

***Gallinula chloropus* (RALLIDAE) NEAR CONCON, V REGION: WHAT IS THE
GEOGRAPHICAL ORIGIN OF BIRDS SEEN IN THE LOWLANDS OF CENTRAL CHILE
AND TO WHAT SUBSPECIES DO THEY BELONG?**

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ABSTRACT

In the last two decades increasing numbers of observations of Common Gallinules *Gallinula chloropus* have been made in the lowlands of central Chile from about 28°S to about 35°S. The known breeding range of *Gallinula chloropus* in Chile is restricted to the high Andean puna of Tarapacá, in the extreme north of the country, inhabited by the subspecies *garmani*. Two other subspecies are widespread in lowlands outside Chile: *pauxilla* in coastal Perú and *galeata* in Argentina, Uruguay, and southern Brazil. The sightings of gallinules in central Chile thus pose two questions: What is their geographical origin?, and To what subspecies do they belong? In October-November 1996 I observed many *Gallinula chloropus* (subspecies *galeata*) in the lowlands of Argentina, Uruguay, and southern Brazil, and in January 1997 I saw one bird near Concón (V Región) that belonged, I believe, to *galeata*. These field observations prompted me to undertake a literature review and to examine series of museum skins. On this basis I tentatively conclude that records of *Gallinula chloropus* from the lowlands of Central Chile can be assigned to the subspecies *galeata*, and represent occasional visitors originating from east of the Andes in Argentina, although the possibility of a breeding population in Central Chile cannot be ruled out. The subspecific assignment is tentative because specimens of *Gallinula chloropus* from Central Chile have not been compared with series of skins of the various described subspecies.

RESUMEN

En los últimos 20 años números crecientes de avistamientos de Tagüitas del Norte *Gallinula chloropus* han sido realizados a baja altitud en Chile central desde aproximadamente 28°S hasta 35°S. El rango de nidificación conocido para *Gallinula chloropus* en Chile está restringido a la puna de los altos Andes de Tarapacá, en el extremo norte del país, donde se encuentra la subespecie *garmani*. Otras dos subespecies tienen una amplia distribución en regiones bajas fuera de Chile: *pauxilla* en la costa del Perú y *galeata* en Argentina, Uruguay y sur de Brasil. Las observaciones de tagüitas en Chile central plantean dos interrogantes: ¿Cuál es el su origen geográfico? y, ¿A qué subespecie pertenecen? En Octubre-Noviembre de 1996 observé muchas *Gallinula chloropus* (subespecie *galeata*) en zonas bajas de Argentina, Uruguay, y sur de Brasil y en Enero de 1997 observé una tagüita cerca de Concón (V Región), que creo puede ser atribuida a *galeata*. Estas observaciones de terreno me motivaron a revisar la literatura y a estudiar series de pieles de museo. Sobre esta base concluí, provisoriamente, que hallazgos de *Gallinula chloropus* de la zona baja de Chile central pueden corresponder a visitantes ocasionales de la subespecie *galeata* originarios de la Argentina al este de los Andes, aunque la posibilidad de una población reproductiva en Chile central no puede ser descartada todavía. La identificación subspecífica de *Gallinula chloropus* en Chile central es provisoria porque especímenes de esta especie no han sido comparados con series de pieles de las varias subespecies descritas.

KEY WORDS

Gallinula chloropus, Tagüita del Norte, Common Moorhen, Chile, geographical distribution, subspecies, geographical variation.

INTRODUCTION.

During field work in Argentina, Uruguay, and southern Brazil in late October-early November 1996, I saw many Common Gallinules *Gallinula chloropus galeata* in coastal and inland wetlands. Two months later, in January 1997, I observed one *Gallinula chloropus* in a wetland of the coastal lowlands of the Vth Region, central Chile, about 33°S. While studying this bird I wondered whether it belonged to the subspecies *garmani* and came from the high Andes of northern Chile, the only known breeding area of this species in Chile (Johnson 1965) or from outside the country, where the subspecies *pauxilla* and *galeata* occur. After a subsequent literature review and a study of museum specimens at the American Museum of Natural History, I would like to address the question of the origin of individuals of *Gallinula chloropus* seen in the lowlands of Chile. In their excellent review of records of *Gallinula chloropus* in Chile, Tala and Vilina (1994) were puzzled by the occurrence of this species in Chile: "Sigue siendo una incognita el origen de las aves de esta especie observadas en nuestro país, ya que son tres las subespecies que se encuentran en los países limítrofes. *Gallinula chloropus pauxilla* que está presente en la costa del Perú. *G. c. galeata*, que se distribuye por el sureste del Perú, alcanzando hasta Mendoza y, *G. c. garmani* que se distribuye en la zona altoandina del Perú, Bolivia, Argentina y que correspondería a la subespecie observada en la I Región (Fjeldså y Krabbe 1990). Esta incognita y la confirmación de su reproducción en Chile deberán ser resueltos en futuras investigaciones."

