

# Status of the Ruddy-headed Goose *Chloephaga rubidiceps* (Aves, Anatidae): a species in serious danger of extinction in Fuego-Patagonia

Status del Canquén (o Cauquén) colorado *Chloephaga rubidiceps* (Aves, Anatidae): una especie en grave peligro de extinción en Fuego-Patagonia

FRANÇOIS VUILLEUMIER

Department of Ornithology, American Museum of Natural History,  
Central Park West at 79th Street, New York, New York 10024, USA

## RESUMEN

El status del Canquén (Chile) o Cauquén (Argentina) colorado *Chloephaga rubidiceps* (Aves, Anatidae), es discutido sobre la base de observaciones llevadas a cabo en 1985-1988 y 1993 en Fuego-Patagonia chilena. Se observó la especie durante un total de sólo 35 días (de los 103 días de terreno): 9 en el continente y 26 en Isla Grande de Tierra del Fuego. La especie no fue observada en Isla Navarino. Se registró la nidificación en una sola ocasión. También se menciona una observación de *C. rubidiceps* en la parte argentina de Tierra del Fuego y una en Neuquén, Patagonia argentina, fuera del rango normal de la especie. Se estima que el total de individuos avistados no superaba los 75. La distribución y abundancia relativa de *C. rubidiceps* en Fuego-Patagonia en 1985-1988 y 1993 son comparadas con sus tres especies congénéricas, *C. picta*, *C. poliocephala* y *C. hybrida*. Aunque distribuido en varios sectores de Fuego-Patagonia chilena, *C. rubidiceps* es sumamente raro en esta región, y su abundancia ha disminuido drásticamente en las últimas cuatro décadas. La población total de Fuego-Patagonia chileno-argentina quizás no alcanza a algunos centenares de individuos. Se discuten las razones posibles de esta disminución y se sugieren medidas para empezar la tarea urgente de conservación de esta especie en peligro de extinción en América del Sur. Estas medidas incluyen la discontinuación inmediata del status de *C. rubidiceps* como "plaga," el listado inmediato de la especie en la lista "roja" de especies amenazadas de extinción, y una campaña de propaganda para señalar a los residentes de la Patagonia la importancia de *C. rubidiceps* en los ecosistemas esteparios de su región.

**Palabras claves:** Tierra del Fuego, Patagonia, Chile, Argentina, aves, *Chloephaga rubidiceps*, especie en peligro de extinción, conservación.

## ABSTRACT

The status of the Ruddy-headed Goose *Chloephaga rubidiceps* (Aves, Anatidae) is reviewed on the basis of observations in Chilean Fuego-Patagonia in 1985-1988 and 1993. The species was observed on a total of 35 days out of 103 field days: 9 on the continent and 26 on Isla Grande of Tierra del Fuego. The species was not seen on Navarino Island. Proof of breeding was obtained only once. Observations of *C. rubidiceps* in Argentine Tierra del Fuego in 1993 and in Neuquén, Argentine Patagonia, in 1992 outside the normal range of the species, are also cited. The total number of birds seen is estimated to be less than 75. The distribution and relative abundance of *C. rubidiceps* in Fuego-Patagonia in 1985-1988 and 1993 are compared with its three congeners *C. picta*, *C. poliocephala*, and *C. hybrida*. Although *C. rubidiceps* was found in several sectors of Chilean Fuego-Patagonia it is quite rare in this region, and its numbers have dramatically decreased in the last four decades. The total population in Chilean and Argentine Fuego-Patagonia may not exceed several hundred birds. The possible causes of this decline are discussed, and measures are suggested for the urgent job of conserving this species, which is in serious danger of becoming extinct in South America. These measures include immediate removal of *C. rubidiceps* from the list of pest (*plaga*) species and its placement on the endangered list, and a campaign to advertise the plight of the species and to indicate to residents of Patagonia the importance of the species in the steppe ecosystem of their region.

**Key words:** Tierra del Fuego, Patagonia, Chile, Argentina, birds, *Chloephaga rubidiceps*, endangered species, conservation.

