

## Comments on Waterfowl Habitat and Management Problems in Argentina

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Interest in foreign waterfowl is at an all-time high because of (1) our concern for rare species, (2) our desire to learn of the biology of species in other lands which may aid in our understanding our own species and conservation problems, and (3) the desire to share management and conservation skills with other nations.

During my studies of the Black-headed Duck *Heteronetta atricapilla* in Argentina in 1964-65 (Weller 1968b), I had an opportunity to visit a number of waterfowl habitats in that country in search of Black-headed Ducks and other species. The work was funded by N.S.F. Grant GB-107. The behavioural and ecological observations have been summarized elsewhere (Weller 1967a, 1967b, 1968a) but there are certain general observations of a non-quantitative nature that may aid other biologists in assessing and improving our knowledge of the ecological, biological and sociological problems of waterfowl conservation in Argentina.

### Wetland types and waterfowl

The unique and diverse waterfowl species complex of Argentina cannot be understood without reference to the habitat which has produced and supports this group. Approximately one-third the size of the United States, Argentina has at least 35 species of breeding waterfowl. Many are unique taxonomically and undoubtedly are the product of centuries of isolation from northern forms. Others are taxonomic and ecological equivalents of northern hemisphere species. Only a few species are identical.

Habitat diversity is great and ranges from the sub-antarctic marine and desert conditions of southern Patagonia to extensive subtropical forest or desert in north-central Argentina, and even to true tropics in the Province of Misiones in north-eastern Argentina. From east to west, the level pampas change to desert in the rain shadow of the Andes, the latter rising abruptly to a maximum of 23,000 feet altitude—the highest peaks in the western hemisphere. In its northern portion, this mountain range has an extensive plateau, the 'puna' zone, which has a unique avifauna of its own.

Based on my own observations, a classification of Argentine avifauna by Dabene (1910), plus waterfowl distributional data by Casares (1933, 1934, 1945), I have tentatively classified Argentine wetlands according to their gross topographic and vegetative features as well as their waterfowl use (Figure 1). I profited greatly from discussions and field trips with duck hunters and naturalists, outstanding among whom are Peter Miles, Maurice Rumboll, Phillip Runnacles, and professional ornithologists Dr. C. Olrog and the late William Partridge.

The major populations of nesting waterfowl probably occur in the belt of fresh tule *Scirpus californicus* marshes (Figure 1, Zone A). Because this area also has the highest human population and is the major agricultural zone, it is a zone of actual and potential competition between livestock or farming activities and wildlife resources. Plant communities and avian associates in these lakes and marshes are similar to those in our western desert marshes but also share some similarities with southern marshes. Coots, gulls, egrets and ibises are common in addition to the complex of anatids: Black-necked Swans *Cygnus melanocoryphus*, Coscoroba Swans *C. coscoroba*, Rosy-bills *Netta peposaca*, Fulvous Whistling Ducks *Dendrocygna autumnalis*, Argentine Red Shovelers *Anas platalea*, Yellow-billed or Speckled Teal *A. flavirostris*, Cinnamon Teal *A. cyanoptera* and Versicolor or Silver Teal *A. versicolor*. The south-westward extension of Zone A represents slightly rolling country with the large, highly saline Guamini Lakes, which possibly should be regarded as a separate zone. This area is utilized some by the huge flocks of wintering sheldgeese of three species: Upland Goose *Chloephaga picta*, Ashy-headed Goose *C. poliocephala* and Ruddy-headed Goose *C. rubidiceps* (Plotnik 1961). Yellow-billed Pintails or South Georgian Teal *Anas georgica*, Cinnamon Teal, Argentine Red Shovelers, Chiloe Wigeon *Anas sibilatrix*, and Yellow-billed Teal also use this area in winter but little is known about the summer nesting period.

The open-country, warm desert marshes (Zone B) have some of the vegetation of temperate marshes (Zone A) and some of more sub-tropical areas. Some

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tropical ducks like Ringed Teal *Anas leucophrys* and Comb Duck *Sarkidiornis melanotos* frequent the area but there are also large populations of what appear to be wintering Rosy-bills and Yellow-billed Pintails and other species of the southern temperate marshes.

