ryu SH, Hwang UW (2021) Complete mitochondrial genome of a Hen Harrier *Circus cyaneus* (Accipitriformes: Accipitridae) from South Korea. *Mitochondrial DNA Part B* 6: 185–186. <https://doi.org/10.1080/23802359.2020.1860700>
- Dickinson EC, Remsen JV (Eds) (2013) *The Howard and Moore Complete Checklist of the Birds of the World*. Vol. 1: Non-passerines. Fourth edition. Aves Press, Eastbourne, 461 pp.
- Ferguson-Lees J, Christie DA (2001) *Raptors of the World*. Christopher Helm, London, 992 pp.
- Friedmann H (1950) The birds of North and Middle America. *Bulletin of the United States National Museum* 50(11): 1–793.
- Gray GR (1840) *A List of the Genera of Birds, with an indication of the typical species of each genus*. R. & JE Taylor, London, 80 pp. <https://doi.org/10.5962/bhl.title.13777>
- Gray GR (1855) *Catalogue of the Genera and Subgenera of Birds contained in the British Museum*. Trustees of the British Museum, London, 192 pp. <https://doi.org/10.5962/bhl.title.17986>
- Griffiths CS, Barrowclough GF, Groth JG, Mertz L (2007) Phylogeny, diversity, and classification of the Accipitridae based on DNA sequences of the RAG-1 exon. *Journal of Avian Biology* 38: 587–602. <https://onlinelibrary.wiley.com/doi/full/10.1111/j.2007.0908-8857.03971.x>
- Hellmayr CE, Conover B (1949) *Catalogue of birds of the Americas and the adjacent islands in the Field Museum of Natural History including all species and subspecies known to occur in North America, Mexico, Central America, South America, the West Indies, and islands of the Caribbean Sea, the Galapagos Archipelago, and other islands which may be included on account of their faunal affinities*. No. 4. Cathartidae, Accipitridae, Pandionidae, Falconidae. *Publications of the Field Museum of Natural History (Zoology Series)* 13: 1–358.
- del Hoyo J, Collar NJ (2014) *HBW and BirdLife International Illustrated Checklist of the Birds of the World*. Vol. 1: Non-Passerines. Lynx Edicions, Barcelona, 903 pp.
- del Hoyo J, Elliott A, Sargatal J (eds) (1994) *Handbook of the Birds of the World*. Vol. 2: New World Vultures to Guinea-fowl. Lynx Edicions, Barcelona, 638 pp.
- Hugall AF, Stuart-Fox D (2012) Accelerated speciation in colour-polymorphic birds. *Nature* 485: 631–634. <https://doi.org/10.1038/nature11050>
- International Commission on Zoological Nomenclature (ICZN) (1999) *International Code of Zoological Nomenclature*. Fourth edition. The International Trust for Zoological Nomenclature, London, 306 pp.
- Jiang L, Chen J, Wang P, Ren Q, Yuan J, Qian C, Hua X, Guo Z, Zhang L, Yang J, Wang Y, Zhang Q, Ding H, Bi D, Zhang Z, Wang Q, Chen D, Kan X (2015) The mitochondrial genomes of *Aquila fasciata* and *Buteo lagopus* (Aves, Accipitriformes): sequence, structure and phylogenetic analyses. *PLoS ONE* 10(8): e0136297. <https://doi.org/10.1371/journal.pone.0136297>
- Kaup JJ (1844) *Classification der Säugethiere und Vögel*. C. W. Leske, Darmstadt. <https://doi.org/10.5962/bhl.title.51492>
