

This high-altitude Andean waterbird lives at low densities in a scatter of low-saline lakes in Argentina, Bolivia and Chile, where it may be suffering from certain human pressures; fieldwork is needed to clarify its status and needs.

DISTRIBUTION The Horned Coot is known from a few high-altitude Andean lakes of the puna zone in south-western Bolivia, north-western Argentina and northern Chile. Records within provinces below are organized from north to south. Unless otherwise stated coordinates are taken from Paynter (1985, 1988) and OG (1967, 1968).

Argentina

Jujuy Records are from: Laguna de Pozuelos, currently (M. Nores and D. Yzurieta *in litt.* 1986, Fjeldså and Krabbe 1990), with three or four pairs nesting there in January 1987 (M. Nores *in litt.* 1991); a small lake 4 km west of Laguna de Pozuelos, where nesting was reported in November 1984 (M. Rumboll *in litt.* 1986); Laguna Larga (untraced, but near Laguna de Pozuelos, and conceivably the same as the previous site), December 1981 (P. Canevari *in litt.* 1987, 1992); La Lagunilla (untraced, but near Laguna de Pozuelos), where c.80 have been reported (date unknown) (F. N. Contino *per* M. Nores and D. Yzurieta *in litt.* 1986); Laguna Pululos (22°35'S 66°44'W), where "large numbers" were reported before 1941 (Crespo 1941) and where nesting occurred in October 1982 (P. Canevari *in litt.* 1992).

Salta The species was recorded during a survey from 19 November to 6 December 1984 at Laguna Socompa (24°30'S 68°14'W; Vides-Almonacid 1990) (see Remarks 1).

Catamarca The species is only known from Laguna Blanca, December 1918 (three specimens in AMNH and IML; also Esteban 1953).

Tucumán Localities are: the Cumbres Calchaquíes range (centred on 26°27'S 65°43'W), February 1903 (two specimens in AMNH and IML; Hartert and Venturi 1909); also within this mountain range three birds were collected at the Lagunas de Amaichá (untraced, but probably near Amaichá del Valle at 26°36'S 65°55'W; see Remarks 2) in February 1905 (specimens in MNHN); Laguna El Negrito (= Lagunas de Huaca Huasi, 26°40'S 65°44'W: coordinates from R. Vides-Almonacid *in litt.* 1992), November and December 1947 (four specimens in IML), and where it was a typical inhabitant (Olrog 1949); Lagunas de Huaca Huasi and Laguna Escondida (untraced, but within the Cumbres Calchaquíes range), where periodical censuses between 1981 and 1985 recorded the species in very low numbers (including a nesting pair: Vides-Almonacid 1988; see Population); Tafí del Valle (26°52'S 65°41'W), March 1948 (Olrog 1949; see Remarks 3); Laguna del Cerro Pelado (untraced, but possibly in the Aconquija range; see Remarks 4), February 1903 (specimen in AMNH; also Baer 1904); Sierra de Aconquija, currently (Fjeldså and Krabbe 1990); Laguna Cerritos, Laguna Los Patos (both in Cerro Muñoz at 26°46'S 65°51'W) and Laguna La Manga (in the base of Morro El Zarzo = Nevado de las Animas, 15 km south-west of Cerro Muñoz), where the species was observed in March and September 1982 and in April and October 1984 (Vides-Almonacid 1988; see Population for numbers observed).

San Juan The species has been recorded breeding at Reserva de San Guillermo (29°08'S 69°30'W), undated (J. C. Pujalte *per* P. Canevari *in litt.* 1987), this being the southernmost known locality for the species.

Bolivia

Oruro A bird was taken at Lago Poopo in June 1903 (Ménégaux 1909).

Potosí Records are from: near Potosí, where the type-specimen was collected in December 1853 (Hellmayr and Conover 1942); small lagoons within the Eduardo Avaroa National Faunal Reserve (21°30'-21°56'S 67°35'-68°05'W in Scott and Carbonell 1986; see the map in Rocha O. 1990b) namely: Laguna Khastor and Laguna Chojllas, where 550 and 782 birds were recorded respectively in October-November 1989 (Rocha O. 1990a; see Population); Laguna Totoral, November 1982, Laguna Catalcito, where small numbers have been recorded, and Laguna Pelada, one of the most important localities for the species (Cabot and Serrano 1982, Scott and Carbonell 1986; see Population); Laguna Verde, where at least

eight birds and three eggs were collected on several dates between 1952 and 1958 (specimens and eggs in ANSP, FMNH, MNHN, MNHNS, WFVZ and YPM) (see Remarks 5).