The river marshes along the Parana (the north-south portion of Zone C in Figure 1) and the Chaco swamps and marshes (east-west portion of Zone C) are considered as one zone. They seem to have much of the same waterfowl com-

plex but differ in the more tropical wooded vegetation in the Chaco. Both areas have Ringed Teal, Brazilian Ducks *Amazonetta brasiliensis* and Masked Ducks *Oxyura dominica* but Comb Ducks, Muscovys *Cairina moschata* and White-faced Whistling Ducks *Dendrocygna viduata* apparently nest only in the northern subtropical areas of the wooded Chaco.

I have had limited personal experience with the remaining zones. The small but unique tropical forest area in the Province of Misiones (Zone D) is part of the

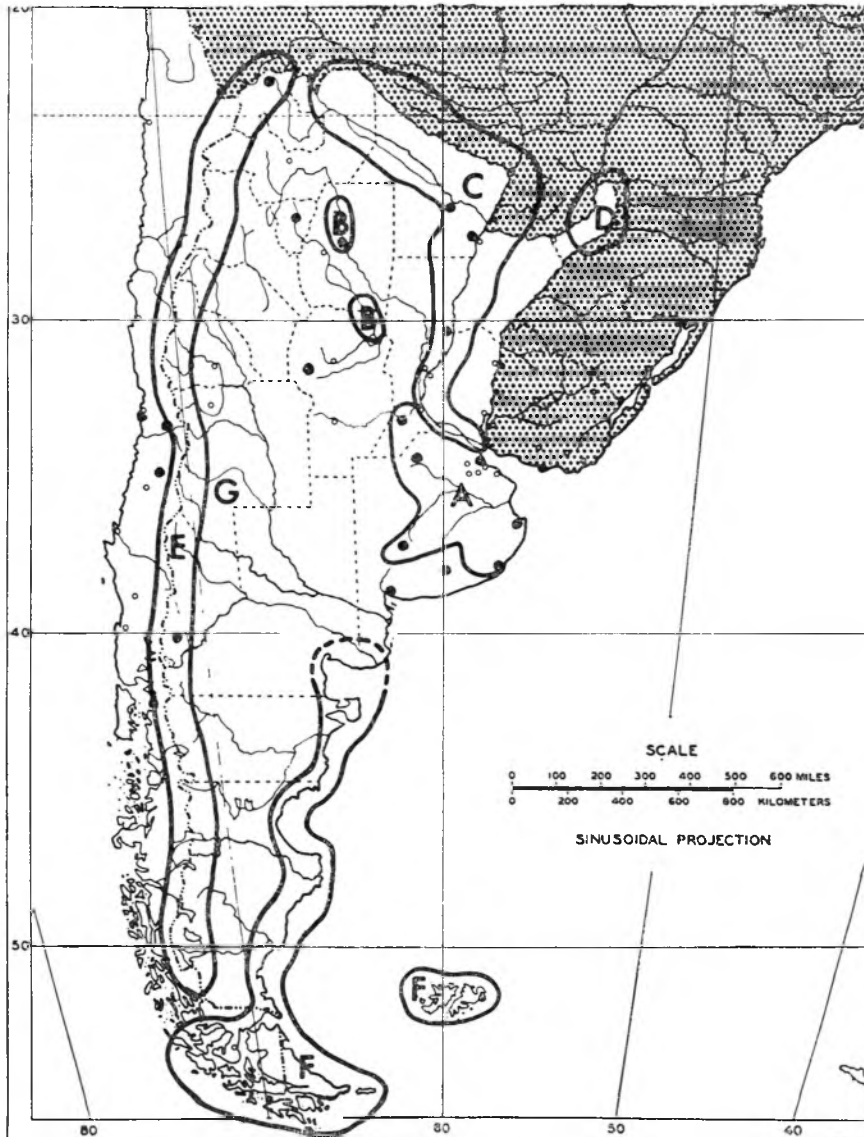


Figure 1. Classification of some Argentine wetlands in reference to waterfowl use and plant life-form. Dots show areas where I did some field work during 1964-65.

Brazilian plateau and has some slow to moderately swift streams which are separated by waterfalls from the lower slow-moving streams which harbour the predacious fish, the dorado *Salminus maxillosus*. It is in these dorado-free streams that the rare Brazilian Merganser *Mergus octosetaceus* breeds (Partridge 1956). It is one of only two mergansers recorded from the southern hemisphere, the other being extinct.

