NOTES ON BLACK-HEADED DUCKS, PAINTED SNIPE, AND SPOTTED TINAMOUS

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In the course of collecting pituitary glands for later prolactin estimation from birds of the three species named above from 12 September to 19 December 1973, in central Argentina, I made some observations that add to existing information. My work was restricted to a marsh near the village of Murphy in the southern part of Santa Fe province. This marsh, part of the Cañada de los Leones drainage system, is characterized by lagoons with large beds of tules, *Scirpus californicus,* and in the shallows floating carpets of *Azolla fidiculoides.* Between the lagoons lie rough pastures, most of which during my stay were under a few inches of water. These pastures are grazed by cattle and horses and also provide a fall passage or winter habitat for numbers of shorebirds from the Northern Hemisphere.

Black-headed Duck (*Heteronetta atricapilla*)

Weller (1967, 1968) has provided the most detailed information available on the breeding biology, plumages, and weights of this duck. My remarks below supplement some aspects of his accounts.

Neck distension by the male in courtship.—The distension of the throat and upper neck shown by courting males is presumably produced by inflation of the bilateral cheek pouches and of the thin-walled upper esophagus described by Wetmore (1926). The role of the latter is confirmed by an observation I made on a male in breeding condition (shot 3 November). While holding the beak tightly closed, I forced air into the nostrils of the freshly killed bird. This produced a neck swelling like that seen in display. On dissecting the neck while maintaining the inflation, the distension was clearly seen to be of the upper third of the esophagus. This observation was made in ignorance of Wetmore's description (1926), which explains why I only noticed the esophageal distension and not that of the cheek pouches.

Body weight.—Weller (1967) did not weigh breeding birds. This fact in great part explains why among the few ducks collected that I had an opportunity to weigh, some were heavier than those he recorded. The weights of 11 adult females he recorded ranged from 470 to 630 g. A female with a shelled egg in the oviduct I collected and one with a soft-shelled egg weighed 720 and 680 g respectively. The weights of 11 adult males Weller examined ranged from 434 to 580 g. The only adult male I collected weighed 680 g.

TABLE 1

SIZE OF LARGEST TESTIS AND LENGTH OF BURSA IN BLACK-HEADED DUCKS, SANTA FE PROVINCE, ARGENTINA, 1973

Adult males, in nuptial plumage			Juvenile males, in juvenile plumage		
Date	Testis size mm	Bursa length mm	Date	Testis size mm	Bursa length mm
1 October	25 × 9	13			
3 November	35 × 11	Not found			
15 December	45 × 15	Not found	5 December	8 × 2	15

Color of soft parts.—I examined this in 3 breeding males, a juvenile male, and in 9 breeding and 4 juvenile females. Their beak colors agreed with Weller's (1967) description but the leg color that he described, apparently for all age and sex classes, as "light green in color with a blending of gray, light brown or flesh color," was to my eyes in adults lead gray with a yellowish green tinge only along the edges of the tarsi, which are markedly laterally compressed. In juveniles of both sexes the tarsi had a noticeably more yellowish green cast and were best described as being grayish yellow-green. This yellowish green tinge of the tarsus and toes of juveniles probably disappears before they enter their first breeding season for I did not notice it in two immature males shot 23 September when the local breeding season had just begun so that these birds must have hatched the preceding season.

Size of testes and bursae.—Weller's (1968) table of gonad sizes does not include breeding males. The data in Table 1 give some indication of maximal testis size in these small ducks. When well enlarged the testes were markedly cylindrical compared to the more ovoid shape I have seen in nearctic ducks including a specimen of the Ruddy Duck (*Oxyura jamaicensis*) to which the Black-headed Duck is considered to have some affinity. The lengths of the bursa (measured outside the

TABLE 2

LENGTH OF THE BURSA IN FEMALE BLACK-HEADED DUCKS SANTA FE PROVINCE, ARGENTINA, 1973

Adult females			Juvenile females	
Date		Bursa length mm	Date	Bursa length mm
1 October	Prelaying	12	22 November	15
19 October	Laying	None found	2 December	15
3 November	Laying	None found	2 December	18
22 November	Laying	None found	2 December	20
2 December	Laying	None found		
18 December	Laying	None found		

Fig. 1. Nest of a Snail Kite with two kite eggs and a Black-headed Duck egg, 4 November 1973, near Murphy, Santa Fe province, Argentina.

gastrointestinal tract) of breeding birds of both sexes are shown in Tables 1 and 2. It is noteworthy that early in the breeding season an adult male and a female, both showing some degree of activation of the gonads, had fairly large bursae. This supports Weller's opinion that these ducks breed in the nesting season following that of their birth. It also suggests that their bursae disappear in the course of gonadal activation rather than before it begins, as is typical of northern hemisphere ducks. Later in the breeding season one would presumably find little remainder of the bursa and thus would be unable to distinguish yearlings from older birds by this character.