## INTRODUCTION

The Ruddy-headed Goose *Chloephaga rubidiceps* (Anatidae) breeds only in Chilean and Argentine Fuego-Patagonia (Patagonian mainland and Tierra del Fuego, southernmost South America) and the Falkland (Malvinas) Islands. The South American population migrates north to

spend the austral winter on the Argentine pampas, but the Falkland population is resident (Delacour 1954: 214-216, Meyer de Schauensee 1966: 39, Woods 1988: 138-139, Madge & Burn 1988: 176).

Together with four other species (*C. picta* and *C. hybrida*, both in southern South America and the Falklands; *C. poliocephala*, southern South America; and *C.*

*melanoptera*, Andes), *C. rubidiceps* is part of a little studied adaptive radiation of goose-like shelducks (Tadornini) endemic to the Andes and Patagonia. Whereas *Chloephaga rubidiceps*, *C. picta*, *C. poliocephala*, and *C. melanoptera* occur in grasslands and shrubsteppes, *C. hybrida* lives in the kelp-covered, rocky intertidal zone along the Pacific coast of southern South America, southward to the Tierra del Fuego and Cape Horn Archipelagos (Murphy 1936: 942-947).

Formerly abundant in its restricted South American range (Crawshay 1907: 99-100, Olrog 1948: 470, Scott 1954: 59, Humphrey *et al.* 1970: 112), *Chloephaga rubidiceps* has declined dramatically in the last four decades. For example, Jehl & Rumboll (1976: 146) wrote: "This species is clearly on the verge of extirpation", Rumboll (1975: 315) sounded the alarm, and Fjelds  & Krabbe (1990: 120) called it "a vanishing species." Still common in the Falklands, *C. rubidiceps* has decreased numerically on those islands as well (Woods 1988: 138). Although Collar & Andrew (1988: 19) included this species in their list of threatened species, Collar *et al.* (1993) did not include it in their list of threatened species of the Americas.

In this paper, I summarize the distribution and status of *Chloephaga rubidiceps* and report my observations in Chilean Fuego-Patagonia in 1985-1988 and 1993, and one observation from Argentine Tierra del Fuego (1993) and one from Neuqu n, Argentina (1992). I conclude that this species is at serious risk of extinction and make suggestions for conservation measures that should be taken immediately if this species is to survive in the future.

#### DISTRIBUTION AND STATUS OF *CHLOEPHAGA RUBIDICEPS*

##### *Distribution*

Delacour (1954: 215) wrote that the distribution of *Chloephaga rubidiceps* was "still imperfectly understood" and Meyer de Schauensee (1966: 39) summarized it as follows: "Southern Magallanes and Tierra

del Fuego, Chile. Tierra del Fuego, Argentina, northward in winter to Buenos Aires. Extralimital range: Falkland Islands." Venegas & Jory (1979: 68) gave information for Chile: "Se encuentra en vegas esteparias y matorral en Tierra del Fuego, Magallanes centro-oriental y Ultima Esperanza," and Clark (1986: 96) mentioned northern and occasionally the east coast of Isla Grande and northwestern Navarino Island. In the Falkland (Malvinas) Islands, it occurs mostly on "coastal slopes" (Woods 1988: 138). Fjelds  & Krabbe (1990: 120) mapped the breeding distribution in Fuego-Patagonia and the Falklands, and the migratory and wintering range of the South American population in Argentine Patagonia north to Buenos Aires Province.