I believe that there is no doubt that *Gallinula chloropus* breeds (or has bred) in Chile. Its nest and eggs were found long ago and described by Johnson (1965: 286), who wrote: "We first met with this gallinule at altitudes between 13,000 and 14,000 feet around the shores of lake Huasco and in the rushes bordering the Collacagua river, and were fortunate enough to find a nest with 5 eggs." Furthermore, there is no doubt that the Tarapacá breeding population can be assigned to the subspecies *garmani*. No less an authority on Chilean birds than Hellmayr (1932: 361) listed the following six specimens

of *garmani* from Tarapacá, examined and identified by him: "Tarapacá: Sacaya, three ad., one imm., one ad., Jan. 25, March 13, 16, 29, April 30, 1890. A. A. Lane; Sitani, ad., Jan. 20, 1886. C. Rahmer (British Museum)." Hellmayr (1932: 361) further stated: "The series [of six birds from Tarapacá] agrees with another [series] from Peru and Bolivia, including a number of topotypes."

Therefore, the questions that remain are, in my opinion, first, what is the geographical origin of *Gallinula chloropus* seen outside Tarapacá, especially individuals observed far away from the high Andes in the lowlands of central Chile, and second, to what subspecies do these lowland birds belong?

In this paper I will attempt to give answers to these two related questions. To do so, (1) I will describe my January 1997 observation near Concón, then (2) I will review the distribution of *Gallinula chloropus*, especially in Chile, next (3) I will review the subspecies of the Common Gallinule in South America with special reference to Chile, and finally (4) I will summarize the results of my examination of skins of *Gallinula chloropus* in the collections of the American Museum of Natural History (AMNH).

THE CONCON GALLINULE.

On 24 January 1997, I observed one Common Moorhen *Gallinula chloropus* (Tagüita del Norte, Rallidae) with Zeiss 10x40 binoculars on and off for three hours from 15.00 h to 18.00 h, near the mouth of a small stream located about five kilometers north of the city of Concón, V Región, Chile (32°52'59S, 71°30'05W; coordinates obtained with a Magellan GPS 2000). This estero is the mouth of Estero Mantagua according to maps 6a and 6b in Guía Turística Turistel 1996, Centro, or the mouth of Estero Quintero and/or of Quebrada Las Majadillas according to Carta 5, La Ligua a Rancagua, Rutas de Chile, Mobil/Copec, cartografía 1989 (see also map C5, p. 27 in Pearman 1995).

During the three hours that I spent at this site, the Common Moorhen foraged regularly in the open, about 25-45 m from me, under excellent light conditions, in an area of exposed

mudflats between the river and dense marsh vegetation on higher ground. Throughout the observation period the gallinule was in more or less constant association with two Red-fronted Coots *Fulica rufifrons* (Tagua de Frente Roja). Whereas the moorhen clearly followed the two coots wherever they went, the coots by contrast paid little or no attention to the moorhen. Only once did one Red-fronted Coot pursue the Common Moorhen aggressively, when the latter approached it quite closely.

The identification of the bird as *Gallinula chloropus* leaves no doubt. Smaller and more slender than the two Red-fronted Coots with which it associated, the Moorhen had deep red (vermilion) shield and bill, except for the bright yellow bill tip, greenish-yellow legs and feet, and very dark, nearly uniformly blackish-slate plumage, with white undertail coverts and a conspicuous, interrupted white line along the body. Since *Gallinula chloropus* is not known to breed in the lowlands of central Chile, then where did the Concón bird come from?

