

- LASKEY, A. R. 1935. Mockingbird life history studies. *Auk* 52:370–381.
- LASKEY, F. C. 1933. A territory and mating study of Mockingbirds. *Migrant* 4:29–35.
- LEDERER, R. J. 1977. Winter feeding territories in the Townsend's Solitaire. *Bird Banding* 48:11–18.
- LOGAN, C. A. 1987. Fluctuations in fall and winter territory size in the Northern Mockingbird (*Mimus polyglottos*). *J. Field Ornithol.* 58:297–305.
- MOORE, F. R. 1978. Interspecific aggression: toward whom should a mockingbird be aggressive? *Behav. Ecol. Sociobiol.* 3:173–176.
- SALOMONSON, M. G. AND R. P. BALDA. 1977. Winter territoriality of Townsend's Solitaire (*Myadestes townsendi*) in a piñon-juniper-ponderosa pine ecotone. *Condor* 79:148–161.
- SIMON, C. A. 1975. The influences of food abundance on territory size in the iguanid lizard *Sceleporus jarrovi*. *Ecology* 56:993–998.
- STENGER, J. 1958. Food habits and available food of Ovenbirds in relation to territory size. *Auk* 75:335–342.
- STILES, E. 1982. Expansions of Mockingbird and multiflora rose in the northeastern United States and Canada. *Am. Birds* 36:358–364.
- WIENS, J. A. 1973. Interterritorial habitat variation in Grasshopper and Savannah sparrows. *Ecology* 54:877–884.

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The correct name for the Olivaceous Cormorant, "Maiague" of Piso (1658).—Nearly 350 years ago, George Marcgraf (also spelled Marcgrave) and Willem Piso (Latinized as Piso), led by Johan Maurits of Nassau-Siegen, conducted natural history explorations in northeastern Brazil (see Whitehead 1979a). Many forms of plants and animals were described for the first time and documented by Piso and Marcgrave (1648) and Piso (1658), with over 500 illustrations based on watercolor and oil paintings (Whitehead 1976). Although specimens were collected on the expedition, no animal specimens are known to be extant (Whitehead 1979a). Some of the descriptions and illustrations from this early expedition were the basis for names introduced by Linnaeus, Gmelin, and others; several of these names have given rise to considerable controversy. Among these is *Procellaria brasiliana* (Gmelin 1789, p. 564), in the description of which Gmelin cited five references, all of which derive from the bird that Piso (1658, p. 83) called "Maiague" (sometimes rendered "Majaque").

Gmelin (1789) placed the "Maiague" as the species *brasiliana* in the genus *Procellaria* (=order Procellariiformes), but he never saw the original paintings (Whitehead 1979a). In one of the works cited by Gmelin, Willughby (1678, p. 334) stated that Piso's bird "seems to resemble" *Corvus aquaticus*, a name then in use for the Cormorant, now *Phalacrocorax carbo*, of the Old World. Latham (1785, p. 398), also cited by Gmelin, expressed doubt that Piso's "Maiague" was a petrel. Latham may have consulted the original paintings (Figs. 1 and 2), whereas Gmelin (1789) and the other authors Gmelin cited referred only to Piso's (1658) published woodcut (Fig. 3) (fide Whitehead, *in litt.*).

Lichtenstein (1817, p. 175) examined the original oil painting (Fig. 1) and water color (Fig. 2) of the "Maiague" that probably were the basis for the rather crude woodcut (Fig.



FIG. 1. Oil painting from the Libri picturati labeled "Magujuba" and "Majaja."

3) in Piso (1658). He concluded that the watercolor represented an adult male *Anhinga* (*Anhinga anhinga*), but later (Lichtenstein 1823, p. 86) reconsidered and used *brasilianus* for the Olivaceous Cormorant.

The name *brasilianus* remained in common usage for over sixty years. Following Brisson's interpretation of Piso (1658) that the feathers of the lower neck are yellow, Ridgway (1889, p. 138) stated that "it is almost incomprehensible" how Piso's "Maiague" could be identified with any known species of cormorant. Ridgway used *vigua* Vieillot (1817) for the name of the Olivaceous Cormorant in which he was followed by Ogilvie-Grant (1898) and the American Ornithologists' Union (1910). Richmond (1926), however, pointed out that *vigua* was based on an older name, *Pelecanus olivaceus* proposed by Humboldt (*in* Humboldt and Bonpland 1805), the name then adopted by the A.O.U. (1931).