##### *Status*

Crawshay (1907: 100) wrote that *Chloephaga rubidiceps* had recently increased in numbers in Tierra del Fuego: "A few years ago, the sheepmen tell me, these Geese did not exist in anything approaching their present numbers: a yearly increase has been remarkable in their immigration which is attributed to the brushwood being eaten away by sheep, and the growth of fine grass." About forty years later, Olrog (1948: 470) reported "Grandes bandadas de *centenares* de aves" [italics mine] near Estancia Viamonte and Puerto R o Grande, and Ripley (1950: 4) reported the species as "the second most common species in the area [of R o Grande]." According to Scott (1954: 59) *C. rubidiceps* was "the commonest goose round the farms in the open pampa of the northern part of the island [of Tierra del Fuego]." At Estancia Mar a Behety Scott (1954: 59) estimated that 25% or 75 individuals out of a flock of 300 *Chloephaga* spp. were *C. rubidiceps*, and at Caleta Josefina he saw "masses of Ruddyheads [*C. rubidiceps*]." Philippi *et al.* (1954: 26) also noted that at Caleta Josefina it breeds "en gran n mero," but, somewhat at odds with the reports of abundance cited above, stated that on Isla Grande it breeds "en n mero reducido." According to Johnson (1965: 187), their numbers "attain

countless thousands" [italics mine] in Tierra del Fuego. Johansen (1966: 229) indicated that *C. rubidiceps* was especially common (*häufig*) in the eastern part of Tierra del Fuego. Humphrey *et al.* (1970: 112) wrote "This *common species* [my italics] is found in summer on the northern, nonforested part of Isla Grande."

Clearly *Chloephaga rubidiceps* used to be common but is now quite rare in South America (see below and next section). Although "still common" in the Falklands it is "becoming rare" there too (Woods 1988: 138).

As early as 1954 Delacour (1954: 204) wrote that "Great concern for the future of these fine birds has been shown recently." Later, Jehl & Rumboll (1976: 146) wrote that on Tierra del Fuego "It is now very rare as a result of control measures instituted primarily against the Upland Goose (*C. picta*; see also Weller, 1975)." Jehl & Rumboll (1976: 146) added: "During our investigations, which covered a large part of the northern half of the Argentine side of the island [of Tierra del Fuego], Rumboll counted only 30 individuals; subsequent reports (Rumboll, 1975) suggest a further decrease." Rumboll (1975: 315) saw only about 30 in 1972, and a flock (no number given) in 1974. Weller (1975: 85) saw very few *C. rubidiceps* on Tierra del Fuego in 1972 and no evidence of breeding. Clark (1984: 213) observed only a pair in the Mitre Peninsula of southeasternmost Tierra del Fuego in 1984.

Collar & Andrew (1988: 19) believed that the decrease in numbers of *C. rubidiceps* was probably correlated with an increase in populations of the introduced fox *Dusicyon griseus*, but other authors disagreed. Fjeldså (1988: 93) stated that "this interpretation seems unsatisfactory, and it seems equally (or more) probable that this species has suffered from the disappearance of tall grass in the lowlands." Weller (1975: 85), in addition to the possible predation by foxes, ascribed the decline in *C. rubidiceps* to the destruction of *C. picta*, encouraged by bounties which resulted in hundreds of thousands of eggs being destroyed, for example 250,000 in 1947 (Delacour 1954: 204-205) and

150,000 in 1972-1973 (Weller 1975). Although it is not known how many eggs of *C. rubidiceps* were destroyed during such attempts at eradication of *C. picta*, Weller (1975) believed that many eggs of *C. rubidiceps* were taken at the same time.

Recent reports indicate that in Chilean Fuego-Patagonia *Chloephaga rubidiceps* "No es extremadamente común aunque a menudo su presencia es inadvertida entre bandadas de *Ch. picta*" (Venegas & Jory 1979: 68), and that "En la actualidad [es] muy escaso y considerado en peligro en el continente" (Venegas 1986: 58). For Argentine Fuego-Patagonia Rumboll (1979: 153) cited only two recent proofs of breeding (in 1975: pair with 5 small goslings, and pair with 2 flying young) and stated "En mis viajes durante este verano pasado (1976-1977) no he visto ningún ejemplar." Furthermore, Rumboll (1979: 153) cited very low numbers from wintering sites in Argentina: 136 individuals in August 1975 and 252 in August 1976. He added: "Es evidente que la población de esta especie es muy pequeña y es mi impresión de que quizás no llegue a cuatro cifras" (i.e., fewer than 1000 birds). Martin *et al.* (1986: 58) censusing *Chloephaga* spp. on their wintering grounds, wrote: "Only 12 Ruddy-headed Geese were sighted in 1983 and 44 in 1984," and Knell & Zelaya (1993: 11) counted 110 birds.