DISTRIBUTION OF *GALLINULA CHLOROPUS*, WITH REFERENCE TO CHILE

Gallinula chloropus is a species of nearly world-wide distribution (Peters 1934: 203-205, Blake 1977: 513, American Ornithologists' Union 1983: 158-159, Sibley and Monroe 1990: 230). The Common Moorhen is widespread in western South America, including the high Andean altiplano, southward to southern Perú, northern Chile, and western Bolivia, and, across the Andes, in the lowlands of Bolivia, Paraguay, central and northern Argentina, Uruguay, and southern Brazil, as well as farther north in the lowlands of Venezuela, Colombia, and the Guianas (Hellmayr and Conover 1942: 399-403, Meyer de Schauensee 1966: 81, Meyer de Schauensee 1982: 69, Blake 1977: 512-515).

In Chile, so far as known, *Gallinula chloropus* breeds only at high elevations in the northern part of the country: in the puna of Tarapacá according to Philippi (1964: 62) and Araya *et al.* (1992: 156), and south to the Río Loa according to Rottmann *et al.* (1995: 51), who stated furthermore that *Gallinula chloropus* is "Rara en Chile central."

Recently Tala and Vilina (1994) have summarized a series of observations of *Gallinula chloropus* in the lowlands of northern and central Chile, as far south as 34°46'S, 72°03'W, and including sightings of juveniles at the mouth of the Río Huasco at 28°26'S, 71°12'W. To be added to the list of records compiled by Tala and Vilina (1994), Howell and Webb (1995: 60) saw two adults at Chacance, "confluence of the Loa and San Salvador rivers, Tocopilla province (C. 1200 m elevation)," believed to be *garmani*, and 20 adults and one immature in the Azapa Valley near Arica.

As none of the classic or even some of the more recent works on the birds of Chile or of South America (e.g., Hellmayr 1932: 361, Hellmayr and Conover 1942: 403, Philippi 1964: 62, Johnson 1965: 285, Blake 1977: 514, Fjeldså and Krabbe 1990: 149, Araya *et al.* 1992: 156, Araya *et al.* 1993: 152), mention the occurrence of *Gallinula chloropus* in Chile outside of Tarapacá, it is tempting to conclude, as did Tala and Vilina (1994) that recent lowland observations in central Chile could be the result of a southward colonization of the species from its high elevation breeding area in northern Chile. Indeed, the Chilean vernacular name of the Common *Gallinula chloropus*, Tagüita del Norte (see, e.g., Araya *et al.* 1995: 20), is a clear allusion to its geographical distribution in Chile.

In their paper, Tala and Vilina (1994) cited individuals of *Gallinula chloropus* collected to the south of their normal range in Tarapacá, but did not indicate to what subspecies they belonged. They then listed the subspecies and their ranges, which I review in detail below.

SUBSPECIES OF *GALLINULA CHLOROPUS*, WITH REFERENCE TO CHILE.

The Chilean population breeding in Tarapacá (nest and eggs described by Johnson 1965: 286) belongs to the subspecies *garmani* (Hellmayr 1932: 361) which was originally described from Lake Titicaca, Perú (Allen 1876: 357-358), and which occurs, besides northern Chile, on the altiplano of central and southern Perú, Bolivia, and northwestern Argentina (e.g., Hellmayr 1932: 361, Hellmayr and Conover 1942: 402-403, Blake 1977: 514). In his

description of *garmani*, based on a series of seven specimens, Allen (1876: 357-358) stated that *garmani* was "similar to *galeata*, but much larger and darker" and that *garmani* had much less brownish-olive coloration on the back, rump, and secondaries than *galeata*. Interestingly, Allen (1876: 358) also wrote that there was "considerable variation, both in size and color" among the seven specimens in the collection. For example, Allen (1876: 358) stated that "some specimens [of *garmani*] present a decided olive-brown tint over the middle portion of the dorsal surface, while in others it is scarcely perceptible."

Much later Hellmayr (1932: 361) stated succinctly the differences between *garmani* and other species of *Gallinula chloropus*: "The large size, the nearly uniform dark slaty coloration (at best with a slight dull brownish olive tinge on lower back and rump), and the slaty blackish head and neck readily distinguish *G. c. garmani* from the other South American races of the moorhen." As I will show below, however, whereas its large size does indeed separate *garmani* from the other subspecies of *Gallinula chloropus*, the color differences are less marked than Hellmayr indicated, at least according to my own analysis of series of skins in the collections of the AMNH.