Host species.—Weller (1968) reviewed the literature to list the species in the nests of which Black-headed Duck eggs have been found. To these the Snail Kite (*Rostrhamus sociabilis*) and the Fulvous Tree Duck (*Dendrocygna bicolor*) should be added. The first was an important host in the marsh where I worked, for two out of the five kite nests I found were parasitized (Fig. 1) while Michael Lubbock of the British Wildfowl Trust, who worked in this marsh for 2 weeks in November with others to catch live ducks and so had occasion to enter kite colonies to a greater extent than I did, told me he had seen over 30 Snail Kite nests with one or more Black-headed Duck eggs. Though the literature cites the Chimango Caracara (*Milvago chimango*) as the only example of parasitism

of a predator by this duck, I gathered from Maurice Rumboll of the Museo Argentino de Ciencias Naturals in Buenos Aires that the Snail Kite was well known to him and other Argentine ornithologists as a host of this duck. I was told that in the Murphy district, Chimango nests were either in trees or on the ground and only very rarely above water. As Black-headed Duck eggs are almost always laid in nests on or 2–3 feet above water, Snail Kite nests, at least in this district, must be parasitized much more frequently than those of the Chimango. It also seems likely that because of the specialized diet of the Snail Kite, ducklings would be safer once out of the host's nest but still near it, if the kite and not the omnivorous Chimango were the host.

As the first published observation of parasitization of the Chimango by Black-headed Ducks (Wilson 1923) was made in the district where I worked, it is surprising that Wilson did not also come across parasitized Snail Kite nests, but his checklist of the birds of southern Santa Fe province (Wilson 1924) does not mention the Snail Kite. Presumably it was absent from the district when he was there, possibly because of a succession of dry years.

My reasons for including the Fulvous Tree Duck among the hosts of the Black-headed Duck are a report of finding an egg of the parasite in a nest of this tree duck, accompanied by an egg of the two species in question by coypu trappers in mid-September, and the finding of at least another nest so parasitized by Michael Lubbock in mid-November; both reports refer to the marsh where I worked.

Other aspects of breeding.—Weller (1968) studied the development of 76 Black-headed Duck eggs in relation to those of the hosts, which in his case were all coots. He estimated that 53% of the parasite's eggs would have hatched with the host eggs; of 33% some might have hatched during the short period when the hosts still brooded their young while some would have been laid too late for this, while 14% were definitely laid too late to be hatched by the host. It may be inferred that about one-third of all parasite eggs laid are wasted. In the case of particular host nests the proportion of failures may be much higher as shown by a parasitized Limpkin (*Aramus guarauna*) nest, the fate of which I followed for 3 weeks. Its contents were as follows: 4 November, 2 host and 1 duck egg; 6 November, 2 host and 3 duck eggs; 20 November, 1 intact and 1 broken host egg, nest damaged, 3 duck eggs; 26 November, host eggs as on 20, 4 duck eggs. As the nest was now evidently deserted, none of the duck eggs in it would hatch.

These considerations suggest that the hatching rate of Black-headed Duck eggs is lower than that of normally breeding ducks. This may explain the species' long laying season. It lasted in the marsh in question

in 1973 from 14 September at least to 18 December, when the last female I shot still had yolk follicles in the ovary, so that laying must have continued at least to the end of December. As most of the adult Black-headed Ducks were still paired in mid-December the females almost certainly produced fertile eggs even late in the breeding season. All adult females I shot at intervals during the period mentioned above had active ovaries. It seems likely, therefore, that the laying season of most individual females extended over 3 months. By mid-December most major hosts such as egrets, coots, gulls, and Snail Kites already had young, but one potential host had not yet reached its peak laying period. This was the Rosy-billed Pochard (*Netta peposaca*), most of which were still paired when I left. It seems likely that a female Black-headed Duck once stimulated to lay a few eggs by the sight of breeding activities of one potential host may then pass into a few days of relatively reduced ovarian activity until events, perhaps in another host breeding colony in the same marsh, induce it to lay another "clutch" of eggs and so on until its laying season finally ends when no more potential host species are in the laying stage.