In summary, data from the early part of this century (Crawshay 1907) to the 1940s-1950s (Olrog 1948, Ripley 1950, Scott 1954), and the 1970s-1980s (Jehl & Rumboll 1976, Rumboll 1975, 1976, Weller 1975, Venegas & Jory 1979, Venegas 1986, Madge & Burn 1988) indicate that on the island of Tierra del Fuego *C. rubidiceps* was at first relatively uncommon, increased in numbers in the early years of the century, became abundant until the 1940s-1950s, but decreased so dramatically thereafter that it is now very rare. On the Patagonian mainland north of the Strait of Magellan it is now also very rare. In the Falkland (Malvinas) Islands, the species has gone from common to relatively rare (Woods 1988).

STATUS IN 1985, 1987, 1988, AND 1993 IN CHILEAN  
FUEGO-PATAGONIA

I spent 103 field-days in Chilean Fuego-Patagonia in November-December 1985 (35 days), February-March 1987 (15), October 1987 (20), January 1988 (8), November 1988 (22), and November 1993 (3), traveling widely on the mainland, on Isla Grande of Tierra del Fuego, and on Navarino Island. *Chloephaga rubidiceps* was encountered on 35 out of 103 days. I also mention one observation from Argentine Tierra del Fuego (1993) and one from Neuquén, Argentina (1992).

*Mainland of Chilean Fuego-Patagonia*

*Chloephaga rubidiceps* was seen on only 9 days: 27 October 1987 (1 pair in steppe between Kimiri-Aike and San Gregorio, eastern Magallanes), daily from 6-12 November 1988 (between 1 individual and 2 pairs along the coast of the Strait of Magellan in a forested area near San Juan, Brunswick Peninsula), and on 28 November 1988 (1 unsexed bird near O'Higgins, southeastern Magallanes). Pairs were seen on several occasions, especially near San Juan, but I found no evidence that they were breeding. I did not see the species along two north-south transects from Punta Arenas to Torres del Paine National Park, Ultima Esperanza (February 1987, January 1988), or an east-west transect between Gallegos Chico and Pali Aike-Monte Aymond (February-March 1987). Clearly this species is quite scarce on the mainland north of the Strait of Magellan.

*Chilean Tierra del Fuego*

The species was seen on 25 days only. In 1985, sightings were made on 7 days (6, 7, 8, 11 November, 8, 9, 10 December): north of Porvenir (4 birds, 4 km NE of that town, 6 November), and south of Porvenir (between that town and Puerto Nuevo, at 4 sites, about 11 km, 16 km, and 25 km south and southeast of Porvenir, and near Puerto Nuevo). Pairs were seen at 2 sites, and a flock of 11 at Los Canelos. The most significant observation in 1985 was a pair

with 6 goslings near Puerto Nuevo (11 November), thus proving reproduction.

In 1987 I saw the species on only one day in February-March (isolated bird southeast of Porvenir, 17 February), and on only 10 days in October. The October sightings were south and southeast of Porvenir, at the same sites as those in November-December 1985. In addition, I saw 1-2 pairs daily at Estancia Los Tehuelches, a few kilometers inland from Puerto Nuevo, from 9-12 October and from 20-22 October 1987. In spite of repeated observations of 1-2 pairs at Los Tehuelches, I detected no evidence of breeding (although *Chloephaga picta* was found nesting there). Finally, I saw several pairs near China Creek on 26 October 1987.

In 1988, I saw the species again between Porvenir and Puerto Nuevo (15, 21, and 25 November; isolated individuals and 1-2 pairs) and at Estancia Los Tehuelches (2 pairs daily from 16-20 November). As in 1987, no evidence of breeding was obtained at Los Tehuelches, where I watched closely the two pairs present. Finally, on 26 November 1988, I saw one pair near Bahía Felipe and one pair near Puerto Percy, northeast of Porvenir.

