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Ducks, Geese, and Swans of the World by Paul  
A. Johnsgard

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## Ducks, Geese, and Swans of the World: Tribe Dendrocygnini (Whistling or Tree Ducks)

Paul A. Johnsgard

University of Nebraska-Lincoln, pajohnsgard@gmail.com

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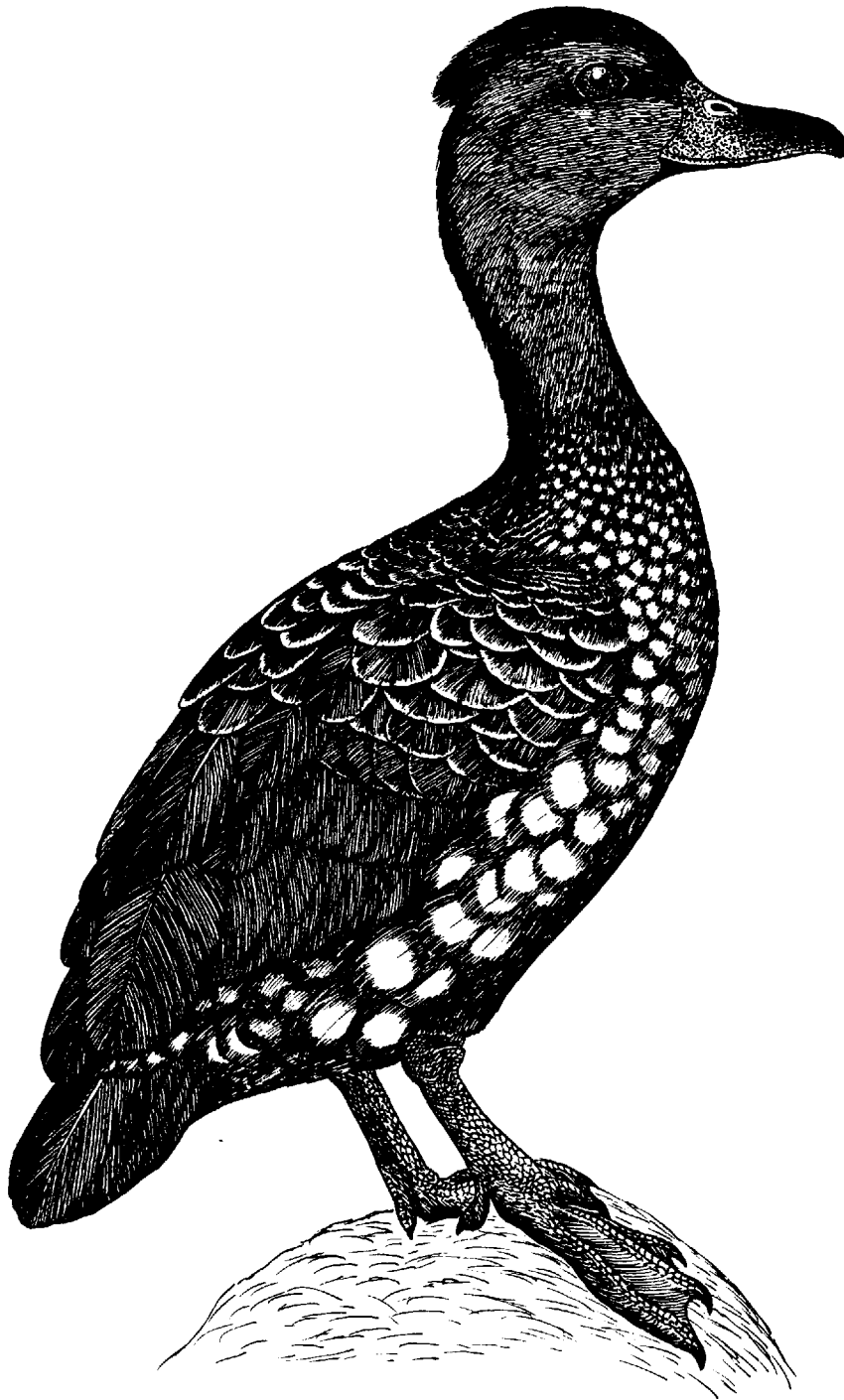
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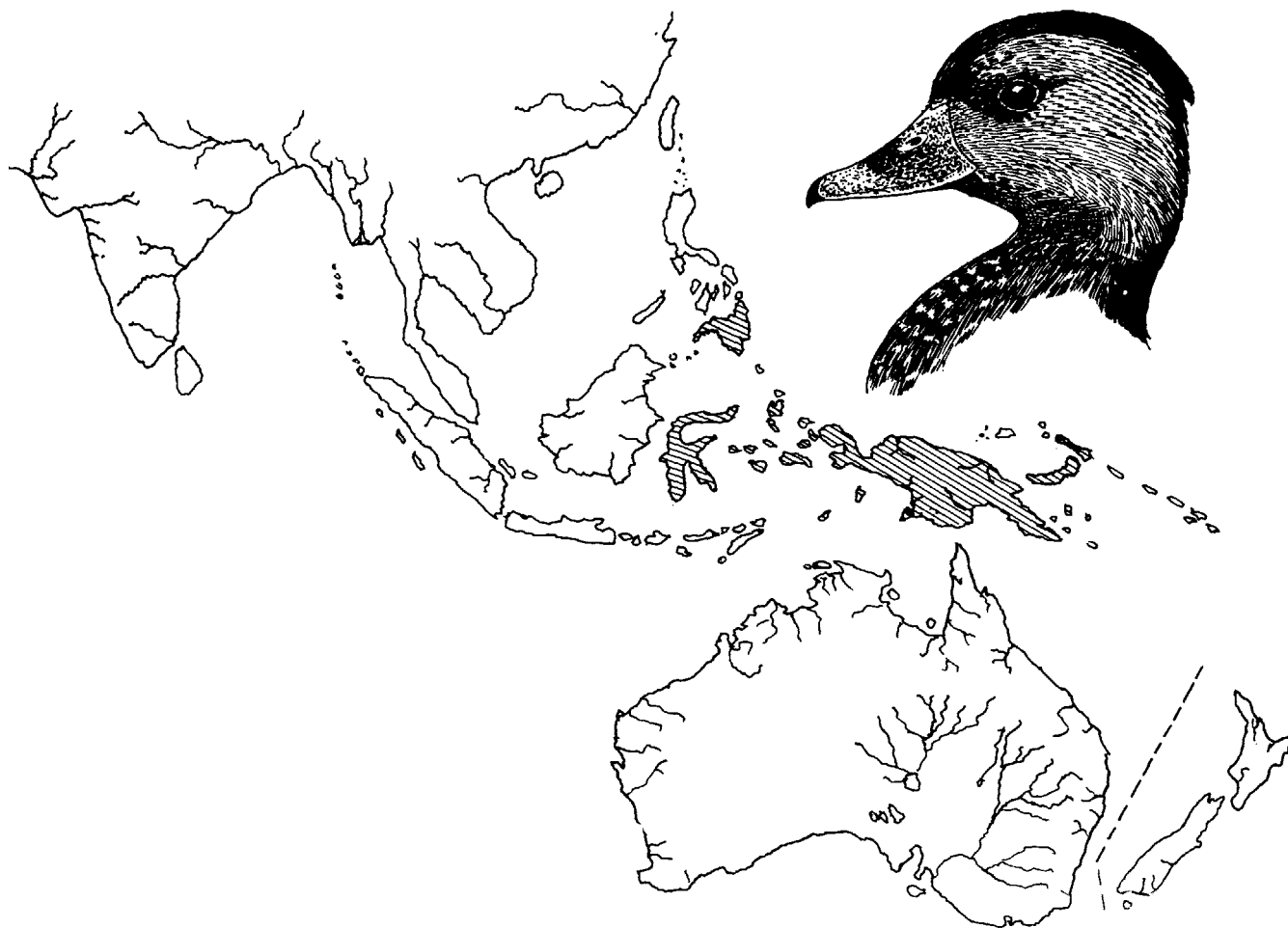
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*Tribe Dendrocygnini*  
(Whistling or Tree Ducks)





MAP 2. Residential or breeding distribution of the spotted whistling duck.

*Drawing on preceding page: Spotted Whistling Duck*

# Spotted Whistling Duck

*Dendrocygna guttata* Schlegel 1866

**Other vernacular names.** Spotted tree duck; Tüpfelpfeifgans (German); dendrocygne tacheté (French); pato silbador moteado (Spanish).

**Subspecies and range.** No subspecies recognized. Resident on Basilan, Mindanao (Philippines), Celebes, Buru, Ceram, Amboina, Tanimbar, Aru, and Kei islands, and in New Guinea and the Bismarck Archipelago (Delacour, 1954–64). See map 2.

**Measurements and weights.** Folded wing: adults of both sexes 212–23 mm. Culmen: adults of both sexes 41–46 mm. Weights: adults av. about 800 g (Lack, 1968). Eggs: av. 52 x 38 mm, white, 49 g.

**Identification and field marks.** Length 17–19" (43–50 cm). Plate 3. This is a medium-sized whistling duck with a dark brown body, light gray face and throat, whitish belly, and fulvous flanks that have numerous rounded white spots surrounded by darker borders. The bill is reddish rather than black like that of the larger Cuban whistling duck, and the feet are tinged with red. *Females* cannot be readily distinguished from males. *Immatures* are generally duller, with flank feathers that are white, broadly edged with black, and the white spots on the sides drawn out into irregular streaks. There are no seasonal variations in plumage.

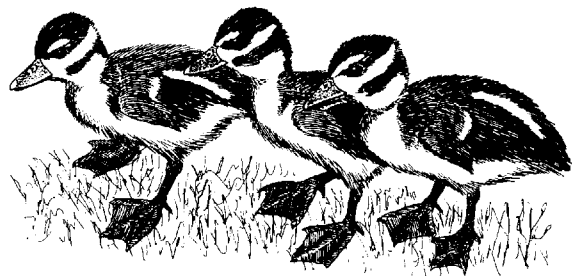
*In the field*, this species is likely to be confused only with the wandering whistling duck, which has an extensively overlapping range with this duck and often associates with it. The spotted whistling duck's darker body color and absence of tawny markings on the upper flanks will serve to distinguish it. The outermost primaries are deeply indented and produce a whirring sound in flight. It is one of the most silent of the whistling ducks, but some whistling calls have been reported, including a *whew'-ow* and a *whew'-whew* (Johnsgard, 1965a).

## NATURAL HISTORY

**Habitat and foods.** Little is known of this species in the wild, but in New Guinea it is said to inhabit marshes, lowlands, and lakes, with grassy waters its favorite habitat. It is said to feed on the seeds of various aquatic plants.