The Andes (Zone E) probably should be subdivided into streams and lakes, and differences probably exist in northern versus southern areas. This area contains the torrential streams which are the home of the unique and little-studied Torrent Duck *Merganetta armata*. The more southerly, larger and slower moving streams are used by the beautiful Bronze-winged Duck *Anas specularis*, both sexes of which have a bold white crescent in front of the eye. The alpine sedge marshes of the northern part of this zone harbour Andean Geese *Chloephaga melanoptera* as well as Andean Crested Ducks *Lophonetta specularioides*, Puna Teal *Anas puna* (possibly a sub-species of the Silver Teal), Cinnamon Teal, and the ubiquitous Yellow-billed Pintail. In the deeper southern lakes, Flying Steamer Ducks *Tachyeres patachonicus* also occur.

The marine zone (Zone F in Figure 1) of lower Patagonia, Tierra del Fuego and the Falkland Islands has a harsh climate in which several unusual species have evolved. These forms are unique among the waterfowl of the world in their restriction to the marine environment and include the Kelp Goose *Chloephaga hybrida*, and the huge, boat-like Flightless Steamer Ducks *Tachyeres pteneres*. Other nesting ducks include migratory species like Chiloe Wigeon, Silver Teal and Yellow-billed Pintails and other dabbling ducks.

There are additional lakes and reservoirs along the foothills of the Andes (Zone G) which with the slow moving streams are utilized by sheldgeese, Crested Ducks, Chiloe Wigeon, Yellow-billed Pintails and a larger, taxonomically confusing Ruddy Duck *Oxyura sp.*

#### Hunter harvest

By northern hemisphere standards, waterfowl hunting is not popular but is favoured mainly by the Anglo-Argentines and American businessmen. However, according to residents, interest is gaining as the standard of living increases, and there is evidence of increasing interest in all outdoor activities. Undoubtedly, waterfowl

hunting will increase in popularity as has hunting of the quail-like tinamous.

Because of the lack of pressure for shooting sites, hunting methods are simple. Pass-shooting is common but marsh hunting without decoys produces excellent bags. Roadside shooting of sitting-ducks is still more common than it should be.

There are 22 provinces, and each apparently is able to set seasons on all game species without Federal influence. Some provinces consider ducks more of a nuisance than game but others have specific shooting seasons and bag limits. During 1964-65, the Province of Buenos Aires had a three month season from 1st May until 31st July with bag limits of 20 ducks per day. This limit probably is reasonable with present hunter activity but the timing of the season may need evaluation. Regulations on tinamous seem to have a strong influence on duck hunting: seasons in the Province of Buenos Aires were set concurrently when the timing of the reproductive periods differed.

Species composition of the kill was assessed by bag checks in northeastern Buenos Aires Province, southern Santa Fe Province and in the seasonally flooded marsh areas of north-central Province of Santiago del Estero (Table I). Rosy-bills and Yellow-billed Pintails were preferred species everywhere and Yellow-billed Pintails were the number one species observed and shot in all areas checked.

**Table I. Anatids examined in hunters' bags, 4th March—23rd July 1965 in eastern Buenos Aires and south-eastern Santa Fe Provinces (Zone A).**

	No.	%
Yellow-billed (Brown) Pintail	122	46
Yellow-billed Teal	27	10
Red Shoveler	23	8
Rosybill	16	6
Black-headed Duck	16	6
Chiloe Wigeon	13	5
Versicolor Teal	12	4
Cinnamon Teal	12	4
Bahama Pintail	12	4
Coscoroba Swan	6	2
Fulvous Whistling Duck	2	2
Argentine Ruddy Duck	2	2
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#### Some management problems

##### Depredations

Crop damage is characteristic of all areas of the world where ducks, water and crops come together. The rice-growing

areas of the Paraná River Basin are no exception and ducks are on the outlawed list. Wintering ducks from Zone A appear to be the chief nuisance but probably some ducks reared in the flooded rice fields also are involved. Yellow-billed Pintails, Rosy-bills and Fulvous Whistling Ducks were most mentioned. Hunters are hired to shoot ducks in the fields and one rice grower reported that aerial applications of pesticides have been used on blackbirds and ducks. This same grower suggested that poor farming practices were responsible for the puddles which attracted ducks. Apparently, no other diversionary tactics have been tried and ducks remain generally unpopular in rice areas.

Competition for grazing areas by cattle and sheldgeese is a major conflict in southern Buenos Aires Province. Cropland is not common in the area but some damage to forage crops is reported. Methods of control are mainly scaring with aircraft, a system in use for 20 years or more and considered satisfactory because of the great fear these birds have for aircraft. Apparently, sheldgeese can be driven many miles and some pilots even try to drive them out to sea in an effort to drown them. All sorts of control measures have been suggested, including shooting females on the breeding areas, but the farmers' co-operatives seem content to pay pilots to drive them to some less important field.