In 1993, *C. rubidiceps* was seen at three sites on 24 November: 16 individuals (mostly paired) near Estancia Los Mellizos, one pair north of Cullen, and two pairs south of Cullen.

*Navarino Island*

The species was not seen from 19-30 November 1985 and on 31 January 1988. It was apparently not observed or collected on Navarino Island by Olrog (1948: 516-517), who saw *C. picta*, *C. poliocephala*, and *C. hybrida* there. I do not know the origin of the information published by Clark (1986: 96), that *C. rubidiceps* occurs in northwestern Navarino Island.

*Argentine Tierra del Fuego*

Two birds were seen in coastal pastures 4 km north of San Sebastián on 27 November 1993.

*Neuquén, Argentine Patagonia*

One pair of *Chloephaga rubidiceps* was seen on 30 October 1992 at Parque Nacional Laguna Blanca, west of Zapala, Neuquén, near a flock of about 50 *Chloephaga picta*, in a wet meadow (*vega*) heavily grazed by sheep. The species had apparently not been recorded previously from Laguna Blanca National Park. This area is not included in Fjeldså & Krabbe's map (1990: 120), nor is Neuquén included by Olrog (1979: 49), although Johnsgard's map (1978: 112) includes all of Patagonia. The species can be expected in western Neuquén during its spring (September) or autumn (April) migration, but a late October date corresponds to the breeding period of Patagonian birds, whether resident or migratory (pers. obs.). Is there a breeding population in northern Patagonia? Only future research will tell, but it is worth noting that some Patagonian species (e.g. the Tyrannidae *Muscisaxicola capistrata* and *Neoxolmis rufiventris*) have apparently disjunct breeding populations in northern and southern Patagonia, respectively (Vuilleumier 1994).

## DISCUSSION

Observations of *Chloephaga rubidiceps* on 35 out of 103 days of field work in Fuego-Patagonia in 1985-1988 and 1993, at only 3 mainland sites (Chile) and 19 Tierra del Fuego sites (18 Chile, 1 Argentina), suggest that the species was relatively widespread in the region in the late 1980s and early 1990s, but was rare wherever it occurred. The sightings involved totals of only 25 different individuals in 1985, 25 in 1987, 20 in 1988, and 24 in 1993. It is likely that several observations were of the same birds in different years. I would estimate that about 75 different birds were sighted during my field work in Fuego-Patagonia. If one assumes, for the sake of argument, that my transects sampled only about one fifth of the suitable foraging and breeding habitat in Fuego-Patagonia, one would extrapolate that the population contains only about 375 birds. Even if this figure were doubled or

tripled it is a far cry from the former abundance of the species, with flocks of hundreds of birds (Olrog 1948: 470). I only saw two flocks, of eleven and sixteen birds respectively.

For purposes of comparison, I mention below the status of the three other species of *Chloephaga* in Fuego-Patagonia in 1985-1988 and 1993. *Chloephaga picta* was seen on 60 out of 103 days, and was common to abundant throughout the region visited. Large flocks were of frequent occurrence, and breeding was recorded repeatedly (nests with eggs, pairs with goslings) at mainland and island sites (Tierra del Fuego and Navarino Island). *Chloephaga hybrida* was observed regularly in all the areas with suitable intertidal habitat of Chilean Fuego-Patagonia (coastal mainland of Peninsula Brunswick; near Porvenir in northwestern Tierra del Fuego; Navarino Island; and throughout the Cape Horn Archipelago). *C. poliocephala* was seen on only 21 days out of 103 days, thus apparently less frequently than *C. rubidiceps*. However, this observation is misleading, since at several sites, for example Estancia Los Tehuelches on Tierra del Fuego, where I spent a number of days in 1987 and 1988, *C. rubidiceps* was observed day after day (probably the same individuals or pairs), thus increasing the number of observation-days for that species, whereas I did not spend equal amounts of time at sites that harbored *C. poliocephala*, except on Navarino Island. On that island, I saw *C. poliocephala* daily and commonly in suitable habitat from 19-28 November 1985. *C. poliocephala* was observed in a wider range of localities than *C. rubidiceps*, including flocks along two transects from Punta Arenas northward to Torres del Paine National Park, and along a transect through Patagonian steppe (Pisano 1977) from Morro Chico eastward to Gallegos Chico where on 27 February 1987 I saw several hundred *C. poliocephala* (about 500?) at 5 sites.