**Social behavior.** This duck is reportedly gregarious in the wild, with flock sizes ranging from a few up to several hundred birds. The birds regularly roost in dead trees near water at night, sometimes in flocks of hundreds. They often associate with wandering whistling ducks in New Guinea (Rand & Gilliard, 1967).

**Reproductive biology.** The nesting season in New Guinea is evidently long, as broods have been reported in March, a female with a formed egg has been collected in April, and nesting has also been reported in September. Although the breeding season is evidently prolonged, it is perhaps most likely to occur near the start of the wet season, during the austral spring that begins in September. In captivity the species has been bred only rarely, initially at the Wildfowl Trust. In 1959 a female spotted whistling duck laid 11 eggs in a wooden kennel (in the wild the species has been reported to nest in tree hollows), and the clutch was left for the parents to incubate. It is believed that, as in other species of whistling ducks, both sexes normally incubate. After a total of 31 days of incubation, the last 10 of which were completed in an electric incubator, 11 young hatched. This period is slightly longer than the 28–30-day incubation periods reported for other whistling ducks, and may have resulted from chilling between the time the parents left the nest on the 21st day and the onset of incubation in the electric incubator. The young were reared by a Cuban whistling duck foster mother after a few days of attempted hand-rearing, and a total of 7 ducklings were raised. Feathering of the ducklings began at 27 days and was completed in seven weeks (Johnstone, 1960).



**Status.** In spite of a relatively restricted range, the spotted whistling duck's status is apparently fairly secure. Rand and Gilliard (1967) reported it to be the most common and widespread duck in New Guinea, where, however, it is limited to lowland habitats.

**Relationships.** Although there are some superficial similarities in the adult plumage patterns of the spotted and Cuban whistling ducks, evidence from the patterning of the downy young and certain other similarities suggest that the nearest relative of this species is the plumed whistling duck (Johnsgard, 1965a).

**Suggested readings.** Delacour, 1954-64.

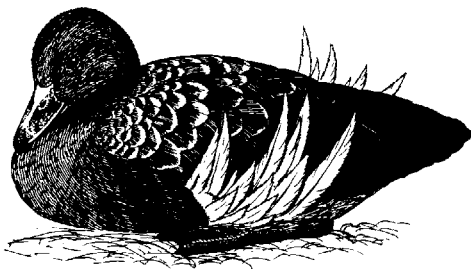
## Plumed Whistling Duck

*Dendrocygna eytoni* (Eyton) 1838

**Other vernacular names.** Eyton whistling duck, plumed tree duck; grass whistle duck (Australia); Tüpfelpfeifgans (German); dendrocygne d'Eyton (French); pato silbador adornada (Spanish).

**Subspecies and range.** No subspecies recognized. Resident in Australia from New South Wales northward and westward to Cape York and the Fitzroy River, and in western Australia. See map 3.

**Measurements and weights.** (From Frith, 1967.) Folded wing: males, 222-42 mm; females, 215-45 mm. Culmen: males, 37-48 mm; females, 37-49 mm. Weight: males, 600-930 g (av. 788 g); females, 580-1,400 g (av. 792 g). Eggs: av. 48 x 37 mm, white, 40 g.

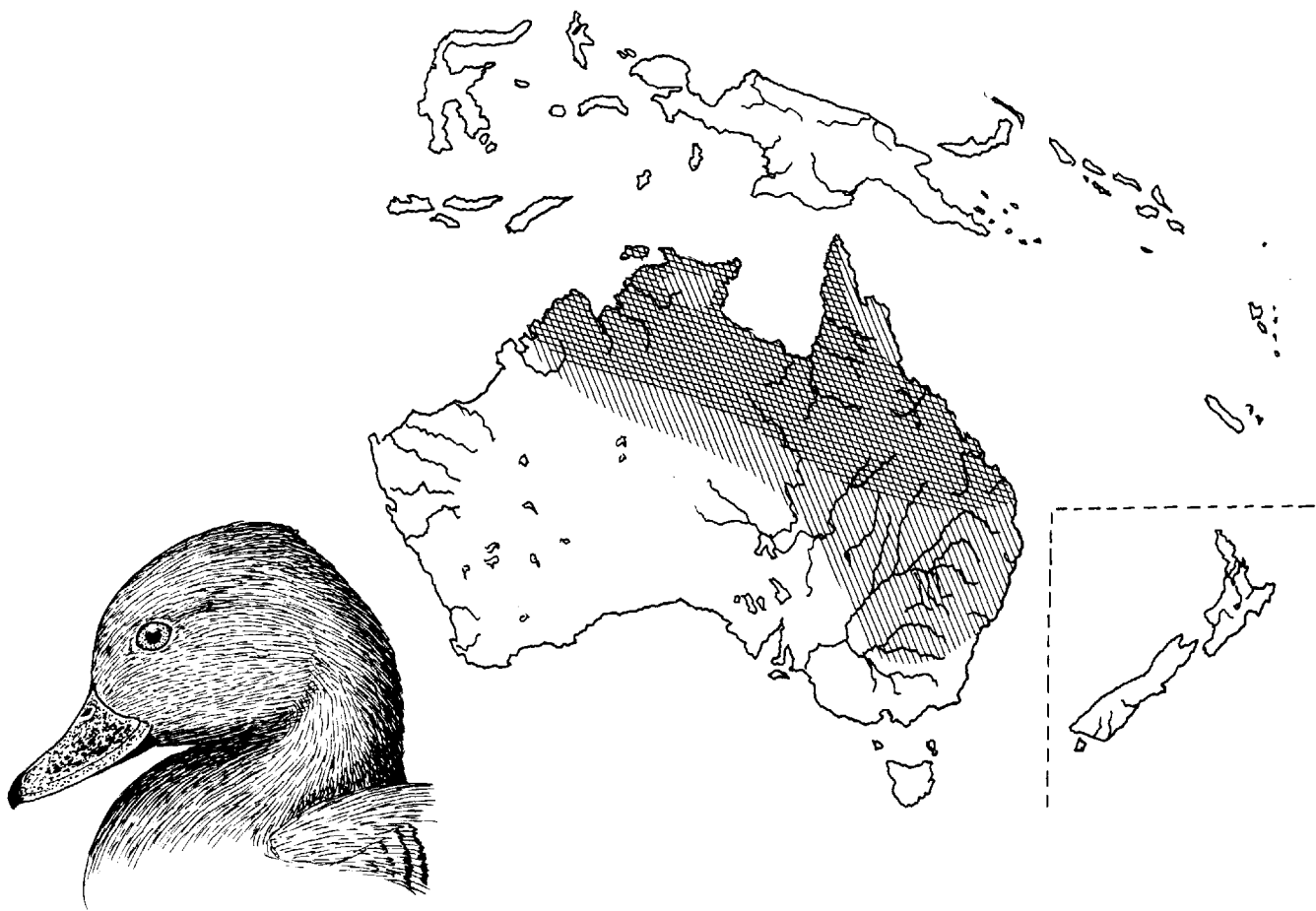


**Identification and field marks.** Length 16-18" (40-45 cm). Plate 4. This medium-sized whistling duck is generally light brown above, with yellow margins on the feathers, giving the bird a pale appearance, and with the abdomen, breast, foreneck, and throat pale brown to buff. The sides are chestnut brown, with vertical black barring, and the upper flank feathers are buffy yellow and greatly elongated, with black margins. The legs, feet, and bill are pink, the bill variably mottled with black. The iris is yellow rather than brown like that of other whistling ducks. *Females* cannot be outwardly distinguished from males, and *immatures* resemble adults but are paler and have narrower and less distinct barring on the sides, and their elongated flank plumes have broader blackish margins.

*In the field*, plumed whistling ducks can be recognized while standing or swimming in the water by their pale yellowish color and conspicuous flank plumes, which extend upward on each side to the top of the back or beyond. Both sexes utter shrill whistling notes, which vary from an extended twittering sound to a loud *wa-chew'* call. A whirring noise is also produced by the wings when in flight.

### NATURAL HISTORY

**Habitat and foods.** This species of whistling duck is closely associated with tropical grasslands, where it forages on lagoon edges and in meadows and plains, but not in deep water. In this respect it differs considerably from the wandering whistling duck, with whose range its range extensively overlaps. It is closer in its habitat preferences to the Australian wood duck, which occurs on more temperate grasslands. Its relative independence from water also allows the bird to move well out into the arid plains, where only small pools may be found. The species is relatively nocturnal in its foraging behavior, spending the day in large roosting flocks near shorelines, and flying out in late afternoon or evening to foraging grounds that may be nearly 20 miles away. Attractive foraging areas are visited nightly until the food supply is exhausted, when the birds move to a new area. Foods consumed in the Northern Territory are almost entirely vegetation, during the wet season consisting of such grasses as wild millet (*Echinochloa*), couch (*Cynodon*), *Paspalum*, and some wild rice (*Oryza*). During the dry season the birds concentrate on foods available at the edges of marshes



MAP 3. Distribution of the plumed whistling duck, showing primary (cross-hatched) and peripheral (hatched) breeding ranges.

and lagoons, such as spike rushes (*Eleocharis*) and sedges, according to Frith (1967). A study by H. J. Lavery in Queensland yielded similar results, with grasses being the most important food plant near the coast throughout the year, while sedges (especially *Fimbristylis*) were more important in inland locations, and particularly during the dry season.

**Social behavior.** Frith (1967) reports that although this species may sometimes be found in small groups, it is most often in very large flocks. As in all whistling ducks, pair bonds are strong and presumably permanent. The flocks thus consist mostly of mated pairs, and there is a good deal of aggressive behavior, especially at the start of the wet season. At that time display and associated pair-forming behavior is more frequent, and within a few weeks the flocks begin to disperse into shallow-water areas for breeding. In one study of banded birds it was found that dispersal from a dry-season concentration near Townsville

was multidirectional, with the birds moving both along the coast and inland, in a few cases to as far as the Murray River, some 1,200 miles away. Frith stated that the plumed whistling duck is a good deal more nomadic in its movements than the wandering whistling duck, even though the two species are often associated and may even breed in the same lagoons.

**Reproductive biology.** Plumed whistling ducks begin their breeding at the onset of the wet season; thus in Queensland and the Northern Territory nests are initiated throughout the period from February to April, but the greatest nesting activity takes place in February and March. The species may breed earlier, from August to October, in southern Australia. The nests are built on the ground, usually under grass or bush cover, and with a simple lining of vegetation, but no down. Clutch sizes reported in the wild have ranged from 8 to 14 eggs, and Johnstone (1970) reports a clutch of 10 to 12 eggs in captivity. The in-

cubation period has been reported as 28 days by Lack (1968) and Frith (1967), and as 30 days by Johnstone (1970). After hatching, the young are led across the grasslands to water, which may be a mile or two away according to Frith. The fledging period is still unknown, but after the adult's postbreeding molt and the completion of fledging by the young, the birds begin to concentrate and move into dry-season habitats.