Schneider (1938) examined the watercolor (Fig. 2) of the "Maiague" and identified it and the description with the Olivaceous Cormorant. Hellmayr and Conover (1948), on the basis of Piso's (1658) description and Schneider's (1938) identification, used the name *Phalacrocorax brasilianus* for this species. Nonetheless, the A.O.U. Check-list of North American birds (A.O.U. 1957, 1983) and Dorst and Mougín (1979) considered *Procellaria brasiliiana* Gmelin to be indeterminate and used *Phalacrocorax olivaceus* (Humboldt and Bonpland 1805), for the species. However, other recent authors (e.g., Gyldenstolpe 1951; Voous 1957; Pinto 1964, 1978; Oberholser 1974) have used the earlier name, *brasilianus*, for the Olivaceous Cormorant, and a review of its validity is warranted.



FIG. 2. Watercolor from the Libri picturati labeled "Magua."

Marcgraf's natural history notes were in code, apparently to prevent Piso from having access to his records, with only Johan Maurits being entrusted with the code. Following Marcgraf's death in Angola in 1643 (Whitehead 1979a), the natural history accounts in Piso and Marcgrave (1648) were assembled from these coded notes and edited by Johan de Laet. Piso (1658) edited and condensed Marcgraf's natural history section, introducing many errors. He also added some new material (see Whitehead 1979b), including the account of the "Maiague" that may have been from memory.

Piso (1658) described the "Maiague" as having "colli tantum parte anteriori flavis plumis decorata" which Hellmayr and Conover (1948) concluded must refer to the yellow gular skin, not yellow feathers. Other characters given by Piso (1658) leave no doubt that the "Maiague" is a cormorant. These include Piso's statement that the bird is black, the size and shape of a duck, and that it resembles "*Corvum aquaticum*" (= *Phalacrocorax carbo*). He added that the "Maiague" has a hooked beak and curved neck like that of a swan, lives at sea and river mouths, and eats fish. Specimens of the Olivaceous Cormorant from South America have dull straw-colored or brownish gulars, and, in first prebasic plumage, the feathers bordering the gular are a pale buff color (Siegel-Causey, *in litt.*). That Piso's (1658) description and accompanying woodcut (Fig. 3) could apply to a bird in eastern Brazil other than the Olivaceous Cormorant is hardly conceivable.

The published woodcuts (see also Piso [1957] for a reproduction of the description, in

M A I A G U E'.

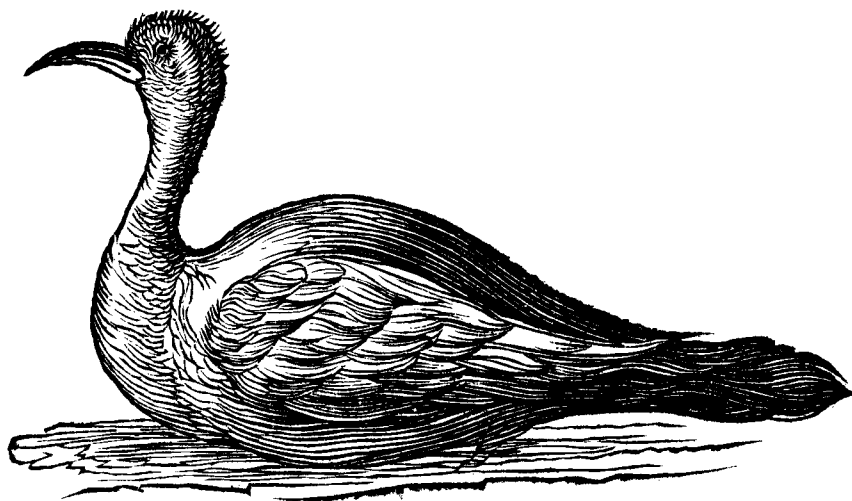


FIG. 3. Illustration of the "Maiague" from a woodcut in Piso (1658).

Portuguese, and woodcut illustration) apparently were based on paintings by artists employed by Johan Maurits during his time as Governor-General of Dutch-occupied Brazil, 1637–1644 (Whitehead 1976). The principal painters were Frans Post and Albert Eckhout (Whitehead 1976), the latter possibly visiting Chile during the time of the expedition (Joppin 1979).