Plate XVI 7a-e in Fjeldså and Krabbe (1990) illustrates three subspecies of *Gallinula chloropus*: (1) the small, brown-backed subspecies *pauxilla* Bangs, 1915 from coastal Perú (7a), (2) the small, slaty-backed subspecies *hypomelaena* Todd, 1954 from Cochabamba, Bolivia (7b; which Blake 1977: 514 stated was "essentially a miniature population of *garmani*"), and (3) the large, slaty-backed and olive-rumped subspecies *garmani* (7e) from the Andean altiplano. Unfortunately Fjeldså and Krabbe (1990) did not illustrate a fourth subspecies, *galeata* (Lichtenstein, 1818), from the lowlands of Argentina, Uruguay, and southern Brazil. Hence, field ornithologists who wonder whether sightings of *Gallinula chloropus* from the lowlands of northern and central Chile refer to high Andean or other populations do not have sufficient iconographic material to help them in their subspecific identification, as the crucial lowland subspecies *galeata* is not illustrated by Fjeldså and Krabbe (1990), a manual that is

likely to be widely used. According to Blake (1977: 514-515) *Gallinula chloropus galeata* has "deep plumbeous coloration of the entire uppersurface" and is "very near *garmani* in color, but decidedly smaller."

This size difference is worth discussing. I summarize the measurements of all four subspecies as given by Blake (1977). Subspecies *garmani* has a wing length (chord) of 207-225 mm (average of 10 males 219 mm) and 195-214 mm (average of 8 females 203.7 mm). Subspecies *hypomelaena* has a wing length (chord) of 174 and 175 mm (2 males), and of 169 and 180 mm (2 females). Subspecies *pauxilla* has a wing length (chord) of 160-192 mm (average of 12 males 169.5 mm) and 155-175 mm (average of 8 females 162.3 mm). Finally, subspecies *galeata* has a wing length (chord) 155-193 (average of 10 males 174.5 mm) and 156-179 mm (average of 10 females 164.9 mm). Hence the three subspecies *hypomelaena*, *pauxilla*, and *galeata* are relatively small and overlap substantially with each other, whereas much larger *garmani* does not overlap in wing length with the other three. Indeed, *garmani*, with an average wing length of 219 mm (males) and 203.7 mm (females), is as large as or even larger than *Fulica armillata* (averages of 205.1 mm and 200 mm for males and females, respectively), and is larger than *Fulica rufifrons* (averages of 177.4 mm and 176.2 mm for males and females, respectively) (measurements from Blake 1977). It would be worthwhile to have comparative weight (body mass) data for all these taxa.

This review of the literature about the subspecies of *Gallinula chloropus* shows that the characters that purport to distinguish these subspecies are not necessarily trenchant. Put differently, individual variation in some of these characters may blur some of the apparent distinctions mentioned by the authors reviewed above. Given these uncertainties I carried out my own analysis of geographical variation in *Gallinula chloropus*, using the skins in the collection of the AMNH.

STUDY OF SKINS OF *GALLINULA CHLOROPUS*.

My examination of series of skins of subspecies *pauxilla* (30 specimens), *galeata* (27

specimens), and *garmani* (8 specimens), revealed two main points as far as color variation is concerned: (1) In each subspecies there is some olive-brown tint on the back and on the secondaries, and (2) The amount and intensity of this olive tint is individually variable in all three subspecies. Nevertheless, it can be stated that, when looking at series of skins rather than at individual skins, on average *pauxilla* has the most olive cast or sheen and *galeata* the least, whereas *garmani* is somewhat intermediate.

Thus, taking into account both size and color, one can state that *galeata* is small and dark, whereas *garmani* is large and dark, and *pauxilla* is small and olive-backed.

However, my study of museum skins suggests that the present subdivision of *Gallinula chloropus* into subspecies based on relatively few and individually variable characters is not satisfactory. Geographical variation in South American populations of the Common Moorhen needs to be thoroughly reanalyzed. First, adequate series of skins from the entire range of the species in all of South America will have to be assembled in order to ascertain the validity of the currently described subspecific units. Secondly, the study of morphological characters should be supplemented with an analysis of biochemical characters, as was correctly pointed out by an anonymous referee.