**Status.** Although no census data are available, the plumed whistling duck is obviously still an abundant species in Australia, at least in the northern portions. It is legally shot in the Northern Territory, but is not an important game bird, and few are killed. Frith suggests that the species has possibly been benefited by settlement and increased grazing, which provides an abundance of short grass cover and water tanks. There seems to be no reason for concern about its numbers.

**Relationships.** This species appears to be generally intermediate in its evolutionary affinities between the extreme represented by the spotted whistling duck and the central group represented by the wandering, fulvous, and lesser whistling ducks (Johnsgard, 1965a), with somewhat closer affinities to the latter than to the former.

**Suggested readings.** Frith, 1967.

## Fulvous Whistling Duck

*Dendrocygna bicolor* (Vieillot) 1816

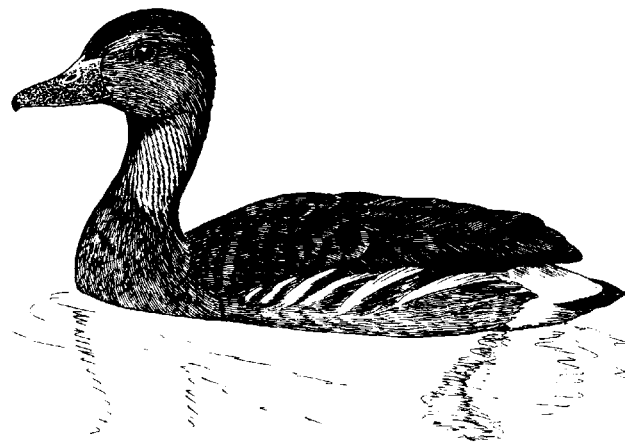
**Other vernacular names.** Fulvous tree duck, Sichelpfeifgans (German), *dendrocygne à bec fauve* (French), pato silbon and pichici colorado (Spanish).

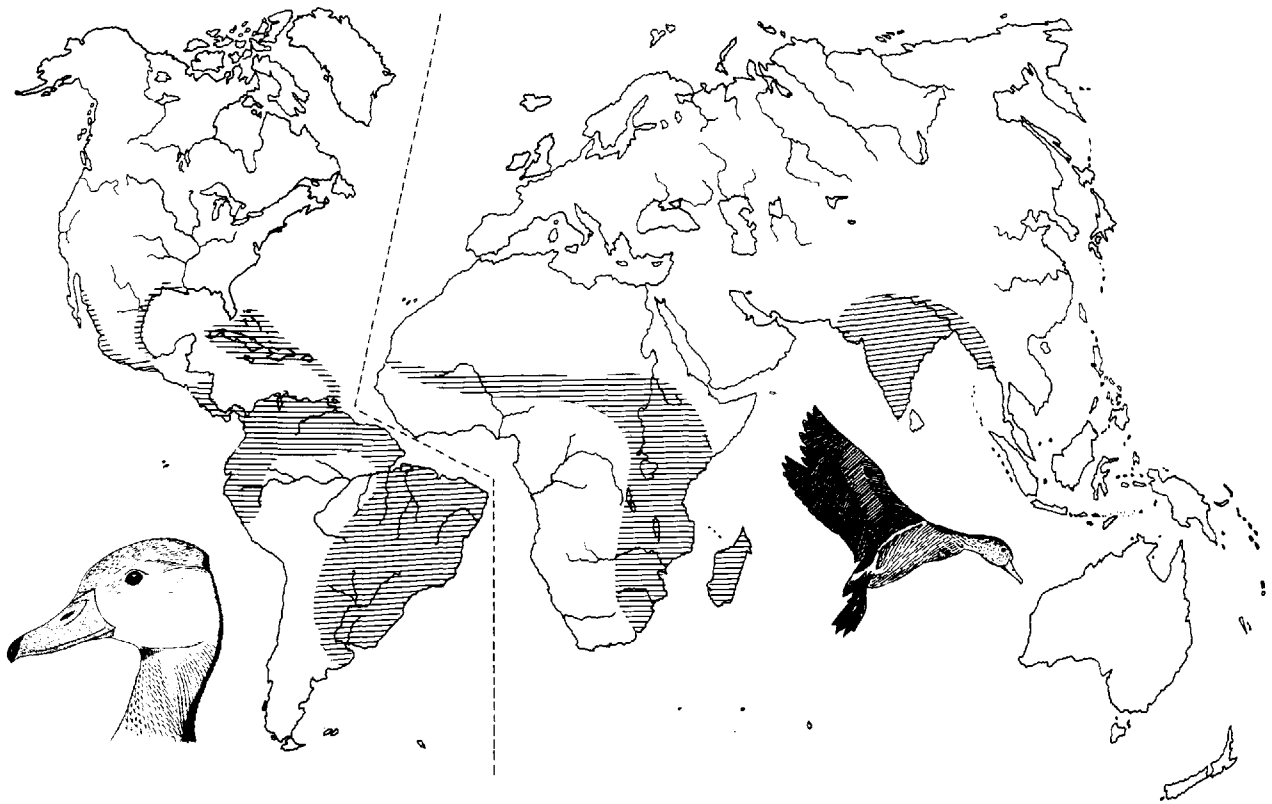
**Subspecies and range.** No subspecies recognized. Currently breeds in southern Florida and southern Texas and Louisiana southward to Oaxaca and Tabasco, recently reaching Cuba and the Greater Antilles. In tropical South America it breeds from Colombia to the Guianas, and from Brazil southwest to Tucumán and southeast to Buenos Aires province. Breeds also in Africa south of the Sahara from Senegal and Ethiopia to Lake Ngami and Natal. Also resident on Madagascar, in India, and in Burma. See map 4.

**Measurements and weights.** Folded wing: males, 214–25 mm; females, 203–11 mm. Culmen: males, 45–48 mm; females, 44–47 mm. Weights: males, 621–755 g (av. 675 g); females, 631–739 g (av. 690 g) (J. Lynch, pers. comm.). Eggs: av. 53 x 38 mm, white, 50 g.

**Identification and field marks.** Length 18–21" (45–53 cm). This is a medium-sized whistling duck with a dark brown back, feathers which are tipped with tawny coloration, the face, breast, abdomen, and flanks all cinnamon, with no spotting or streaking except on the neck, which is buffy white streaked with dark brown. The upper flank feathers are elongated and creamy white, edged on the outer vane with blackish brown. The bill is blackish, and the feet and legs are bluish gray. *Females* differ from the males only in being slightly duller and smaller, and *juveniles* cannot easily be distinguished from adults, but the edges of their back feathers may average slightly darker. The upper wing coverts of young birds have little chestnut color, and their upper tail coverts are narrowly margined with brown.

*In the field*, fulvous whistling ducks might perhaps most readily be confused with wandering whistling ducks, but the ranges of these species do not overlap. In India and southeast Asia the fulvous and lesser whistling ducks occur together, and the smaller size and more grayish back of the latter species will serve to separate them. In flight, fulvous whistling ducks have the characteristic slow wingbeat and dangling-legs appearance typical of all members of this group, and their loud, whistled *wa-chew'* notes are commonly uttered in flight. In





MAP 4. Distribution of the fulvous whistling duck.

Africa and South America the species often associates with the white-faced whistling duck, and in tropical America it may also be seen with the black-bellied whistling duck; the white markings on the face of the former and on the upper flanks of the latter will serve to separate them, as will the melodic and multisyllabic calls of these species.

#### NATURAL HISTORY

**Habitat and foods.** Clancey (1967) describes the habitat of this species in southern Africa as including fresh-water lakes, vleis, marshes, and swamps, including papyrus swamps, and the open portions of slowly flowing streams. Favored waters are those with a rich shoreline vegetation, banks of reeds, and floating plants such as water lilies. In the United States, nesting has occurred on fresh-water marshes where bulrushes or cattails grow interruptedly, and especially in weed-infested rice fields. The relationship between rice and the distribution of this species is quite clear in both

Texas and Louisiana. Various studies in the United States have indicated that grass seeds of such types as wild millet (*Echinochloa*) and wild timothy (*Phleum*) are important foods, as are the seeds of broad-leaved herbs such as smartweeds (*Polygonum*) and sweet clover (*Melilotus*) (Johnsgard, 1975). Rice is apparently a major food in India, but the birds there have also been reported to eat various aquatic seeds, bulbs, leaf shoots, buds, grass, and rushes. There are few records of animal foods in the diet. The skull and bill structures of this species suggest that it feeds primarily by swimming and diving, as does the wandering whistling duck, whereas the black-bellied and plumed whistling ducks are structurally adapted for grazing (Rylander & Bolen, 1974). The birds dive surprisingly well, often remaining under water for up to 15 seconds.

**Social behavior.** Like all whistling ducks, this species is highly social, but it usually is not to be found in extremely large flocks. Flocks consist of mated pairs and families, and early studies in California indicated that social nesting was com-



mon there, with as many as fifty nests in an area about half a mile long by two hundred yards wide. More recent studies in Louisiana indicate much sparser nesting concentrations. During the non-breeding season these birds often associate with other whistling duck species and leave their roosting areas at dusk to feed. In many areas the nesting season is greatly extended, so that no single period of courtship appears evident. Courtship in this species, as in other whistling ducks, is prolonged and inconspicuous, and the only obvious aspect of pair formation is actual copulatory behavior. This occurs in water of swimming depth, with the birds facing each other and performing mutual head-dipping movements very much like normal bathing movements. The male then suddenly mounts the female, and after a brief period slips off to one side. The two birds then quickly rise in the water while treading water vigorously, and call while lifting the folded wing on the side opposite the partner. After treading, they bathe and preen extensively, often on shore (Johnsgard, 1965a). In the cooler parts of its range, as in the United States, movements out of the breeding area occur during winter, but most migrations are relatively short. In East Africa the birds also move out of the lakes in June, to return again in August, presumably after breeding.

**Reproductive biology.** The timing of breeding in this species is remarkably variable throughout its large range. In the United States it is a summer breeder, as it is in Argentina, where it nests between November and February. In India it nests from June to October, but mainly during July and August, while the nesting dates from Africa span nearly all of the months of the year. In southern Africa most of the nesting records are for the period between February and August. Birds in breeding condition have been reported in Senegal in January, and breeding on Madagascar has been reported for November, December, and April.