The watercolors and oil paintings eventually were deposited in the Preussische Staatsbibliothek in Berlin and catalogued as *Libri picturati A* (two volumes of watercolors and four volumes of oil paintings). These were the originals examined by Lichtenstein (1817, 1823) and by Schneider (1938). In 1941, the paintings were evacuated to Silesia and were not seen or heard of until rediscovered in Poland in 1977 (Whitehead 1979b, 1982). They are now in the Jagiellon Library in Cracow, Poland. As noted by Schneider (1938), Piso's "Maiague" is an oil painting (Fig. 1) in the *Libri picturati A* 33 (p. 13, labeled "Maguajuba" and "Majaja") and is represented as a watercolor (Fig. 2) in the same collection as A 36 (p. 224, labeled "Migua"). I believe that both represent the Olivaceous Cormorant and that the watercolor is the basis for Piso's (1658) woodcut (Fig. 3).

Geography also serves as evidence that the "Maiague" is the Olivaceous Cormorant. Maurits' expedition and Marcgraf's activities were confined to northeastern Brazil. Previously published itineraries (Hantsch 1896, Gudger 1912) of Marcgraf are fabricated (Whitehead 1979b), but according to Marcgraf's astronomical notes (Whitehead 1979b) he visited northeastern Brazil from Salvador to Rio Grande do Norte, and almost certainly this applies also to Piso. This is a smaller area of Brazil than assumed by Hellmayr (1929). The only species of *Phalacrocorax* found there, or anywhere in Brazil, is the Olivaceous Cormorant (Dorst and Mougín 1979). That the "Maiague" of Piso could have been an immature

Phalacrocorax magellanicus in an all black plumage (see Rasmussen 1987), and based on Eckhout's possible trip to Chile (Joppien 1979) is improbable, since immatures of that species have blackish facial skin (Humphrey et al. 1970). The only species of cormorant in Chile having a yellowish gular region is the Olivaceous Cormorant.

Thus, as shown by Piso's (1658) description, the accompanying illustration, the original paintings, and by geographical probability, the "Maiague" unquestionably refers to the Olivaceous Cormorant. *Procellaria brasiliensis* Gmelin, 1789, clearly has priority over *Pelecanus olivaceus* Humboldt, 1805, for this species, and *Phalacrocorax brasiliensis* (Gmelin, 1789) should be reinstated as the correct name for the Olivaceous Cormorant, with the type locality as eastern Brazil.

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LITERATURE CITED

- AMERICAN ORNITHOLOGISTS' UNION. 1910. Check-list of North American birds. 3rd ed. A.O.U., New York, New York.
- . 1931. Check-list of North American birds. 4th ed. A.O.U., Lancaster, Pennsylvania.
- . 1957. Check-list of North American birds. 5th ed. A.O.U., Baltimore, Maryland.
- . 1983. Check-list of North American birds. 6th ed. A.O.U., Washington, D.C.
- DORST, J. AND J.-L. MOUGIN. 1979. Order Pelecaniformes. Pp. 155–193 in Check-list of birds of the world. Vol. 1 (E. Mayr and G. W. Cottrell, eds.). (Second ed.). Mus. Comp. Zool., Cambridge, Massachusetts.
- GMELIN, J. F. 1789. Caroli Linne Systema naturae. Vol. 1(pt. 2). Leipzig, Germany.
- GUDGER, W. W. 1912. George Marcgrave, the first student of American natural history. *Pop. Sci. Monthly* (Sept.):250–274.
- GYLDENSTOLPE, N. 1951. The ornithology of the Rio Purus region in western Brazil. *Ark. Zool.* 2:1–320.
- HANTSCH, R. 1896. George Marggraf. *Berichte Verhandl. königl. Sächsischen Gesellsch. Wissensch. Leipzig, Phil. hist. Klass* 48:199–227.
- HELLMAYR, C. E. 1929. A contribution to the ornithology of northeastern Brazil. *Field Mus. Natl. Hist., Zool. Ser.* 12:235–501.
- AND B. CONOVER. 1948. Catalogue of birds of the Americas. Pt. 1, No. 2. *Field Mus. Nat. Hist., Zool. Ser.* 13:1–384.
- HUMBOLDT, F. H. A. AND A. J. A. BONPLAND. 1805. *Memoires sur l'os hyoïde et le larynx des oiseaux, des singes et du crocodile. Recueil d'Observ. Zool. d'Anat. Comp.* 1:1–13.
- HUMPHREY, P. S., D. BRIDGE, P. W. REYNOLDS, AND R. T. PETERSON. 1970. Birds of Isla Grande (Tierra del Fuego). *Prelim. Smithsonian Man., Smithsonian Inst., Washington, D.C.*
- JOPPIEN, R. 1979. The Dutch vision of Brazil, Johan Maurits and his artists. Pp. 297–376 in *Johan Maurits van Nassau-Siegen, 1604–1679, A humanist prince in Europe and Brazil* (E. van den Boogaart, H. R. Hoetink, and P. J. P. Whitehead, eds.). The Johan Maurits van Nassau Stichting, Mauritshuis, The Hague, Netherlands.
- LATHAM, J. 1785. A general synopsis of birds. Vol. 3, Pt. 2. Leigh and Sotheby, London, England.