Chile The Horned Coot occurs from the lakes of the Lauca National Park (18°25'S) south to Lago Valeriano and El Cajón del Encierro (28°46'S) (Johnson 1965, Scott and Carbonell 1986). Behn and Millie (1959) remarked that the species would probably be found in other localities where similar conditions to those at Lago Caritaya and Santa Rosa exist, but some of these remain unknown because the difficulty of access.

Tarapacá The northernmost locality for the species, once thought to be Tranque Caritaya (19°01'S 69°19'W), where 10 birds were observed and four eggs (in WFVZ) were collected in February 1957, now appears to be the lakes of Lauca National Park (18°25'S 69°10'W; coordinates from Scott and Carbonell 1986) (Behn and Millie 1959, Scott and Carbonell 1986).

Antofagasta Localities are: río Loa, "casual" (no further details given) (Goodall *et al.* 1951); Lago Ascotán, February 1884 (Philippi 1888), and a bird collected in 1886 (specimen in MNHNS); near Calama, where a pair (apparently accidentals) were recorded in July 1940 (Olrog 1948; see Remarks 2); Laguna Verde (23°14'S 67°46'W), October 1955 and July 1957 (three specimens in YPM); Lago Loyoques (Salar de Loyoques at 23°15'S 68°18'W), where an egg was taken in December 1952 (held in WFVZ); Laguna Meñique (untraced, but near Salar de Atacama), where a "large group" was recorded on 21 February 1989 (Narosky 1990).

Atacama Localities are: Laguna de Santa Rosa (27°05'S 69°10'W), from at least the 1950s down to the present (see Population); and the headwaters of the río Huasco, where the species has been recorded in several lagoons of the Cajón del Encierro (28°59'S 69°52'W) including (to the end of the paragraph): Lagunita de Encierro, where nest-building was in progress in November 1946 (Ripley 1957a); Laguna Chica (28°48'S 69°52'W), February 1945 (specimen in MCZ) and a nest found in November 1945 (Behn and Millie 1959); Laguna Pachuy (untraced), where five eggs were collected in January 1946 (Behn and Millie 1959); Laguna Grande (28°53'S 70°04'W), where nests were found in 1936, 1945 and 1946 (Ripley 1957a, Behn and Millie 1959), and Laguna Valeriano (29°03'S 69°52'W), undated (Johnson 1965), this being the southernmost extreme of its range, except that of the apparently isolated population in San Juan province of Argentina.

POPULATION The Horned Coot has been considered "rare and extremely local" (Ripley 1977). Large concentrations have been recorded only occasionally (see below), but in general its density appears to be low, and lower than other species of coot (Vides-Almonacid 1988). However, no apparent decline is known to have occurred (King 1978-1979), although local populations are believed to fluctuate greatly between periods of drought and rain (Fjeldså and Krabbe 1990).

Argentina The Horned Coot has not been reported in large numbers except at Laguna Pululos, where large numbers were reported prior to 1941 (Crespo 1941), and c.40 pairs with nests were observed in October 1982 (P. Canevari *in litt.* 1992), although large numbers no longer occur (Vides-Almonacid 1988); Fjeldså and Krabbe (1990) believed that "good numbers" occur around Sierra de Aconquija and at Laguna de Pozuelos, but no numbers are given. Apart from this, modest numbers have been recorded in the Aconquija range at Laguna Cerritos, Laguna Los Patos and Laguna La Manga, where maximum total numbers of 135 (of which 106 were juveniles) and 98 birds respectively were present in March and September 1982, but only 10 and 12 birds in April and October 1984 (numbers for each lagoon are given in Vides-Almonacid 1988), and at La Lagunilla, where c.80 birds have been recorded, undated (F. N. Contino *per* M. Nores and D. Yzurieta *in litt.* 1986). M. Rumboll *in litt.* (1986) found c.28 nests in a small lake 4 km west of Laguna de Pozuelos in November 1984, and the species was found in small numbers at Laguna de Pozuelos, Laguna Larga and Laguna Pululos in the early 1980s (P. Canevari *per* M. Nores and D. Yzurieta *in litt.* 1986, M. Nores *in litt.* 1991). The species was found "very scarce" at Laguna Socompa and in the lagoons within the Cumbres Calchaquies range (Laguna de Huaca Huasi and Laguna Escondida), where from December 1981 to February 1985 the maximum population consisted of six

individuals (a family group in December 1981 and two pairs with young in February 1985) (Vides-Almonacid 1988, 1990), and in March 1986 three nests and 10 juveniles were found (R. Grau *per* R. Vides-Almonacid *in litt.* 1992).