- Kaup JJ (1845) Ueber Falken, mit besonderer Berücksichtigung der in Museum der Senckenbergischen naturforschenden Gesellschaft aufgestellten Arten. *Museum Senckenbergianum* 3: 229–262.
- Kocum A (2006) *Phylogenie der Accipitriformes (Greifvögel) anhand verschiedener nuklearer und mitochondrialer DNA-Sequenzen*. PhD Thesis, Universität Greifswald.
- Kocum A (2008) *Phylogenie der Accipitriformes (Greifvögel) anhand verschiedener nuklearer und mitochondrialer DNA-Sequenzen*. *Vogelwarte* 46: 141–143.
- Lerner HRL, Klaver MC, Mindell DP (2008) Molecular phylogenetics of the buteonine birds of prey (Accipitridae). *Auk* 125: 304–315. <https://doi.org/10.1525/auk.2008.06161>
- Mathews GM (1920) *The Birds of Australia*. Supplement 1. HF & G Witherby, London, 116 pp.
- Mindell DP, Fuchs J, Johnson JA (2018) Phylogeny, taxonomy, and geographic diversity of diurnal raptors: Falconiformes, Accipitriformes, and Cathartiformes. In: Sarasola JH, Grande J, Negro J (Eds) *Birds of Prey*. Springer, Cham, 3–32.
- Nagy J, Tökölyi J (2014) Phylogeny, historical biogeography and the evolution of migration in accipitrid birds of prey (Aves: Accipitriformes). *Ornis Hungarica* 22: 15–35. <https://doi.org/10.2478/orhu-2014-0008>
- Oatley G, Simmons RE, Fuchs J (2015) A molecular phylogeny of the harriers (*Circus*, Accipitridae) indicate [sic] the role of long distance dispersal and migration in diversification. *Molecular Phylogenetics and Evolution* 85: 150–160. <https://doi.org/10.1016/j.ympev.2015.01.013>
- Olson SL (1987) Variation in the procoracoid foramen in the Accipitridae. *Rivista Italiana Ornitologia*, Milano 57: 1–4.
- Olson SL (2006) Reflections on the systematics of *Accipiter* and the genus for *Falco superciliosus* Linnaeus. *Bulletin of the British Ornithologists' Club* 126: 69–70.
- Peters JL (1931) *Check-list of Birds of the World*. Vol. 1. Museum of Comparative Zoology, Cambridge, MA, 345 pp. <https://doi.org/10.5962/bhl.title.14581>
- Richmond CW (1917) Generic names applied to birds during the years 1906 to 1915, inclusive with additions and corrections to Waterhouse's "Index Generum Avium". *Proceedings of the United States National Museum* 53: 565–636.
- Sharpe RB (1874) *Catalogue of the Birds in the British Museum*. Vol. 1. Catalogue of the Accipitres, or diurnal birds of prey, in the collection of the British Museum. Trustees of the British Museum (Natural History), London, 480 pp. <https://doi.org/10.5962/bhl.title.8233>
- Stresemann E, Amadon D (1979) Order Falconiformes. In: Mayr E, Cottrell GW (eds) *Check-list of Birds of the World*. Vol. 1. Second edition. Museum of Comparative Zoology, Cambridge, MA, 271–425. <https://doi.org/10.5962/bhl.title.14581>
- Vigors NA (1824) *Sketches in Ornithology; or, observations on the leading affinities of some of the more extensive groups of birds. On the groups of the Falconidae*. *Zoological Journal* 1: 308–346.
- Wolters HE (1975–1982) *Die Vogelarten der Erde*. Paul Parey, Hamburg.