- LICHTENSTEIN, A. A. H. 1817. Die Werke von Marcgrave und Piso über die Naturgeschichte Brasiliens, erläutert aus den wieder aufgefundenen Original-Abbildungen. Abhandl. Kgl. Akad. Wiss. Berlin:115-178.
- . 1823. Verzeichnifs der Doubletten des zoologischchen Museums. . . . Königl Universität, Berlin, Germany.
- OBERHOLSER, H. C. 1974. The bird life of Texas. Vols. 1 and 2. Univ. Texas Press, Austin, Texas.
- OGLVIE-GRANT, W. R. 1898. Catalogue of the birds in the British Museum. Vol 26. British Mus. (Nat. Hist.). London, England.
- PINTO, O. M. 1964. Ornitologia Brasileira. Vol. 1. Dept. Zool. São Paulo, Brasil.
- . 1978. Novo catálogo das aves do Brasil. Pt. 1. São Paulo, Brasil.
- PISO, W. 1658. De Indiae utriusque re naturali et medica libri quatuordecim, quorum contenta pagina sequens exhibet. Lugd. et Dan., Elzevirii, Amsterdam, Netherlands.
- . 1957. História natural e médica da Índia Occidental. Imprint. Ministerio da Educação e Cultura, Instituto Nacional do Livro, Rio de Janeiro, Brasil.
- AND G. MARCGRAVE. 1648. Historia naturalis Brasiliae, auspicio et beneficio illustri. I. Mauritii Com. Nassau illius provinciae et maris summae praefecti adornata. . . . Frans Haack, Leiden and Ludovic Elsevier, Amsterdam, Netherlands.
- RASMUSSEN, P. C. 1987. Molts of the Rock Shag and new interpretations of the plumage sequence. Condor 89:760-766.
- RICHMOND, C. W. 1926. On the name *Phalacrocorax vigua*. Proc. Biol. Soc. Washington 39:142.
- RIDGWAY, R. 1889. Birds collected on the island of Santa Lucia, West Indies, the Abrolhos Islands, Brazil, and at the Straits of Magellan, in 1887-88. Proc. U.S. Natl. Mus. 12: 129-139.
- SCHNEIDER, A. 1938. Die Vogelbilder zur Historia Naturalis Brasiliae des Georg Marcgrave. J. f. Orn. 86:74-106.
- VIEILLOT, L. J. P. 1817. Nouveau dictionnaire d'histoire naturelle. . . . Nouv. ed., Vol. 8. Chez Deterville, Paris, France.
- VOOUS, K. H. 1957. The birds of Aruba, Curuçon, and Bonaire. Natur. Stud. Suriname and Nederlandse Antillen, No. 14. The Hague.
- WHITEHEAD, P. J. P. 1976. The original drawings for the Historia naturalis Brasiliae of Piso and Marcgrave (1648). Journ. Soc. Biblphy. nat. Hist. 7:409-422.
- . 1979a. Georg Marcgraf and Brazilian zoology. Pp. 424-471 in Johan Maurits van Nassau-Siegen, 1604-1679, A humanist prince in Europe and Brazil (E. van den Boogaart, H. R. Hoetink, and P. J. Whitehead, eds.). The Johan Maurits van Nassau Stichting, Mauritshuis, The Hague, Netherlands.
- . 1979b. The biography of Georg Marcgraf (1610-1643/4) by his brother Christian, translated by James Petiver. Journ. Soc. Biblphy. nat. Hist. 9:301-314.
- . 1982. The treasures of Grüssau. New Scientist 94:226-231.
- WILLUGHBY, F. 1678. The ornithology of Francis Willughby. . . . Printed by A. C. for J. Martyn, London, England.

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