Thus, of the four species of *Chloephaga* observed in Fuego-Patagonia in 1985-1988 and 1993, *C. picta* was abundant and *C. poliocephala* common (both are geographically and ecologically widespread, with

*C. picta* more common in open steppes and *C. poliocephala* more common at the steppel/*Nothofagus* forest ecotone); and *C. hybrida* was common in its intertidal habitat. By comparison, *C. rubidiceps* was rare.

Observations of small numbers of *Chloephaga rubidiceps* in Fuego-Patagonia justify the fears of earlier authors (Rumboll 1975, Jehl & Rumboll 1976, and Fjelds  & Krabbe 1990) that the survival of *C. rubidiceps* in southern South America is seriously threatened. Thus Rumboll (1975) estimated 30 birds in Argentine Tierra del Fuego in 1972 where I saw 2 in 1993. These are low numbers. What are the possible causes of the decline of this species in South America?

It is not easy to give an answer to this question. The habitat preferences of the rare *C. rubidiceps* overlap widely with those of the abundant *C. picta*. Both species occur in grazed grasslands interspersed with open matorral, especially in areas with roadside ditches, shallow pools, or narrow rivers. One difference is that *C. picta* occurs in both lowland and montane situations, whereas *C. rubidiceps* appears restricted to the lowlands.

*Chloephaga* sheldgeese were declared a pest (*plaga*) in the 1960s because they allegedly compete with sheep for grazing pastures, and were subsequently actively destroyed. If the three upland species of sheldgeese were equally persecuted because hunters did not distinguish the eggs of these species, then why today is *C. picta* abundant and *C. poliocephala* common, but *C. rubidiceps* so rare? There seems to be no answer to this question. Is persecution on the wintering grounds a factor contributing to the decline? Martin *et al.* (1986: 62) believed that the answer was "yes."

Is the smaller sized *C. rubidiceps* at some disadvantage in interspecific encounters with the larger, and perhaps more aggressive *C. picta*? At Estancia Los Tehuelches on 17 November 1988 I saw one pair *C. rubidiceps* being attacked vigorously by a territorial male *C. picta*. The two *C. rubidiceps* flew off. *C. picta* was found nesting at Los Tehuelches at that time, but

not *C. rubidiceps*. On 24 November 1993 two displacement attacks were seen near Estancia Los Mellizos, each involving a male *C. picta* displacing *C. rubidiceps*. Such displacement behavior could lead to *C. rubidiceps* losing access to foraging sites, nesting sites or both.

Is the increase in fox (*Dusicyon griseus*) populations (Jaksic & Y nez 1983, Collar & Andrew 1988, Martin *et al.* 1986) a factor that has contributed to the decline of *C. rubidiceps*? Jaksic & Y nez (1983: 371) listed *Chloephaga picta*, but not *C. rubidiceps*, as prey of *Dusicyon* in Tierra del Fuego. Since populations of *C. picta* ought to be as susceptible to fox predation as those of *C. rubidiceps*, but are healthy and show evidence of active reproduction today, the answer to the above question would seem to be "no." Unless the smaller and perhaps less aggressive *C. rubidiceps* is less able to fend off foxes approaching its nest, than is *C. picta*.

Was the disappearance of tall grass in the lowlands more likely than foxes to have caused a population decrease in *C. rubidiceps* (Fjelds  1988)? Was *C. rubidiceps* more closely linked ecologically to tall grass in the past than it is linked today to grazed grassland, steppe, and open matorral? Wood's (1988: 138) description of the habitat of *C. rubidiceps* in the Falkland (Malvinas) Islands does not suggest tall grass to be the preferred habitat there.