#### *Habitat Loss*

Although waterfowl presently are an abundant and little-used resource, habitat destruction of various types is moving at such a rate that the resource is being endangered before public sentiment reaches a level of concern and action. This already has happened with larger land mammals. Much loss of habitat already has occurred. Huge agricultural drainage ditches remove excessive rain water from the rich tule marshes of eastern Buenos Aires Province. This apparently has reduced both the size and permanence of some wetlands. Some of the canals have control structures which allow tidal action to influence marsh levels to a degree where flooding of nests is possible. Apparently these marshes remain essentially fresh water, however.

Grazing is sufficiently severe in many areas adjacent to marshes that production of dabblers must be seriously affected. Fencing of marsh areas is rare and some destruction of emergent vegetation occurs because of cattle trampling during dry

periods. Some of these key production areas need to be set aside now for preservation of nesting-habitat. These can be fenced to allow cattle access to water without destroying all cover adjacent to the marsh, and hunting may not be detrimental if limited to the non-breeding season.

One of the most successful dabbling ducks in the tule marsh zone (A) is the Yellow-billed or 'tree' Teal, a close relative of the American Green-winged Teal *Anas crecca carolinensis*. Its success probably is due to the fact that it has adapted to using old nests of Monk Parakeets *Myopsitta monarcha* which are 30-60 feet up in *eucalyptus* trees planted near most estancias. These Teal are known to nest on the ground but it is rare in Zone A. Although tree nest sites would seem safe and permanent, there is presently a major campaign to eliminate the parakeets because of crop damage and because of their possible role as vectors of psittacosis. The loss of these nest sites would place these Teal back in competition with cattle—a condition which at present would provide few ground nesting-sites. However, I feel sure that artificial nesting boxes would be used if parrot nests are ever eliminated; we need to learn this now to plan for the future.

#### *Lack of biological data*

Comparatively speaking, little is known about the nesting habits, productivity or movements of even the most common ducks. The banding programme of Dr. C. Olrog (1962) of the Lillio Institute is a promising endeavour but this and similar efforts must be initiated with stronger financial backing.

There is considerable variability in timing of nesting periods because of the lack of importance of seasonal changes and the great importance of water availability (Weller 1968a). This produces serious problems in the timing of the harvest seasons. Although harvesting of a few breeding birds may not be serious at this time, there is a need for better data. Moreover, in the northern regions, water availability induces both breeding by ducks and hunting. Because of annual variation in any given area, some index to breeding of subtropical birds is badly needed so that seasons may be set quickly and effectively. Harvest seasons, where they occur, now are set by provinces but I do not know the basis for the timing. Whether Federal regulations would provide a more sound basis for setting sea-

sons according to biological zones needs to be considered.

#### A needed stimulus

There is serious need now for an active national—not necessarily governmental—research and management organization. Some of the better work being done is by the national agricultural organization, the National Institute of Agricultural Technology (I.N.T.A.) but this seems to vary with interested staff. Several amateur ornithologists have contributed greatly toward a knowledge of distribution, nest sites and general habits of waterfowl but much still is to be done. I learned of no provincial governments which are sponsoring management - orientated research projects on waterfowl.

Because of sensitivity by provincial governments about Federal control of activities, it is possible that a private organization financed by contributions from interested businesses and sportmen would be best. Financing by any national license seems unlikely, and provincial licenses have not been well enforced. An

independent organization could encourage management-oriented research by local as well as foreign workers. In addition, this organization could stimulate and co-ordinate programmes of the provincial federal governments, and develop licensing and enforcement systems which eventually could finance a research, management and conservation scheme. Such a group might also co-ordinate the activities of ornithological workers as well, because there appears to be some unnecessary friction between the 'birdwatchers' and hunters.

One other problem this organization could tackle is the issue of international management agreements. At present, there is little interest in problems of wildlife movements across national borders in South America. Waterfowl movements do occur between Uruguay, Brazil and Argentina (Olrog 1962) and presumably between Chile and Argentina. Although it does not seem a major problem, the development of co-operative programmes of these nations will lead to further study and improved attitudes towards all migratory species.

#### Summary

Waterfowl habitat in Argentina is reviewed, and the main waterfowl species listed. Management problems such as hunters, habitat loss and the lack of good data are discussed. An independent organisation is needed to stimulate and coordinate research, management and conservation.

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