Although in most parts of its range, as in the United States and Argentina, nesting has been reported to occur in reed beds, rice fields, or beds of flag, nests have also been reported in tree crotches or natural hollows in a few areas, especially in India. Such tree locations are usually on small islands or overhanging water, and it seems much more characteristic of fulvous whistling ducks to build their nests in mats of aquatic vegetation that are trodden down to form a platform

above the water. Such nests are also usually concealed from above by overhanging grasses, and are lacking in down. The normal clutch size is from 8 to 16 eggs, averaging about 10, but multiple clutches, or dump nesting, are not infrequent, resulting in clutches of more than 20 eggs. Incubation is performed by both sexes, perhaps predominantly by the male, and the reported incubation periods range from 24 (Meanley & Meanley, 1959) or 26 (Johnstone, 1970) to 28 (Lack, 1968) days. Longer periods, as reported by Delacour (1954-64) are apparently not characteristic. The ducklings are guarded by both parents, and a fledging period of 63 days has been reported (Meanley & Meanley, 1959). In spite of a long nesting season in some areas, the birds are evidently single-brooded (Clancey, 1967).

**Status.** This species is still relatively abundant over most of its original range, which has retracted in some areas (California and Trinidad), but expanded in others (Cuba and the Greater Antilles). The species is hunted to some extent and is easily killed, but it is not a major sporting species anywhere. In some areas, such as Louisiana, it has been seriously affected by the coating of rice seeds with pesticides, but in general it does not appear to have suffered measurable inroads from man's activities.

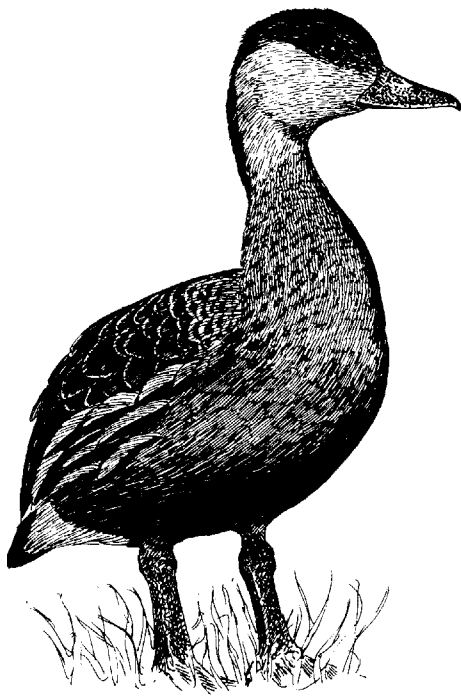
**Relationships.** The fulvous whistling duck might well be regarded as the core of the genus *Dendrocygna*, with its nearest relatives being the wandering and lesser whistling ducks (Johnsgard, 1965a).

**Suggested readings.** Clancey, 1967; Johnsgard, 1975; McCartney, 1963.

## Wandering Whistling Duck

*Dendrocygna arcuata* (Horsfield) 1837

**Other vernacular names.** Wandering tree duck, whistling teal, black-spotted tree duck; water whistle-duck (Australia); Wanderpfeifgans (German); dendrocygne à lunules (French); pato silbador errante (Spanish).



**Subspecies and ranges.** (See map 5.)

- D. a. arcuata*: East Indian wandering whistling duck. Resident in the Philippines, Borneo, Java, Bali, Sumba, Celebes, Timor, Roti.
- D. a. australis*: Australian wandering whistling duck. Resident in southern New Guinea and northern Australia.
- D. a. pygmaea*: Lesser wandering whistling duck. Resident on New Britain, and possibly also the Fiji Islands.

**Measurements and weights.** Folded wing: both sexes 173–222 mm. Culmen: both sexes 40–48 mm. Weights (for *australis*): males, 866–948 g (av. 741 g); females, 453–986 g (av. 732 g) (Frith, 1967). Eggs: av. 51 x 35 mm, white, 40 g.

**Identification and field marks.** Length 16–18" (40–45 cm). This medium sized whistling duck has a dark brown mantle, with lighter brown edging on the back feathers, chestnut flanks and abdomen, conspicuous buffy yellow upper flank feathers with black and brown edges, and a brownish breast that is spotted with black markings. Unlike that of the fulvous whistling duck, its head is nearly black above the eyes, the neck streaking is lacking, and the bill is blackish rather than bluish gray. *Females*

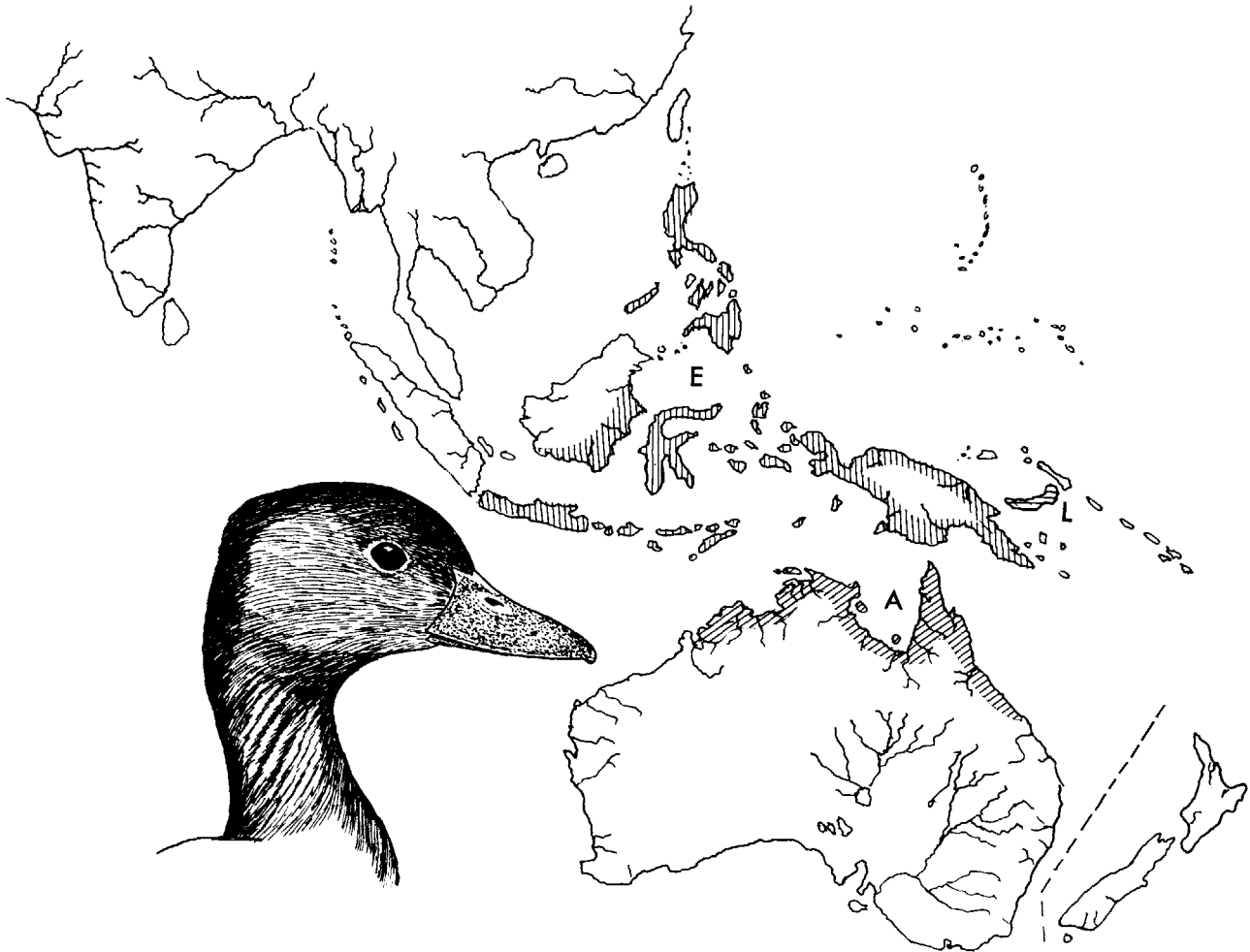
are virtually identical in appearance to males. *Juveniles* lack the broad pale edges on their back feathers, they are less reddish on the underparts, and there is little chestnut coloration on their lesser wing coverts and none on their median coverts, as is typical of adults.

*In the field*, wandering whistling ducks might most likely be confused with lesser whistling ducks; their range otherwise overlaps only with that of the spotted and plumed whistling ducks. Besides being larger than lesser whistling ducks, they have more conspicuous buff markings on the upper flanks, have whitish rather than chestnut upper tail coverts, and are darker on the back and above the eyes. The most frequently heard call is a rapid, descending whistle of five to seven notes, which is often uttered in flight, and the wings also produce a distinctive whistling noise.

NATURAL HISTORY

**Habitat and foods.** Frith (1967) reports that in Australia the favored habitats of this species consist of permanent water areas where aquatic foods are richest and can be obtained by diving. The birds are usually to be found in lagoons, billabongs, or flooded meadows, or sometimes on the edges of creeks and rivers. They dive into water up to ten feet deep, and also dabble along the water's edge, stripping seeds from plants within reach. Birds collected in the Northern Territory were found to have consumed primarily water lilies, including their seeds, buds, and leaves, and a variety of grasses typical of lagoons, such as *Paspalum*, rice (*Oryza*), couch (*Cynodon*), and wild millet (*Echinochloa*). Sedges were next most important, followed by a variety of other plants associated with water. Among birds collected in Queensland, grasses and various members of the gentian family were the two most important groups of food plants, followed by water lilies and sedges (Frith, 1967).

**Social behavior.** Like other members of this genus, wandering whistling ducks are highly gregarious, and their flocks consist of permanently mated pairs and families. During the nonbreeding dry season, flocks of one or two thousand birds may often be found on permanent water areas of the Northern Territory, especially in deep and permanent lagoons. Unlike the grazing-adapted plumed whis-



MAP 5. Distributions of the Australian ("A"), East Indian ("E"), and lesser ("L") wandering whistling ducks.

ting duck, this species does much foraging during the day, flocks frequently foraging as a group. As the wet season begins, these flocks break up and disperse to suitable nesting habitats provided by the filling swamps.