CONCLUSIONS

With the above discussion of geographical distribution and subspecies as a background, the origin of the Common Moorhen I saw near Concón (and by extension the origin of other moorhens sighted in central Chile) can be approached in terms of three precise questions. (1) Was this bird a stray from the high Andean populations much further north, either large and dark subspecies *garmani* or small and dark *hypomeleana*? (2) Or was it a stray from the populations found along the coastal areas of Perú much further north (smaller and olive-brown backed subspecies *pauxilla*)? (3) Or else was it a vagrant from the populations living in the lowlands east of the Andes in Argentina,

Uruguay, and southern Brazil (small and dark subspecies *galeata*)?

Two traits noted in the bird I saw near Concón have clear bearing on these questions: (1) the bird I observed was relatively small for a *Gallinula chloropus* (in comparison with *Fulica rufifrons*, which was larger and bulkier), and (2) it was very dark slaty-black in overall coloration, the upperparts appearing (in good light) entirely dark slaty-black without an olive-brown cast to the lower back and rump areas. The relatively small size of the bird rules out its belonging to the large Andean subspecies *garmani* and the lack of an olive tint on its lower back or rump rules out the small, but clearly olive brown-backed, Peruvian coastal *pauxilla*. Instead, the characteristics of this bird suggest that it was either a member of the small and dark Andean form *hypomelaena* from Bolivia, or of the small and dark lowland form *galeata* from Argentina, Uruguay, and southern Brazil.

The status of *hypomelaena* is unclear. This subspecies is apparently "known only from the type locality" of Vacas, Cochabamba, Bolivia (Blake 1977: 514). It is worth noting here that Hellmayr (1932: 361) examined one bird from Vacas that he attributed to *garmani* and that Fjeldså and Krabbe (1990: 149) wrote that *hypomelaena* is "maybe a *galeata/garmani* intergrade." If *hypomelaena* is indeed a valid subspecies, its range is quite restricted, so its total population must be small, and its occurrence in central Chile would appear to be a remote possibility only.

By contrast, the subspecies *galeata* is not only widespread but is also common to super-abundant locally on the other side of the Andes at about the latitude of central Chile (personal observation), so that its casual occurrence in central Chile would not be very surprising and could be expected. Indeed, the bird I saw near Concón appeared to me to be very similar in relative size and in coloration to the many individuals of *Gallinula chloropus galeata* that I had seen in southern Brazil (Rio Grande do Sul), Uruguay, and Argentina only about two months earlier, in late October-early November 1996. In fact, I had concluded while watching it that the Concón bird belonged to the small and dark subspecies *galeata* from the lowlands east of the Andes and not to the large and dark

garmani from the high Andes, chiefly because it was distinctly smaller than *Fulica rufifrons*, which is about the same size as *garmani*.

I conclude from the foregoing review of literature data and of information from museum specimens that there is strong presumptive evidence that the Concón bird belonged to the small and dark subspecies *Gallinula chloropus galeata*, and hence was a vagrant from east of the Andes and not a stray from the high Andean breeding northern Chilean population of *G. chloropus garmani*. It is therefore possible that the other records of the species in central Chile reviewed by Tala and Vilina (1994) also refer to individuals of the subspecies *galeata*.

However, this matter will only be settled definitively after specimens have been collected in the lowlands of central Chile and have been compared with adequate series of museum skins of the other South American subspecies. Drouilly (1979) collected the bird he saw in Laguna de Torcas, but wrote: "La falta de material de comparación ha impedido hasta el momento determinar a cuál de las tres subespecies mencionadas podría pertenecer el ejemplar de la Laguna de Torca, situación que una vez aclarada, nos permitiría llegar a precisar su posible procedencia, ya que este hallazgo debe ser considerado como casual dada su presencia tan alejada de su distribución normal en el país."

I would be glad to critically examine the specimen from Laguna de Torca, or any other specimen from the lowlands of Chile, should my Chilean colleagues wish me to do so, as I have at AMNH the necessary comparative material.

A final question, of whether another subspecies of *Gallinula chloropus* besides *garmani* breeds in Chile, remains a problem for future research. Should *galeata* be found to breed in Chile, then this would constitute a rather clear case of a recent colonization event, a biogeographical phenomenon well worth studying in detail.

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