South American Painted Snipe (*Nicticryphes semicollaris*)

Local seasonal occurrence, general habits and habitat.—No Painted Snipe were seen in the area until 26 September when I flushed one in a boggy cow pasture 1 km south of the marsh, where I also saw one during the next 2 days. I saw no more until 7 November when one flushed in a wet pasture in the southern part of the marsh and within a few days there were several in a more northern section of the marsh, where they remained confined to an area of about 1 × 2 km until my last visit on 7 December, and where they were evidently about to nest as a female shot that day had a soft-shelled egg in the oviduct. They were generally flushed singly, but groups of 2–3 couples and about as many single birds were at times flushed from one small area. The coarse grass in the two adjacent pastures these snipe frequented was not over 16 cm above the water, providing a habitat like that often used by true snipe and more open than that used by Painted Snipe Wetmore (1926) encountered in Buenos Aires province. In my marsh Painted Snipe used the same situations as small flocks of Pectoral Sandpipers (*Calidris melanotos*), yet the two species did not associate with one another. On flushing a snipe, after a few twists, generally rose to a height of about 10 m and then planed down in a straight line to a landing; occasionally a larger curved flight at the 10–m level would precede the descent.

Measurements.—Table 3 shows the measurements taken on the 22 birds I collected and those from 9 unsexed Chilean birds given by Goodall

TABLE 3

MEASUREMENTS, IN MM, OF SOUTH AMERICAN PAINTED SNIPE

	Males			Females			Sexes not separated[1]		
	No.	Range	Mean	No.	Range	Mean	No.	Range	Mean
Total length	11	191–217	213.8	10	199–232	206.4	1	200	
Beak length	10	35–40	37.4	9	35–42	39.4	9	38–43	40.4
Wing length	11	99–109	104.5	11	105–123	119.9	9	102–110	105.3
Tarsus length	10	32–39	31.1	10	35–40	33.2			
Tail length							9	50–55	53

[1] From Goodall et al. (1957)

et al. (1957). The two groups are similar in beak and tarsus lengths, but females average slightly shorter in total length in the flesh and slightly larger in wing length. Hudson (1920), without giving details, states that females are slightly larger than males and that they are more brightly colored. I could see no sex difference in the plumage of live or freshly killed birds, nor to my knowledge have other authors since Hudson mentioned such a difference.

Maurice Rumboll told me of the batlike flight of these birds before I encountered them. The comparison is apt, but refers to my mind not so much to the erratic flight path but to the wing action, which seems fluttery compared to the swift wingbeats of other shorebirds.

On 11 November Michael Lubbock's team of duck catchers gave me four live Painted Snipe they caught in their duck nets. I kept them, first in a box with water in a large flat tin, and later in an outdoor enclosure on grass with a pool in which water plants such as *Azolla* were placed. Insects and insect larvae, assiduously hunted for in cow and horse manure and under rotten logs, were dropped into the shallow pool where the snipe spent most of their time standing. As one of them survived for 7 days in apparent good health until the morning of the day of its death, some of this fare must have been taken.

The only call the captive birds uttered was a querulous, hoarse, almost hissing "wee oo" uttered when they were approached closely by an observer or by another snipe. As is well known, Painted Snipe flush silently and no display flight occurs, so the call described above may well be their only utterance, serving perhaps in different intensities as a contact and warning note and to express sexual or aggressive moods.

Beak color.—While all the birds examined had green tarsi and toes, beak colors were far more complex than indicated by "greenish" (Johnson 1965) or "green" (Meyer de Schauensee, 1970). As shown by Wetmore's description (1926) of the beak of a single bird, the color may differ in different parts of the beak. In 18 birds on which I kept careful

notes of beak color not one beak was uniformly colored along its whole length. Dividing the birds according to sex and by size of the bursa into presumed adults and immatures showed no groups with similar beak patterns. Perhaps a more extensive series covering a wider range of ages and seasons would clarify these puzzling individual differences. As it is, I can only list the colors found on different portions of the beak in different individuals of the whole group examined: Upper mandible—the base might be green, yellow, or yellow-brown; the mid-zone—green, yellow, yellow-brown, or reddish brown; the tip—green, yellow-green, buff, reddish brown, or almost black; the nail—yellow, buff, reddish brown, or almost black; corresponding zones of the lower mandible showed similar colors except that in some cases the base was bluish green.

Gonads, incubation patches, bursae, and breeding season.—Table 4 lists gonadal dimensions, presence or absence of incubation patches and length of the bursa, measured external to the gastrointestinal tract, of 23 Painted Snipe. In all males the larger left testis was ovoid in shape and the smaller right testis was almost spherical. Incubation patches were found in females as well as males. This is not compatible with Goodall's statement (1957) that "incubation and care of the young are attended to by the male" (apparently meaning by the male only), a statement probably based on the known role of the sexes in the Old World Painted Snipe (*Rostratula benghalensis*). The table also shows that large bursae may be found in birds with enlarged testes though among females no bursa was found in a bird with an active ovary. This apparent sex difference may be due to the small sample, or involution of the bursa in yearling females may take place before the first annual ovarian development but rather later in the course of testicular activation in yearling males.