Bolivia Little has been published about numbers of the Horned Coot. Probably the largest concentration ever recorded within its range was at Laguna Pelada, where 2,800 individuals were counted in November 1982 (Cabot and Serrano 1982). Other large counts include 90 birds at Laguna Totoral in November 1982 (Cabot and Serrano 1982), 550 (18 active nests found) and 782 (11 active nests found) birds in Laguna Khastor and Chojllas respectively in October-November 1989 (Rocha O. 1990a). According to this author, although the species's population is small there is no evidence to support a decline. Besides these records and that of 36 birds observed at Laguna Verde in July 1957 (Peña 1961), other localities given under Distribution simply refer to single or a few specimens collected.

Chile The overall population is estimated to consist of 620 individuals (Glade 1988: 22). Largest numbers have been found at Laguna de Santa Rosa, where counts include: 100 birds (including immatures and juveniles) and c.30 nests (not all of which were in use), between 29 January and 5 February 1958 (Behn and Millie 1959); 252 birds (58 nests in an advanced stage of construction and 30 nests in early stages), October 1986 (Correa and Oyarzo 1987); 107 birds, 17 chicks out of the nest and 27 nests (nine of them containing chicks), January 1988; 77 birds and 32 nests, October 1988 (both from CONAF 1988); 72 adults and 28 active nests, October 1990; 54 adults and 23 active nests, November 1990 (both from Oyarzo and Cisternas 1990); 68 adults, 49 chicks and 31 active nests; 159 birds (37 of which were juveniles), May 1991 (both from Oyarzo and Cisternas 1991). At Laguna Grande 50 birds were reported arriving after dusk in April 1956 and departing the following morning (Behn and Millie 1959, Johnson 1965). Other records, except that at Tranque Caritaya, where 10 birds were observed (see Distribution), refer to single or a few specimens collected and/or observed.

ECOLOGY The Horned Coot inhabits barren Andean highland lakes both fresh and brackish, where it is chiefly found at altitudes varying from 3,000 to 5,200 m (Fjeldså and Krabbe 1990), although records at Calama (2,266 m) in July 1940 and at Tañi del Valle (2,000 m) in March 1948 show that occasional movements to lower altitudes may occur in winter or while harsh weather conditions at higher altitudes are present (Olrog 1948, 1949).

The Horned Coot's diet remains little studied but consists mostly of aquatic plants (*Myriophyllum*, *Potamogeton* and *Ruppia*) which are apparently absent in saltmarshes, which may explain the species's avoidance of highly saline environments commonly found in the puna (Behn and Millie 1959, Johnson 1965, Vides-Almonacid 1988, Fjeldså and Krabbe 1990). Stomach contents of three birds from Laguna Verde (Bolivia) consisted of aquatic grasses and volcanic sand (Peña 1961), and five stomachs from birds collected at Laguna Santa Rosa contained sand, *Ruppia* seeds and stems (Behn and Millie 1959). These latter authors pointed out that where *Myriophyllum* is present, the species prefers it to *Ruppia*. There is evidence that the Horned Coot may fly from one feeding ground to another (see data for Laguna Grande under Population: Chile).

The breeding season is fairly well documented and mainly occurs from October to February, although birds can be paired and building nests as early as September (Ripley 1977, CONAF 1988, Vides-Almonacid 1988, Fjeldså and Krabbe 1990). Nests can be enormous, and usually consist of mounds of stones built up from the bottom of the lake and then covered with soft vegetable matter (*Myriophyllum*, *Ruppia*, etc.), or else entirely made of it; clutches vary from three to five eggs (Behn and Millie 1959, Johnson 1965, Ripley 1977). Little is known about reproductive success, but in Laguna Santa Rosa, Chile, 25% of the chicks did not reach the juvenile stage (Oyarzo and Cisternas 1991).

Little is known about seasonal altitudinal movements or displacements from one feeding locality to another; surveys conducted at Laguna Santa Rosa showed that birds are absent during the winter months when the surface of the lake is frozen and food unavailable (CONAF 1988, Oyarzo and Cisternas 1990).

Winter is thus the more likely season to find the species at lower elevations; long displacements may take place to areas where conditions are less severe.