**Reproductive biology.** Because of the timing of breeding to coincide with the onset of the rainy season, most nesting in northern Australia occurs between December and April in Queensland, and between December and May in New Guinea (Frith, 1967). Records of breeding in the Philippines range from January to May, and there is a record of a duckling obtained in July in the Celebes. The nest is apparently always placed on the ground, either in grassy cover or under the protection of a bush. It may be placed quite close to water or some dis-

tance from it. Courtship and copulatory behavior appear to be identical with that of the fulvous whistling duck. Clutch-size information is scanty, but in general the clutch size has been reported to vary from 6 or 8 to about 15 eggs. Incubation periods have likewise been estimated at from 28 (Johnstone, 1970) to 30 (Lack, 1968) days. No doubt both sexes assist in incubation, as in other whistling ducks, and no down is present in the nest, presumably since it is never left unattended by at least one parent. Judging from ducklings that have been raised in captivity, the growth rate is fairly slow, with full feathering not occurring until the 10th week of life, and fledging at 12 to 13 weeks of age (Frith, 1967). Whether such a long prefledging period is also characteristic of wild birds remains to be determined, but ecological

pressures for rapid completion of breeding are not nearly so strong in this bird of permanent water areas as is with the more nomadic and opportunistically breeding species of Australian waterfowl.

**Status.** In Australia, wandering whistling ducks are reportedly still very abundant in tropical areas, and are not seriously affected by hunting or by agricultural practices. They are apparently also still quite abundant in the Philippine Islands. Doubtless the population in greatest jeopardy is the one that is apparently confined to New Britain Island; its status is unknown.

**Relationships.** The close anatomical and behavioral similarities of the wandering and fulvous whistling ducks, and their nonoverlapping distributions, indicate that these species are very closely related and should be considered a superspecies (Johnsgard, 1965a).

**Suggested readings.** Frith, 1967.

## Lesser Whistling Duck

*Dendrocygna javanica* (Horsfield) 1821

**Other vernacular names.** Lesser whistling teal, lesser tree duck, Indian whistling duck; Zwergpfeifgans (German); dendrocygne de l'Inde (French); pato silbador de la India (Spanish).

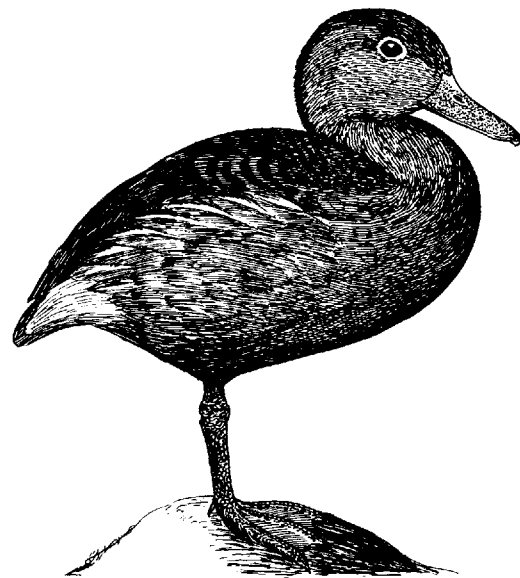
**Subspecies and range.** No subspecies recognized. Resident from Pakistan and India eastward to the coast of southern China, Formosa, the Ryukyu Islands, Ceylon, the Andaman and Nicobar islands, the Malay Peninsula, Hainan, Indochina, the western half of Borneo, Sumatra, and Java. See map 6.

**Measurements and weights.** Folded wing: both sexes 170–204 mm. Culmen: both sexes 38–42 mm. Weights: about 450–600 g (Ali & Ripley, 1968). Eggs: av. 47 x 38 mm, white, 35 g.

**Identification and field marks.** Length 15–16" (38–40 cm). Plate 5. This smallest of the whistling ducks is generally pale brown and chestnut-colored, with chestnut upper tail coverts, light rufous-cinnamon underparts that lack breast spotting, a

pale buff face with a narrow yellow eye-ring, inconspicuous whitish flank feathers, and dark gray bill, leg, and foot coloration. *Females* are not distinguishable from males, and *juveniles* are duller-colored, with the back and scapular feathers margined with dingy fulvous instead of golden rufous coloration. The underparts are also a pale dull fulvous brown.

*In the field*, the small body size and chestnut rather than whitish upper tail coverts will serve to separate this species from the fulvous and wandering whistling ducks, with which it often associates. In flight a whistled *whi-wheee* (or "sea-sick") is uttered almost constantly, and the modified inner vane of the bird's outermost primaries is adapted for producing wing noise.



NATURAL HISTORY

**Habitat and foods.** In India and Pakistan this species is said to inhabit reedy and vegetation-covered tanks and jheels in plains country, or essentially the same habitats as used by the fulvous whistling duck, with which it often associates. In Ceylon it likewise favors lotus-covered tanks and swamps, especially if they are surrounded by jungle, but it avoids coastal lagoons and brackish estuaries. The presence of trees in or around the water is apparently important for roosting; treeless



MAP 6. Residential or breeding distribution of the lesser whistling duck.

waters that otherwise seem suitable are evidently avoided. Habitats favored are much the same as those used by cotton pygmy geese, and the species often associate. Wherever it is available, rice is the favored food, and the birds make dusk flights into rice paddies, as do fulvous whistling ducks. Young rice shoots are sometimes also grazed, as are some grasses in certain seasons. Reportedly this species eats some animal foods, most probably fresh-water snails, that makes its flesh less desirable for human consumption than that of other whistling ducks.

**Social behavior.** This species is highly social, with flock sizes that may number in the dozens but have also been reported to reach the thousands in India and Ceylon. One report in the early part of the

twentieth century estimated flocks of hundreds of thousands. No doubt all flocks consist of pairs and families, as in other whistling ducks. A good deal of local movement is performed by these flocks as dry-season changes in water supplies dictate, and in some parts of India the bird is a local migrant. The breeding season is fairly prolonged, especially in southern parts of its range, and no specific period of pair formation has been reported. As in other whistling ducks and in geese, pair formation is extremely inconspicuous and probably a very prolonged process. Again as in most whistling ducks, copulatory behavior occurs in water in swimming depth, with the two birds close together and the male performing bill-dipping movements toward the female. In the few cases observed, only the

male performed this display, while the female remained in an erect posture. The male then suddenly mounted the female and, after treading was completed, performed a vigorous step-dance, rising beside the female and raising the wing opposite her while treading water. The female performed the same display but with less pronounced wing lifting (Johnsgard, 1965a). Except for the Cuban and red-billed whistling duck, much the same behavior is characteristic of all the members of this genus.

**Reproductive biology.** In most of its range, the lesser whistling duck breeds during the rainy season. In India this activity is performed mainly during July and August but in rare instances occurs from mid-June to mid-October. Likewise in Pegu district of Lower Burma, nesting has been reported for July and August, and on the Andaman Islands during August and September. In Ceylon probably most breeding takes place during July and August, but breeding has also been reported during the drier months of December and January. On the very wet Malay Peninsula breeding is much more extended, lasting from August or September to January or February.

The nest of this species is apparently most often situated above the ground—in the natural hollow of a large tree or the fork of tree branches—the bird utilizes the old nests of kites, herons, or crows. Sometimes nests are found on the ground, among reeds and shrubs near a tank or jheel, in which case they consist of mounded herbaceous vegetation. Down is never present in the nest. Seven to 12 eggs are usually reported, rarely as many as 17, with 8 to 10 the most common number. The incubation period is probably 27 or 28 days (Lack, 1968; Johnstone, 1970), although Delacour (1954–64) has suggested it may be as long as 30 days and earlier estimates have been as short as 22 to 24 days. Both sexes are believed to incubate, and the male remains to help rear the brood. The fledging period is as yet unreported.

**Status.** This species has historically been one of the most common ducks in India and Ceylon and apparently it is still relatively common. Although it is hunted somewhat in Ceylon, it is not regarded in India as an important sporting bird because of its reportedly ill-tasting flesh and probably also its small size. Because it destroys rice, it may be locally hunted. However, there seems to be no current basis for concern about the species' status.

**Relationships.** Although the bird's behavior and plumage suggest affinities to the wandering as well as the fulvous whistling duck, details of its tracheal anatomy and its geographic distribution suggest somewhat closer affinities with the former species.

**Suggested readings.** Delacour, 1954–64.

## White-faced Whistling Duck

*Dendrocygna viduata* (Linnaeus) 1766

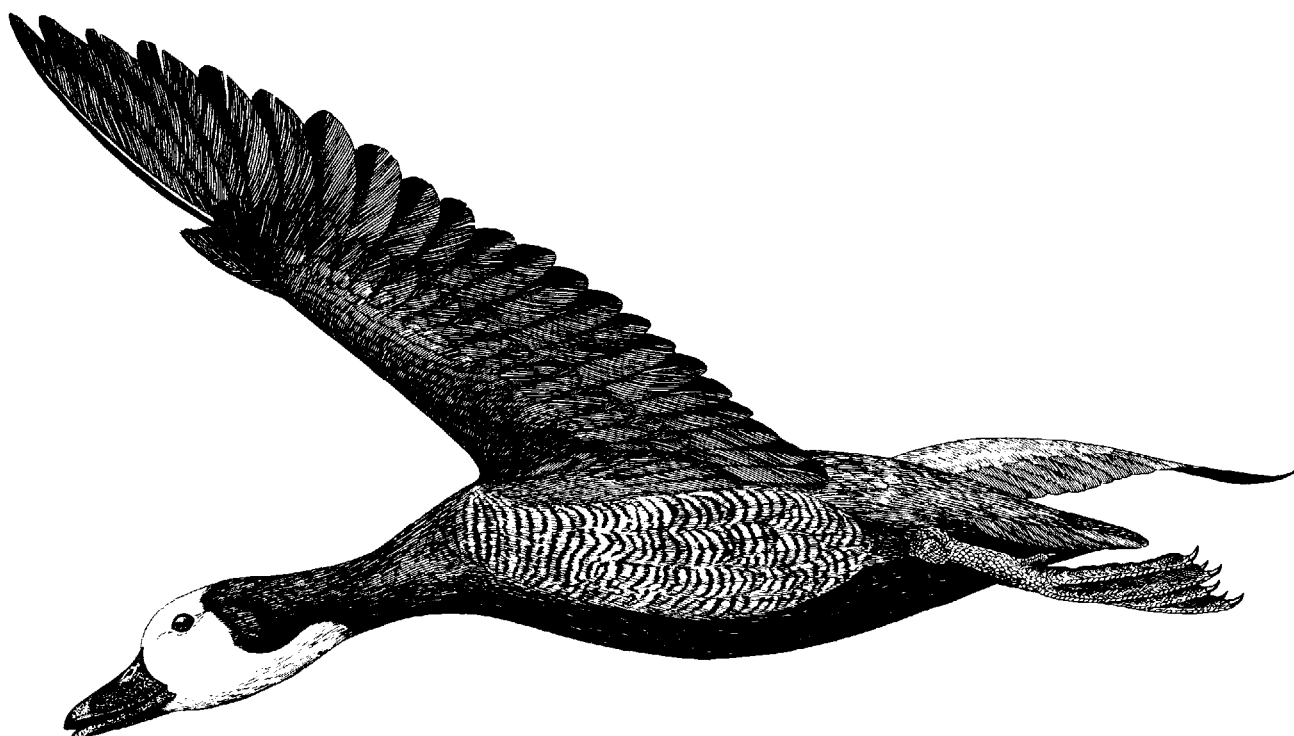
**Other vernacular names.** White-faced tree duck; Witwenpfeifgans (German); dendrocygne à face blanche (French); pato silbador cara blanca or suiriri (Spanish).

