

## A Revision of C. W. De Vis' Fossil Cormorants (Aves: Phalacrocoracidae)

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**ABSTRACT.** C.W. De Vis named two species of fossil cormorant, *Phalacrocorax gregorii* and *P. vetustus*, from Pleistocene deposits at Cooper Creek and Warburton River, Australia, based on specimens mainly collected by J.W. Gregory in 1901–1902. The material of each nominal species consists of extensive, syntypic series of mixed elements. It was subsequently regarded that each series comprised specimens from several living species. One of these species, *P. fuscescens*, is an exclusively marine species, raising questions about its purported presence in central Australian deposits. Re-examination of the fossil material confirms that all specimens complete enough for identification can be referred to either of two living species, *P. carbo* or *P. varius*, or occasionally the Darter *Anhinga novaehollandiae*. There is no unequivocal evidence of the occurrence of *P. fuscescens*. Selections of lectotypes are made to synonymize *P. gregorii* with *P. carbo* and *P. vetustus* with *P. varius*.

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C.W. De Vis, of the Queensland Museum, named numerous fossil birds on the basis of specimens from the Darling Downs, southeastern Queensland, and the Cooper Creek/Warburton River region of South Australia (De Vis, 1888a,b, 1889, 1892, 1905). Although he was prolific, De Vis lacked more than a cursory reference collection, missing representatives of a number of the families to which he allocated taxa. He also held the belief that fossils could be related to, but had to be separate species from, living ones. Many of his taxa are still recognised, but a number of species have been found to be allocated to the wrong family, or to be junior synonyms of living species, or both (summarized by van Tets & Rich, 1990).

Most of his nominal species have been reviewed (megapodes: van Tets, 1974; ducks: Olson, 1977; pelicans: Rich & van Tets, 1981; storks: Boles, 2005; flamingos: Rich *et al.*, 1987; birds of prey: Rich *et al.*, 1982, Gaff, 2002; rails: Olson, 1975; pigeons: van Tets & Rich, 1980). Among the few that await detailed re-examination are the cormorants.

De Vis (1905) erected two species from central Australian material, *Phalacrocorax gregorii* and *P. vetustus*, each on the basis of large syntypic series of assorted skeletal elements (Tables 1–8). He gave few details on the characters used to diagnose these species. Lambrecht (1933) created the genus *Australocorax* for them (type species *Phalacrocorax gregorii*). cursory examination of the material led G.F. van Tets (pers. comm. in Condon, 1975) to suggest possible synonymy with the Pied Cormorant *Phalacrocorax varius*. Later, Rich & van Tets (1982), van Tets (1984) and van Tets & Rich (1990) considered that De Vis' series comprised composites of modern forms, the Pied Cormorant, Great Cormorant *P. carbo* and Black-faced Shag *P. fuscescens* (sometimes placed in the genus *Leucocarbo*) and, in the case of *vetustus*, the Darter *Anhinga novaehollandiae*, as well. Rich & van Tets (1982) provided a list of De Vis' fossil bird specimens, with an indication of proposed identifications. Each of the cormorant bones was tentatively associated with a living species. No indication was given in that list regarding