THREATS As previously mentioned (see Population), little is known about population trends. Vides-Almonacid (1988) commented that the reduced population of the Horned Coot in Tucumán perhaps could be related to unpredictable ecological changes in the lagoons (e.g. droughts and floods), although this should not constitute a threat itself as the species has evolved in such extreme ecosystems; but such changes, when occurring together with other threats noted by Vides-Almonacid (1988) and J. C. Torres-Mura *in litt.* (1986), such as hunting, egg-harvesting, exploitation of habitat (piping water to coastal cities and towns or mining centres), may prove fatal. Other potential threats such as predation by the Andean Gull *Larus serranus* has been reported (R. Vides-Almonacid *in litt.* 1992) although it is believed not to occur very often (Behn and Millie 1959). In Tucumán, the trampling of nests by cattle and the contamination of waterbodies with their ordure are also reasons for concern (R. Vides-Almonacid *in litt.* 1992).

MEASURES TAKEN In Chile the Horned Coot has been officially considered threatened in the “vulnerable” category, and CONAF is carrying out periodic censuses and surveillance with the purpose of gaining further knowledge on the species (Glade 1988); a study of the species at Laguna Santa Rosa is being conducted by CONAF, but no information on this is yet available (I. Castro *in litt.* 1989). Some of the lakes where the species occurs have been protected (see Remarks 6) and are listed as follows: (in Argentina) Laguna Pozuelos National Monument, Laguna Blanca Provincial Reserve (Scott and Carbonell 1986) and San Guillermo Provincial Reserve (Vides-Almonacid 1988); (in Bolivia) Eduardo Avaroa National Faunal Reserve (Scott and Carbonell 1986), which includes Laguna Totoral, Laguna Catalcito and Laguna Pelada (one of the most important localities known for the species: see Population).

MEASURES PROPOSED Detailed studies should be conducted in the three countries where the species occurs (see Remarks 7), concentrating on: (1) overall breeding population estimates for each country, including visits to those areas where the species has not been reported but where it is likely to occur; (2) studies on the biology of the species, (i.e.) habitat requirements, feeding and ecology, seasonal movements, etc., all of which should be mainly focused on identifying possible threats; (3) a global strategy for conservation which can guarantee the species's long-term survival, obviously involving the creation of new protected areas within the Andean puna, as well as enforcement of existing laws which already protect them. In Argentina, the establishment of a protected area in the already proposed mountainous areas of Sierra del Aconquija (Tucumán and Catamarca provinces) and Cumbres Calchaquíes (Tucumán and Salta provinces) comprising more than 300,000 ha (R. Vides-Almonacid *in litt.* 1992) would result in a major step towards protecting prime habitat of the species and thus ensuring its survival in the country. This initiative will also benefit populations of the White-tailed Shrike-tyrant *Agriornis andicola*, Rufous-throated Dipper *Cinclus schulzi* and Tucumán Mountain-finch *Poospiza baeri* (see relevant accounts).

REMARKS (1) This appears to be the only published locality for this province, although Salta has previously been mentioned as one of the provinces where the species is to be found (Blake 1977, Vides-Almonacid 1988). (2) According to R. Vides-Almonacid (*in litt.* 1992) these lagoons could well be Laguna Cerritos and Laguna Los Patos (see Distribution), but it is also possible that the lagoon in question was “Laguna Amaicheña” (= Laguna de los Amaicheños), which is c.5 km north-west of Lagunas de Huaca Huasi. (3) This locality together with that of Calama in Chile are at an unusually low altitude, probably related to bad weather conditions, as pointed out by Olrog (1949; see Ecology). (4) The specimen's label indicates an altitude for the collecting locality of 5,000 m; Paynter (1985) pointed out that Laguna del Cerro Pelado could possibly be in vicinity of Cerro Pelado (26°55'S 65°44'W), although this mountain attains an altitude of only c.2,500 m and altitudes approaching 5,000 m are found no nearer than 25 km to the south-west on the Catamarca border. (5) A bird taken by L. Peña in July 1954 and labelled as “Laguna Verde, Chile/Bolivia” (specimen in ANSP) could have been collected at Laguna Verde, Antofagasta, at 23°14'S 67°42'W, as a visit of L. Peña to Laguna Verde in 1954 has been attributed to the Laguna Verde in Antofagasta, Chile, by Paynter (1988), who has pointed out Peña's confusion of these two localities, although he visited and collected birds in both of them (see Distribution). (6) Although under legal protection, some of these areas still witness illegal hunting, egg-collecting and cattle-grazing, but whether these practices affect the Horned Coot is not known (for details affecting these areas see Scott and Carbonell 1986). (7) The study that CONAF is carrying out at Laguna Santa Rosa, Chile, could serve as a model for further projects elsewhere in Chile or in Bolivia and Argentina, but details are first needed.