Is shooting a cause of the decline of *C. rubidiceps* in South America as in the Falklands (Woods 1988: 139)? I have seen no evidence of shooting, or even of antagonism between sheep ranchers and *Chloephaga* geese (of any species) in Fuego-Patagonia but I have seen evidence of the dislike of raptors, for example *Milvago chimango*, that I have found nailed to fenceposts on several occasions.

At present we have several unanswered questions about the decline of *C. rubidiceps* in Fuego-Patagonia but have little concrete evidence to explain the crash in numbers. It is clear, however, that its population density is so low that *C. rubidiceps* is at risk of further, catastrophic decline that would lead

to its extinction in South America. Since, as Woods (1988: 139) correctly stated, "There is no evidence of interchange between mainland [South American] and Falkland populations," the Fuego-Patagonian population is entirely dependent upon local recruitment for its survival. At present, therefore, and even though it, too, seems to be declining, the Falkland (Malvinas) Islands population of *C. rubidiceps* is, indeed, the main center of its world population (Woods 1988: 139). King (1981) cited an unpublished manuscript by Rumboll to the effect that: "A 1976 estimate quoted the total population [in South America] at less than 1000 individuals." The total South American population may now be below 1000. Given the lack of recent observations of breeding (only one family seen in several spring seasons in the late 1980s), it is in grave danger of further decline.

In view of this situation, I recommend the following: (1) a vigorous and highly publicized research program into the breeding biology and ecology of the species, and (2) immediate measures resulting in total protection of the species in South America.

One species, that was once widespread in Fuego-Patagonia, the Burrowing Owl (*Speotyto cunicularia*, Strigidae), has become extinct there in this century (Humphrey *et al.* 1990: 190-192). Fortunately, *S. cunicularia* can still be found locally elsewhere in Patagonia and in other parts of its vast range in the Americas. Such would not be the case for *C. rubidiceps*, however: should its South American population become extinct, the risk of total extinction would be increased severalfold, because its only remaining population, in the Falkland (Malvinas) Islands, would be insular, and hence at potentially even greater risk than a mainland population, as are all island populations.

It is not easy to propose effective conservation measures for *C. rubidiceps*. Because the species is scattered in low numbers across Fuego-Patagonia, no single part of this region can be singled out as a potential faunal reserve, where birds would

be unmolested and where active recruitment would take place. Rumboll (1975: 315, 1979: 154) has advocated the urgent removal of *C. rubidiceps* from the list of pest (*plaga*) species in Argentina. Martin *et al.* (1986: 62) demonstrated that "the situations in which sheld-geese come into conflict with agriculture are relatively few," so the pest status is unfounded. This removal is an indispensable step in the right direction, but others are necessary as well. One is a campaign in Chilean and Argentine Fuego-Patagonia, to advertise the importance of this species, by highlighting the special status of *C. rubidiceps* in South America and by emphasizing that it is a unique component of the biodiversity of the Fuego-Patagonian steppes.

This advertising campaign can perhaps be achieved, at modest cost, by the publication of leaflets, brochures, and posters with a color illustration of this attractive species and a map showing its distribution in Fuego-Patagonian ecosystems. These publications can then be posted in all corners of Magallanes and Chilean Tierra del Fuego, and of Argentine Tierra del Fuego, including post offices, police stations, border stations, bus terminals, town halls, ferry boats, restaurants along highways, and schools. Another aspect of this campaign would be ads placed on television, in newspapers and especially on the radio.

I would like to conclude with four points:

(1) Take *C. rubidiceps* off the list of pest (*plaga*) species at once: a species with a total South American population perhaps lower than 1000 birds is no *plaga*!

(2) Place *C. rubidiceps* on the endangered species list of Argentina and Chile at once.

(3) Publicize the endangered status of *C. rubidiceps* widely by distributing information throughout Fuego-Patagonia.

(4) Call the attention of sheep ranchers at once, telling them that to help protect this unique species, which does not compete with their sheep, cannot be estimated in terms of cash rewards, but may earn them a spot in paradise.

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