Appendix 1

Synonymy of *Accipiter* (sensu Dickinson and Remsen 2013). Incorrect subsequent spellings and (unjustified) emendations are mostly omitted for the purposes of this list. The list is based on Sharpe (1874), Peters (1931), Hellmayr and Conover (1949), Friedmann (1950), Wolters (1975), Stresemann and Amadon (1979), and the Richmond Index made available at <http://www.zoonomen.net/cit/RI/Genera/RIGen.html> (accessed 19 March 2021).

- Accipiter* Brisson, 1760. Type species “*Accipiter*” Brisson = *Falco nisus* Linnaeus, 1758 (now *Accipiter nisus*).
- Astur* Lacépède, 1799. Type species, by subsequent designation (Vigors 1824), *Falco palumbarius* Linnaeus, 1758 = *Falco gentilis* Linnaeus, 1758 (now *Accipiter gentilis*).
- Nisus* Lacépède, 1799. Type species “*Épervier*” = *Falco nisus* Linnaeus, 1758 (now *Accipiter nisus*).
- Daedalion* Savigny, 1809. Type species, by subsequent designation (G. R. Gray 1840), *Falco palumbarius* Linnaeus, 1758 = *Falco gentilis* Linnaeus, 1758 (now *Accipiter gentilis*).
- Ierax* Leach, 1816. Type species *I. fringillarius* Savigny, 1809 = *Falco nisus* Linnaeus, 1758 (now *Accipiter nisus*).
- Sparvius* Vieillot, 1816. Type species, by subsequent designation (G. R. Gray 1840), *Falco nisus* Linnaeus, 1758 (now *Accipiter nisus*).
- Aesalon* F. O. Morris, 1837. Type species *A. fringillarius* = *Falco nisus* Linnaeus, 1758 (now *Accipiter nisus*). Preoccupied by *Aesalon* Kaup, 1829 [Falconidae].
- Asterias* F. O. Morris, 1837. Type species *A. palumbarius* = *Falco gentilis* Linnaeus, 1758 (now *Accipiter gentilis*). Preoccupied by *Asterias* Linnaeus, 1758 [Echinoderma].
- Fringillarius* Jameson, 1840. New name for *Accipiter* Brisson, 1760, and *Daedalion* Savigny, 1809.
- Phobotypus* Gloger, 1842. New name for *Astur* Lacépède, 1799.
- Tachyspiza* Kaup, 1844. Type species *Falco soloensis* Horsfield, 1821 (now *Accipiter soloensis*).
- Lophospiza* Kaup, 1844. Type species, by monotypy, *Astur trivirgatus* = *Falco trivirgatus* Temminck, 1824 (hitherto *Accipiter trivirgatus*).
- Leucospiza* Kaup, 1844. Type species *Astur novaehollandiae* = *Falco novae Hollandiae* J. F. Gmelin, 1788 (now *Accipiter novaehollandiae*).
- Nisastur* Blyth, 1844. Type species *Falco badius* J. F. Gmelin, 1788 (now *Accipiter badius*).
- Hieraspiza* Kaup, 1845. Type species, by designation herein, *Falco virgatus* Temminck, 1822 (now *Accipiter virgatus*). See main text.
- Urospiza* Kaup, 1845. Type species *Nisus radiatus* Temminck, 1822 *nec* Latham, 1801 = *Astur fasciatus* Vigors and Horsfield, 1827 (now *Accipiter fasciatus*).
- Scelospiza* Kaup, 1847. Type species *Nisus francesii* [sic] = *Accipiter francesii* A. Smith, 1834 (now *Accipiter francesiae*).
- Cooperastur* Bonaparte, 1854. Type species, by subsequent designation (G. R. Gray 1855), *Falco cooperii* Bonaparte, 1828 (now *Accipiter cooperii*).
- Eunisus* Bonaparte, 1854. Type species, by subsequent designation (Richmond 1917), *Falco (Nisus) sphenurus* Rüppell, 1836 (now *Accipiter badius sphenurus*).
- Eusparvius* Bonaparte, 1854. Type species, by designation herein, *Accipiter trinotatus* Bonaparte, 1850.
- Nisuides* Pollen, 1866. Type species, by monotypy, *Nisuides morelii* Pollen, 1866 = *Accipiter francesii* A. Smith, 1834 (now *Accipiter francesiae*).
- Erythrospiza* Kaup, 1867. Type species *Falco trinotatus* Temminck = *Accipiter trinotatus* Bonaparte, 1850. Preoccupied by *Erythrospiza* Bonaparte, 1831 [Fringillidae].
- Leptohierax* Sundevall, 1874. New name for *Cooperastur* Bonaparte, 1854.
- Chirospizias* Sundevall, 1874. New name for *Erythrospiza* Kaup, 1867, preoccupied by *Erythrospiza* Bonaparte, 1831 [Fringillidae].
- Dinospizias* Cabanis, 1874. Type species *Astur pectoralis* Bonaparte, 1850 = *Falco poliogaster* Temminck, 1824 (now *Accipiter poliogaster*).
- Erythrospizias* Gurney, 1875. Unjustified emendation of *Erythrospiza* Kaup, 1867.
- Spilospiza* Salvadori, 1875. New name for *Erythrospiza* Kaup, 1867 (preoccupied by *Erythrospiza* Bonaparte, 1831 [Fringillidae]).
- Paraspizias* Mathews, 1915. Type species *Sparvius cirrocephalus* Vieillot, 1817 (now *Accipiter cirrocephalus*).
- Aerospiza* Roberts, 1922. Type species *Astur tachiro* = *Falco tachiro* Daudin, 1800 (now *Accipiter tachiro*).
- Neonisus* Roberts, 1922. Type species *Accipiter melanoleucus* = *Accipiter melanoleucus* [sic] A. Smith, 1830 (now *A. melanoleucus*).

Appendix 2

Species taxa of *Accipiter* (sensu Dickinson and Remsen 2013) not screened by the Mindell et al. (2018) phylogeny. * = sampled by Breman et al. (2013). All three species of *Erythrotriorchis* and *Megatriorchis* were sampled by Mindell et al.

Accipiter griseiceps Sulawesi goshawk; *A. butleri* Nicobar sparrowhawk; *A. trinotatus* spot-tailed goshawk; *A. hiogaster* variable goshawk; *A. princeps* New Britain goshawk; *A. fasciatus** brown goshawk; *A. albogularis* pied goshawk; *A. rufitorques* Fiji goshawk; *A. henicogrammus* Moluccan goshawk; *A. luteoschistaceus* slaty-backed sparrow-

hawk; *A. nanus* dwarf sparrowhawk; *A. erythrauchen* rufous-necked sparrowhawk; *A. brachyurus* New Britain sparrowhawk; *A. rhodogaster* vinous-breasted sparrowhawk; *A. gundlachi** Gundlach’s hawk; and *A. meyerianus* Meyer’s goshawk.