Snipe in my marsh were evidently about to lay in late December. Wetmore (1926) found a female with an active ovary in late October and a nest in early November in the adjacent province of Buenos Aires, while he collected two males that still had testes 8 mm long in late March in the Argentine province of Mendoza. Michael Rumboll told me of a nest he found in northern Santa Fe province in July, while Goodall et al. (1957) give late July to early August as the beginning of the nesting season in the Chilean province of Santiago. These localities lie between latitudes 33° and 35° S, yet within this narrow zone nesting may apparently take place between July and February. No doubt the breeding period of any one colony of these birds is much shorter than this. The wide spread of the breeding season shown by the species as a whole may be due to high water levels precipitating activation of the gonads provided other factors are not unfavorable.

TABLE 4

GONAD SIZE, INCUBATION PATCHES, AND SIZE OF THE BURSA IN A GROUP OF SOUTH AMERICAN PAINTED SNIPE ENTERING BREEDING CONDITION[1]

Date	Testes (mm)	Incubation patches	Bursa length (mm)	Date	Diameter of largest ovarian follicle (mm)	Incubation patches	Bursa length (mm)
12 Nov.	7 × 5						
	3 × 3	n.l.f.	–	11 Nov.	<1	n.l.f.	+
12 Nov.	9 × 4						
	3 × 4	n.l.f.	–	17 Nov.	2–3	n.l.f.	–
16 Nov.	5 × 3						
	3 × 3	n.l.f.	–				
5 Dec.	10 × 6						
	5 × 5	n.l.f.	6	5 Dec.	<1	n.l.f.	10
9 Dec.	8 × 5						
	6 × 5	+	8	9 Dec.	13	+	–
9 Dec.	8 × 5						
	4 × 4	+	9				
11 Dec.	9 × 5						
	5 × 5	incip.	–	11 Dec.	<1	–	9
11 Dec.	6 × 3						
	4 × 3	incip.	4	11 Dec.	4	+	–
				11 Dec.	6	+	–
13 Dec.	6 × 4						
	3 × 3	incip.	–	13 Dec.	3	+	–
				13 Dec.	5	+	–
				13 Dec.	3	+	–
17 Dec.	6 × 3½						
	3 × 3	incip.	6	17 Dec.	3	+	–
17 Dec.	10 × 5						
	5 × 4	+	–	17 Dec.	Soft-shelled egg in oviduct	+	–

[1] n.l.f. = not looked for; – = absent; + = present; incip. = incipient.

Spotted Tinamou (*Nothura maculosa*)

It is well known that only males of the family *Tinamidae* incubate. Bailey (1955) found typical brood patches in male *Nothoprocta ornata* but I found none in 6 male *Nothura maculosa* collected between early October and mid-December 1974 (the first half of the local breeding season). Further, Maurice Rumboll told me that these birds did not form incubation patches, nor do the Bumps (1969) in their detailed account of this species and its congener, *N. darwinii,* refer to a brood patch although they studied birds that bred in captivity as well as wild ones. Some of the males I examined showed a very slight thinning out of the plumage of the lower breast and abdomen, but pieces of skin from this area were microscopically like those from the same region in females. Perhaps members of the entire genus *Nothura* form no incubation patches.

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Summary

Juvenile Black-headed Ducks were found to be separable from adults not only by the plumage differences previously described, but also by grayish-yellowish-green tarsi as compared to a lead-gray color in adults. Data on the gonads and bursae showed that the latter may still be enlarged early in the breeding season. In the case of juveniles breeding for the first time, the bursa apparently involutes during the course of rather than before the onset of gonadal activation as in Northern Hemisphere ducks. The Fulvous Tree-Duck and Snail Kite are added to the list of species parasitized by this duck; the latter host was evidently of some importance in the area studied in 1973. All six adult female Black-headed Ducks shot at intervals between 23 September and 18 December had active ovaries, and it is suggested that individual hens may lay intermittently over the whole of the 3 or 3½ months of the annual breeding season.

A few South American Painted Snipe were kept in captivity for up to 7 days and the single call they uttered is described. Measurements of 11 males and 11 females are given as well as data on the size of the gonads and bursae. The latter indicate that in this species too the bursae

at least of male yearlings involute during rather than before the breeding season. As no sex differences in plumage were noted and as incubation patches were found on birds of both sexes, this species, unlike the Old World Painted Snipe, shows no sex reversal. Information is given on the different beak colors that occur regardless of age or sex.

No true incubation patch was found in male Spotted Tinamous collected over the first 2½ months of the breeding season. Some of the males showed at most some thinning out of the plumage of the breast and upper abdomen, but skin from these areas was not distinguishable under the microscope from skin from the corresponding area of females.

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