**Subspecies and range.** No subspecies recognized. Resident and local migrant in tropical South America south to the Argentine Chaco, Paraguay, and Uruguay, and in Panama and Costa Rica. Also resident in Africa south of the Sahara south to Natal, and on Madagascar and the Comoro Islands. See map 7.

**Measurements and weights.** (Measurements from Clancey, 1967.) Folded wing: both sexes 219–40 mm. Culmen: both sexes 46–53 mm. Weights: males, 637–735 g (av. 686 g); females, 502–820 g (av. 662 g). Eggs: av. 47 x 37 mm, white, 36 g.

**Identification and field marks.** Length 17–19" (43–48 cm). Plate 1. This is the only species of whistling duck that has white on the front half of its head and throat, and black behind. The breast and upper back are chestnut, while the flanks and underparts are transversely barred with black and white. The back feathers are elongated and dark brown with buff edging, producing a linear striping effect rather than crosswise barring as in other whistling ducks. The tail and tail coverts are blackish, the feet are bluish gray, and the bill is black with a lighter subterminal band. *Females* are identical in appearance to males, and *juveniles* are grayish buffy white on the face and front of the throat, while the back of the head is brownish black. The chestnut breast coloration is less rich in young birds, and also is less extensive.

*In the field*, the white face markings of this species are the best field mark. The most typical in-flight call is a three-note *wee-a-whew* (or "*su-ri-ri*," its Spanish name), while the fulvous whistling duck



has a two-note call and the black-bellied a five- to seven-note call. In flight, it does not exhibit the buff upper tail coverts of the fulvous or the white wing markings of the black-bellied duck.

#### NATURAL HISTORY

**Habitat and foods.** In South Africa, this species' habitats are diverse and consist of fresh-water lakes, vleis, dams, reservoirs, marshes, swamps, and pans on flood plains, and, locally, sewage farms. Areas with mud or sandbars for roosting are preferred. Evidently it shows no tendency to inhabit wooded areas, and is sometimes found in large open waters. However, it is also frequently found on small water areas with rich shoreline vegetation, or on lakes with wide swamp margins. In South America the species likewise occupies a wide diversity of habitats, including both forested and nonforested areas, and fresh or brackish waters. However, the birds do not perch, and relatively open-country habitats seem to be favored over forested ones, and fresh-water areas over salt or brackish ones. Their foods are likewise diverse,

and are commonly obtained by diving. They evidently include invertebrates such as aquatic insects, mollusks, and crustaceans, as well as vegetable material such as aquatic seeds and sometimes rice. In Africa the birds often wade and dabble in shallow waters on grass and aquatic plant seeds and on aquatic invertebrates (Clancey, 1967).

**Social behavior.** This species is highly social, with flock sizes often numbering in the hundreds in favored habitats. During daylight hours of the non-breeding season the birds roost on banks, spending much time preening themselves and each other; mutual preening is highly developed in this species. Foraging is done primarily at night, so that there is a good deal of nocturnal flying. Nomadic movements are prevalent in some parts of Africa, as in Zambia, and seasonally there are large numbers on large lakes such as Lake Rudolf and the lakes of southern Nyasaland (Malawi). Where the two species exist together, white-faced and fulvous whistling ducks are often found in association. Pair-forming behavior is inconspicuous and probably greatly prolonged, in conjunction with the permanent pair bonds and extended breeding season.



MAP 7. Residential or breeding distribution of the white-faced whistling duck.

Mutual preening is probably an important part of pair-forming and pair-maintaining behavior. Copulation occurs in water of swimming depth, and in three instances observed by the author it was always preceded by bill-dipping and cheek-rolling movements by the male, while the female occasionally bill-dipped. Upending in the water by both birds was seen once. In all three instances copulation was followed by a typical step-dance with wing raising by both birds.

**Reproductive biology.** The time of breeding in South America is relatively poorly known, but considerable information is available for Africa. At the southern end of its range the species breeds from October through March. In Zambia the largest number of breeding records are for January and February, but they extend from December through June. Similar breeding times are reported for the southern Congo, but as one moves north to Kenya, the Sudan, and Chad, most breeding records are for the period July through August, and Senegalese records are for September and October. In Madagascar it is reported to nest from September to November and again in January and February. The

nest site is a depression in dry ground or in reed beds over water. Few or no feathers are present in the nest. The usual clutch size is from 6 to 12 eggs, with an average of about 10. Incubation, which is performed by both sexes, requires 26 (Lack, 1968) to 28 (Johnstone, 1970) days. Both sexes tend the brood, and the ducklings are often kept hidden among water lilies and reeds (Clancey, 1967). The period to fledging has been estimated to be two months (Clark, 1976).

**Status.** The species is probably not in danger in any part of its range. It is extremely common in Africa, especially along the coast and on the larger lakes. Its broad ecological tolerances probably assure its continued abundance for the foreseeable future.

**Relationships.** In many respects, but particularly in its plumage patterns, the white-faced whistling duck appears to be relatively isolated from the other species of *Dendrocygna*. Probably its nearest, if not extremely close, relative is the black-bellied whistling duck (Johnsgard, 1965a).

**Suggested readings.** Clancey, 1967.



# Cuban Whistling Duck

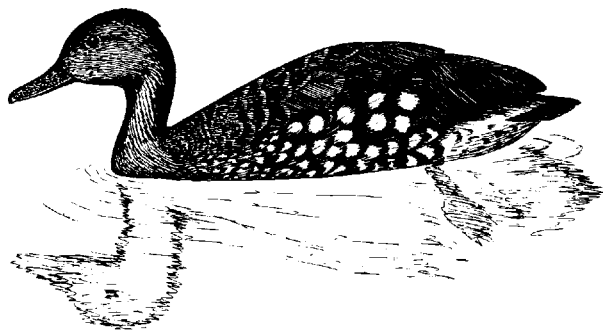
*Dendrocygna arborea* (Linnaeus) 1758

**Other vernacular names.** Black-billed whistling duck, Antillean tree duck, West Indian tree duck; Kubapfeifgans (German); dendrocygne à bec noir (French); pato silbador pico negro (Spanish).

**Subspecies and range.** No subspecies recognized. Resident in the Bahama Islands, the Greater Antilles, and the northern Lesser Antilles. See map 8.

**Measurements and weights.** Folded wing: both sexes 230–70 mm. Culmen: both sexes 45–53 mm. Weights: adult females av. 1,150 g (Lack, 1968). Eggs: av. 55 x 40 mm, white, 65 g.

**Identification and field marks.** Length 19–23" (48–58cm). This is the largest of the whistling ducks, and the only one with wing measurements in excess of 250 mm. The adults are dark umber brown, with a dark brown face and brown neck streaks that grade into a whitish foreneck and throat. The breast is a mottled brown, grading on the flanks into irregularly patterned black and white spotting and striping, the upper flank feathers tending toward stripes and the lower ones toward variably connected white spots. Spotting also occurs on the under tail coverts; the tail and upper tail coverts are blackish. The bill is black and the legs and feet are dark gray. *Females* do not differ noticeably from males, and *juveniles* are duller, with less distinctive spotting.



*In the field*, this species' restricted range makes it likely to be confused only with the fulvous and black-bellied whistling ducks. It is larger and more uniformly darker than either of those species, although its multisyllabic flight call of about five notes resembles that of the black-bellied duck. In flight, the Cuban whistling duck exhibits a pale gray upper wing area that corresponds to the white area exhibited by the black-bellied whistling duck.

## NATURAL HISTORY

**Habitat and foods.** Cuban whistling ducks are often associated with forested swamps such as mangrove swamps, where they spend much of the daylight hours. They seem to be relatively terrestrial birds, at least in captivity, and spend a good deal of time on dry land. They also perch very well, and frequently can be seen perching in palm trees. Diving for food does not appear to have been reported. Most reports indicate that their favorite food is the fruit of the royal palm (*Roystonea*), and they regularly make dusk flights from their roosting areas to stands of these trees. They have also been reported to consume rice, sorghum grain in the milk stage, grass seeds, berries, and small fruit. Few instances of feeding on animal materials have been reported (Phillips, 1922–26).

**Social behavior.** Very little specific information on social behavior is available. The birds are evidently found in flocks throughout the year, and doubtless pair bonds are permanent in this species. Owing to the species' insular distribution, movements must be of a local nature only. Pair-forming behavior has not been specifically noted, and the copulatory behavior of this species differs from that of all other whistling ducks with the exception of the black-bellied in that it occurs while the birds are standing on ground or at the edge of water. Both sexes repeated making drinking movements, after which treading occurs. Afterward, both sexes call loudly with bills upraised and feathers ruffled, and the male parades rather stiffly around the female (Johnsgard, 1965a).

**Reproductive biology.** The period of breeding of this species is not yet well documented. Delacour (1954–64) indicates that in general the birds breed from June to October, and possibly later, while in Puerto Rico breeding reportedly occurs from October to December. Nesting sites are evidently very

variable. They have been reported in palm trees, in tree branches or tree cavities, in clusters of bromeliads, in dry places among bushes, and among the roots of overturned trees in swamps. It would seem that the species is quite flexible in its range of acceptable nest sites. The clutch size is reportedly from 6 to 10 (Johnstone, 1970) or 8 to 12 (Delacour, 1954-64) eggs, or typically about 11 (Lack, 1968). The incubation period is generally reported to be 30 days and incubation no doubt is performed by both sexes. The fledging period is still unreported.

**Status.** Doubtless the population of this species has declined seriously in recent decades, particularly since the introduction of the mongoose into several islands where the birds used to be common, as on Jamaica, Puerto Rico, and Cuba. No estimates of the population are available, but it is clear that this species may eventually reach a threatened status.

**Relationships.** In spite of this species' distinctive adult plumage pattern, with some slight similarities to that of the spotted whistling ducks, its downy plumage and particularly its copulatory behavior pattern strongly indicate a close relationship to the black-bellied whistling duck (Johnsgard, 1965a; Bolen & Rylander, 1973).

**Suggested readings.** Phillips, 1922-26.

## Black-bellied Whistling Duck

*Dendrocygna autumnalis* (Linnaeus) 1758

**Other vernacular names.** Red-billed whistling duck, black-bellied tree duck, gray-breasted tree duck; Herbstpfeifgans (German); dendrocygne à bec rouge (French); pato silbador pico rojo or pichi-chi comun (Spanish).

**Subspecies and ranges.** (See map 8.)

*D. a. autumnalis:* Northern black-bellied whistling duck. Breeds from southeastern Texas, Sinaloa, and Nuevo León south to the Canal Zone. Migratory at northern end of range, otherwise resident.

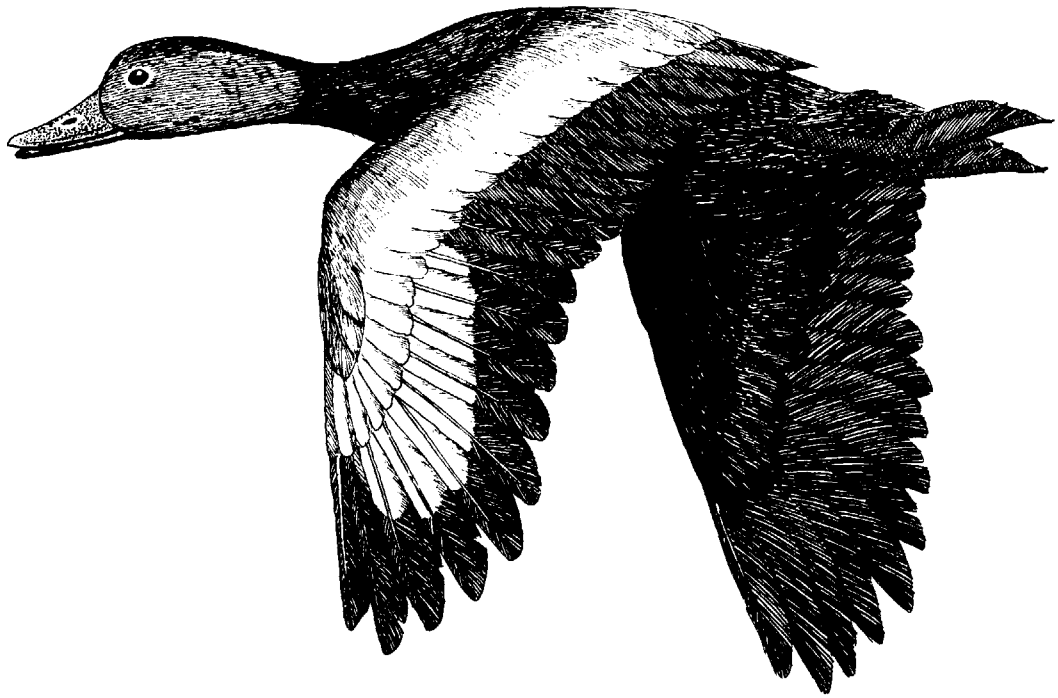
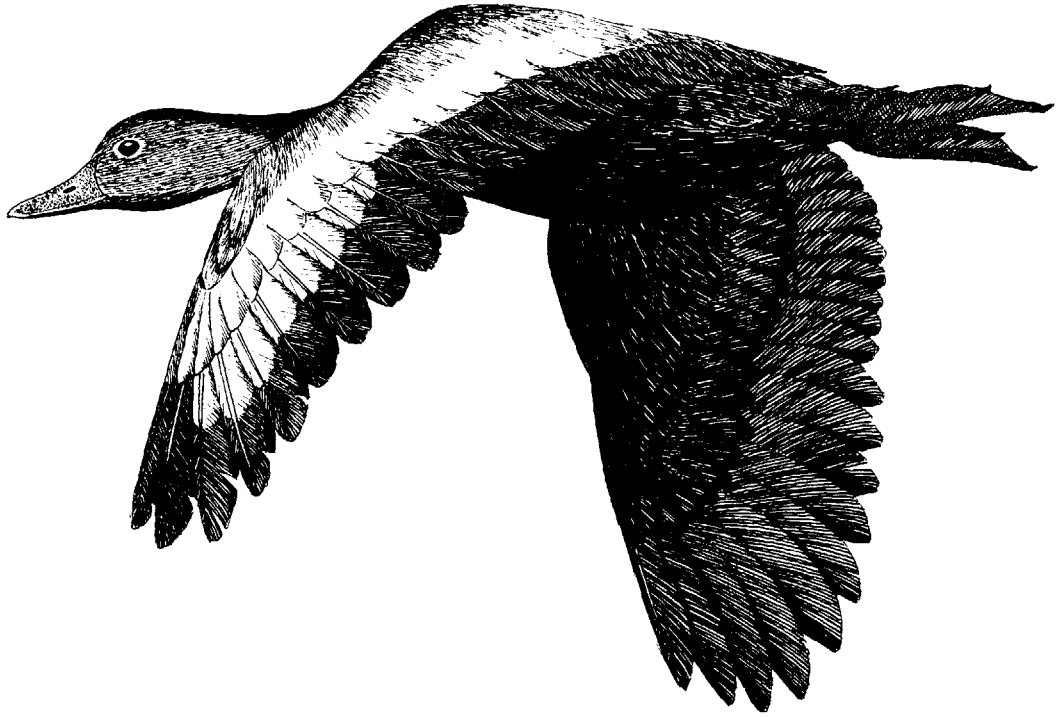
*D. a. discolor:* Southern black-bellied whistling duck. Breeds from eastern Panama and northern South America southward to Guayaquil on the west and northern Argentina on the east. Also resident in Trinidad and occasional in some of the southern Lesser Antilles, Virgin Islands, and Puerto Rico.

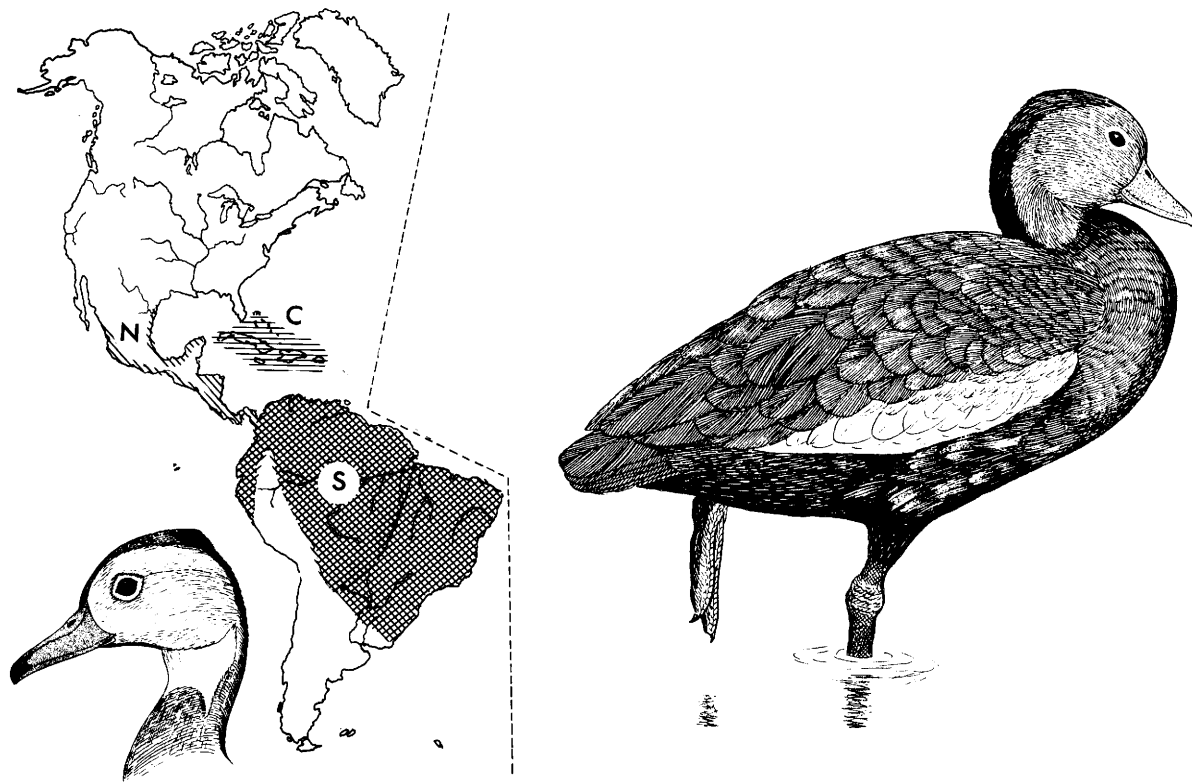
**Measurements and weights.** Folded wing: males, 233-48 mm; females, 229-47 mm. Culmen: males, 49-56 mm; females, 51-56 mm. Weights: males, 680-907 g (av. 816); females, 650-1,020 g (av. 839) (Bolen, 1964). Eggs: av. 50 x 39 mm, white, 44 g.

**Identification and field marks.** Length 19-21" (48-53 cm). Plate 6. This is the only species of whistling duck with a bright pink bill, which grades to gray at the nail and to yellow behind the nostrils. The tail, upper tail coverts, flanks, and underparts are black, the breast and lower neck are chestnut to grayish (the latter in *discolor* only), and the back feathers are medium chestnut with tawny edging. The face is grayish, with a white eye-ring, and the uncrested crown is brownish. Unlike that of other whistling ducks, the upper wing surface is extensively white, including most of the coverts and the basal portions of the primaries. The feet and legs are flesh-colored. *Females* are not distinguishable from males, but *juveniles* have grayish feet and bills, and are generally duller and more obscurely patterned than adults, with bellies that are grayish white and marked with cross-barring. *In the field*, the strong contrast between the white upper wing surface and the black sides is evident and appears as a white stripe extending from near the tail to the bend of the wing. In flight the flashing white upper side of the wing contrasts strongly with the blackish underside, and the distinctive five- to seven-note call is uttered very frequently. The Spanish name "pichichi" is indicative of the usual flight call, which sounds like *wha-chew', whe-whe-whew*.

### NATURAL HISTORY

**Habitat and foods.** The black-bellied whistling duck perches to a greater extent than does the fulvous, and thus is rarely found very far from trees. Tropical lagoons are a favorite habitat. In Mexico it breeds primarily along the tropical coasts, but sometimes also in the temperate uplands. It is





MAP 8. Breeding distributions of the northern ("N"), southern ("S"), and Cuban ("C") whistling ducks.

sometimes attracted to areas where corn is raised or rice culture occurs, and foraging flights to grassy pastures are also common. The black-bellied whistling duck walks in a more erect stance than does the fulvous, in association with its more terrestrial way of life. Likewise, its bill structure has been modified for terrestrial grazing in a number of respects, while that of the fulvous duck remains better adapted for sieve-foraging in water. (Rylander & Bolen, 1970, 1974). Studies in North America indicate that about 90 percent of the species' food is plant material, with sorghum grain and Bermuda grass (*Cynodon*) predominant items (Bolen & Forsyth, 1967). The intake of animal foods is very limited and confined largely to mollusks and insects. Deep waters are avoided, and areas with mud flats or sandbars for feeding and loafing are preferred.

**Social behavior.** This highly gregarious species often occurs in flocks of up to several thousand birds where it is common, and flocking is typical

most of the year. The pair bonds are permanent, and banding studies have confirmed that the same birds are often paired in successive years (Bolen, 1971). In conjunction with the avoidance of deep water, copulation occurs in very shallow water or while the birds are standing at the shoreline. One or both members of the pair perform drinking movements before treading, and it is followed by mutual calling and partial wing lifting by the male. Family and flock movements are not well documented, but at least at the northern end of their range in Texas these birds are migratory, moving an unknown distance into Mexico for the winter. Even as far south as Guatemala there appears to be an influx of birds from Mexico during the colder months.

**Reproductive biology.** The nesting period for this species in Texas is from June through July, as it presumably also is in Mexico. There are no definite nesting records from Panama, but a laying female was collected in June. Nesting in Surinam occurs in

July and August, with ducklings seen as late as December, and nesting in Trinidad has been reported in November. Nesting in Brazil is probably more prolonged than the few records (July, September) of breeding or birds in breeding condition would indicate. The birds prefer to nest in cavities; of 20 nests studied in Texas, 17 were in trees and only 3 on the ground. Most of them were situated very close to water, and in the case of tree nests the cover below was usually herbaceous and a convenient perch was present. Ground nests consist of shallow baskets of woven grasses (Bolen et al., 1964). Clutch sizes are very variable as a result of dump-nesting, but usually range from about 12 to 16 eggs. Incubation is performed by both sexes, and estimates of its duration range from 26 to 31 days, with the longer periods probably more typical.

**Status.** The broad geographic range and association of this species with tropical lowland habitats that have not as yet been seriously affected by human activities make its status reasonably secure. It is not an important game species, but does cause local damage to corn or rice crops, which may result in control measures.

**Relationships.** The unusual adult plumage patterns and the distinctively brightly patterned downy young of this species set it well apart from nearly all other whistling ducks and most cause it to be regarded as an extreme variant in the genus *Dendrocygna* (Johnsgard, 1965a). Its nearest living relative is quite clearly the Cuban whistling duck (Johnsgard, 1965a; Bolen, 1973).

**Suggesting readings.** Johnsgard, 1975; Bolen, 1967.

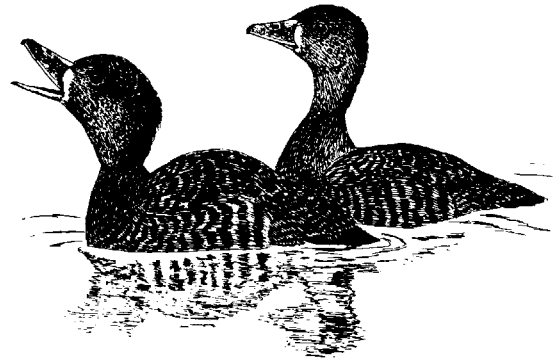
## White-backed Duck

*Thalassornis leuconotus* Eyton 1838

**Other vernacular names.** None in general English use. Weissrückenente (German); canard à dos blanc (French); pato lomo blanco (Spanish).

**Subspecies and Range.** (See map 9.)

*T. l. leuconotus*: African white-backed duck. Resident from eastern Nigeria and southern Ethiopia southward to the Cape, except for the Congo Basin.

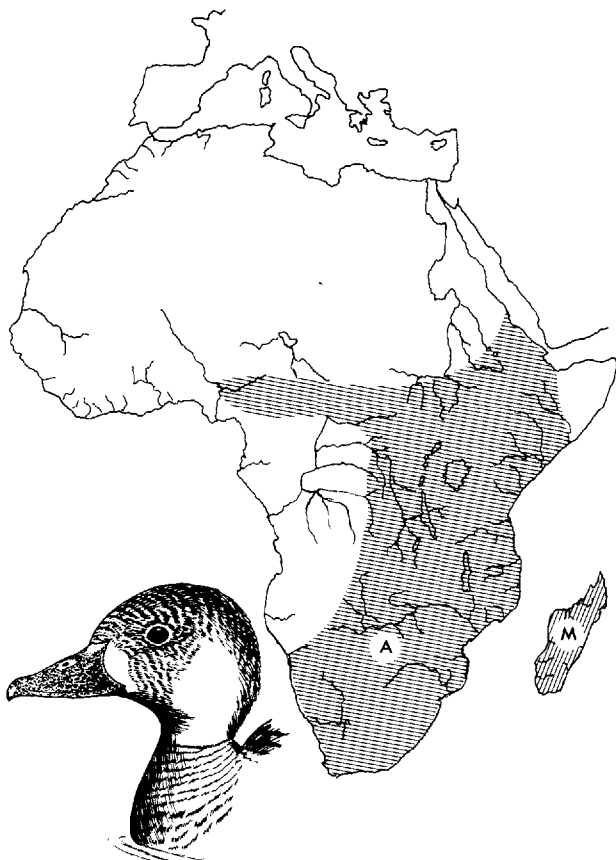


*T. l. insularis*: Madagascan white-backed duck. Resident on Madagascar to elevations of 2,500 feet.

**Measurements and weights.** Folded wing: males 160–80 mm; females, 150–60 mm. Culmen: males, 38–45 mm; females, 35–42 mm. Weights: males, 650–790 g; females, 625–765 g. Eggs: Av. 68 x 48 mm, rich brown, 81 g.

**Identification and field marks.** Length 15–16" (38–40 cm). Plate 7. This is an unusually short and thick-set duck, with legs and feet gray and placed well to the rear, and with a reticulated scale pattern as in *Dendrocygna*, rather than scutellated as in typical ducks. The bill is blackish, with yellow at the edges and below, and a large nail. Except for the lower back and upper tail coverts, which are broadly tipped with white, the head and body are predominantly shades of buff, tawny, and darker brown, all intermixed with extensive barring and spotting. There is a nearly white mark on the face behind the mandible (upper lores), otherwise the face and neck are buff, heavily spotted above with black. *Females* closely resemble males, and *immatures* are generally darker and less distinctively patterned, with the sides of the face and neck more heavily spotted with black.

*In the field*, the species' stubby shape somewhat resembles that of a stiff-tailed duck, but the neck is thinner and the tail is shorter. Like stiffetails, it flies rarely, and thus its white back and upper tail coverts are usually not visible. In the air it often calls in the distinctive manner of whistling ducks, and on the water it sometimes also utters a clear whistling note. It dives well and forages in this manner.



MAP 9. Breeding distributions of the Madagascan ("M") and African ("A") white-backed ducks.

When taking off, it patters along the water some distance, in the manner of coots.

#### NATURAL HISTORY

**Habitat and foods.** The favored habitats of this species are quiet lagoons, lakes, or flood plains where there is an abundance of floating vegetation such as water lilies. Open waters are avoided, and on lakes it is mostly confined to shallow bays. It occupies much the same habitats as pygmy geese and Hottentot teal, and probably feeds on much the same foods as the former. Little has been written on its foods, which are believed to consist primarily of the seeds of aquatic plants as well as the leaves of water lilies. Clark (1969b) states that the bird dives to the bottom and sifts food from the mud and debris, often remaining under water for 20 to 30 seconds. Foraging times are from dawn to shortly after sunrise, and again from late afternoon to sundown; the birds are evidently not nocturnal as are most whistling ducks. During the

middle of the day they are inactive and appear to be asleep.

**Social behavior.** In the wild, the birds are sociable, both resting and often foraging in groups. Flying is rarely undertaken for any distance, or at any great height off the water. There are some migratory movements associated with rainfall patterns; the birds are said to appear at the start of the rainy season in Rhodesia. They are usually to be found in pairs or larger groups, and the absence of conspicuous pair-forming behavior suggests that pair bonds are permanent, a view supported by the active role of the male in breeding. Some possible pair-forming behavior patterns that have been described consist of one bird (probably the male) swimming to another, calling, and the two birds swimming in parallel while calling (Johnsgard, 1965a). Another possible pair-forming or pair-maintaining display consisted of mutual bill dipping on the part of a presumed pair (Clark, 1969b). Aggressive chin lifting during calling has frequently been seen, as well as an aggressive head-back posture similar to that of whistling ducks. In extreme threat the bird will gape, spread its flank and scapular feathers, and hiss loudly while paddling the water vigorously (Johnsgard, 1967a). Precopulatory behavior consists of drinking movements on the part of the male as he approaches the female, followed by the female going prone in the water. After treading, the male utters a loud whistling note, and both sexes perform a step-dance in the manner of whistling ducks (Johnsgard, 1967a; Clark, 1969b).

**Reproductive biology.** Probably a prolonged period of breeding is typical of this species; Benson et al. (1971) list breeding records for nine months from December through August, with the largest numbers in February, April, and May. In South Africa the recorded nestings have mostly been from the period November through May, while Rhodesian records range from November through August (Clancey, 1967). Nests are built in reeds or papyrus beds, often in fairly deep water, with the nest near the edge of the reed bed. There is often a ramp leading to the nest, and it is usually concealed from above by overhanging reeds. Sometimes coot or grebe nests are used as a nest foundation. There may also be an approach channel between the nest and open water. The nest cup is not lined with down. The average clutch size is about 6 eggs (Lack, 1968), but up to 14 have been found in a

single nest, probably because of multiple layings. The incubation period has been estimated to be as little as 26 days (Johnstone, 1970), but various eggs incubated under brood hens required from 29 to 33 days to hatch (Johnsgard, 1967a). It is now well established that the male strongly guards the nest and does much if not most of the incubation, as in typical whistling ducks. In both wild ducklings and those hatched in captivity it has been found that a favorite if not the only food consists of gnat larvae (*Chironomus*), which are sieved from the muddy bottoms of ponds (Kear, 1967).

**Status.** This species is locally abundant over its African range wherever water conditions are suitable, and appears to be fairly secure. It is con-

sidered inedible and is not hunted for food or sport. The status of the Madagascan race is unknown.

**Relationships.** The possible whistling duck affinities of this species were initially suggested by me in 1960, and later (1967a) supported by behavioral evidence. Anatomical evidence (Raikow, 1971) and analyses of duckling vocalizations (Kear, 1967) have provided additional support for this view. Most recently, Brush (1976) has analyzed the feather proteins of *Thalassornis* by electrophoretic methods and concluded that this hypothesis can be supported by his results.

**Suggested readings.** Johnsgard, 1967a; Clark, 1969b; Clancey, 1967.

