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Editorial

Timothy O. Osborne

We were supposed to be back on "schedule" with editions appearing every 3 months and I thought we were but a minor glitch occurred at the printers for volume 35(2). I had submitted the edition before returning to Alaska for a month and expected to find the volume in my mail box upon my return. It came as a surprise to me that no edition was ready. I inquired and found out that neither the Scientific Society nor Typoprint who prints the *Lanioturdus* had any idea where the manuscripts were. After several weeks of phoning and trying to trace the papers it turned out that a woman at Typoprint who had quit her job, had stuffed the manuscript into her desk drawer. It was finally located and printed in July instead of May!

I want to thank everyone who has been submitting papers for publishing, as we are now back to having a Club journal with recent information. This edition contains a variety of papers starting with two opposing viewpoints, but both working towards the same end result—reducing the number of birds poisoned in Namibia. Rob Simmons and Penn Lloyd give us the biology behind the hunting seasons and other authors see one small event but it all contributes towards scientific knowledge.

SANDGROUSE: THE BIOLOGY BEHIND CONSERVING THROUGH SUSTAINABLE USE

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Sandgrouse are big business. Hunters around the world are keen to pit their skills against fast moving and wild quarry such as sandgrouse wherever they occur. In southern Africa, huntable birds include the sandgrouse, certain francolin, ducks, quail, doves and geese. All other species, bar pest species, are protected by law. For the conservation agencies their task is to ask: *how can we facilitate the management of hunting of such species so it is both lucrative for the hunters, and not limiting for the species involved?* This simple question is much more difficult than it looks and here we show how we arrive at some answers. To start, Table 1 shows what birds are huntable in Namibia in 1998. Note the short open seasons; these are designed to prevent species being hunted continuously. But why are these seasons so designated?

This leads us to one of the fundamental principles that guides this process. No huntable birds can be hunted during their breeding season - a complete ban is imposed during this period. The reason is simple - if hunters take away the very portion of the population that is adding to the next generation, there will be no next generation. This is the first step towards sustainable hunting. Moreover, if hunting is allowed shortly after young have become independent - a time when many will fall prey to predators, disease or hunger anyway - then the impact on the population will be almost negligible. In certain cases, if breeding output (i.e. eggs laid or young reared) by adults is limited by the high density of other adults in the populations (we call it density-dependent breeding) then by taking away some of that population by shooting, we may actually enhance recruitment of young and increase the population. This is what managers of fish stocks strive to do - mainly unsuccessfully!

The case of sandgrouse

Most of Namibia's huntable birds occur over wide areas and do not occur in large enough flocks to be shot indiscriminately. However, the sandgrouse are particularly vulnerable because they visit watering points in huge flocks, early in the morning or evening, which in some areas can number 20,000 individuals. The potential for over-exploiting such flocks is high and that is one reason why Namibia, South Africa and Botswana have put their heads together to come to an agreement on the conservation of sandgrouse. Because they wander nomadically across borders, they are a vulnerable common property. The Memorandum of Understanding that results from this brainstorming (initiated by Mark Anderson of the Northern Cape Conservation Service) is an agreement under the Bonn Convention on Migratory Species. It states that the three countries will share knowledge on research, conservation, education, management and legislation aspects of their common resource, for its future sustainable use.

The other principles that Namibia has followed to protect sandgrouse and other huntable species are :

Gamebirds are *only* those species mentioned in Table 1: only pest species (e.g. Quelea) may also be shot

Birds must only be hunted on a sustainable basis: lower numbers in your area in the next season may indicate unsustainable hunting

No more than 10% of the adult population can be killed (or injured) in any one year

Sandgrouse may not be shot on the ground; belly-soaking birds are breeding and must not be shot

Sandgrouse may not be shot *within* 100 m of a waterhole

Gamebird populations may be augmented by habitat-alteration or feeding

Gamebird populations may *not* be augmented by reducing aerial or terrestrial predators

Hunting birds on migration routes is prohibited

Hunting seasons and bag limits are only as given above, they may be altered in 1999.

Hunting may occur only under permit from the Ministry of Environment & Tourism, P/Bag 13306, Windhoek.

Most of these are self-explanatory to the conservationist, hunter or layman and need no further explanation. However, we still haven't come to grips with the most important guiding principle - when do they breed!

Breeding schedules

This is where one of the Ministry of Environment and Tourism's (MET) national programmes housed in the Biodiversity Programme comes in. By searching the data present in its national nest record scheme, it is easy to determine breeding seasons for all three species of sandgrouse (Namaqua, Double Banded and Burchell's), and then put a moratorium on hunting during breeding. This is even easier now that the scheme is being computerised by a data base team under the Biodiversity Programme. Some Namibian records are still held by the South African scheme (n = 103), which when combined with our own (n = 115), gives a healthy sample of 218 records for all species. The data are presented in Figure 1. Most records are for the Namaqua Sandgrouse (92% of 218). Considering all species, most eggs (39% of 218 records) are generally laid in two months - April and May (Fig. 1). Namaqua Sandgrouse are shown separately in Figure 2 (with the hunting season months). To check that we don't have a biased sample we graphed sandgrouse breeding data from Botswana published by Neville Skinner (1996). His data (Fig. 3) confirm our own: egg-laying peaks in May and is lowest in the rain months - October to February. The reason that sandgrouse differ from many other species in this regard is that they are obligate seed eaters and it is the rain months when the seeds germinate - leaving few for sandgrouse and their chicks. This is useful data in the case of the Namaqua Sandgrouse because the Botswana records are from the Nossob River, bordering the Kalahari Gemsbok Park, in SW Botswana. Since this is equivalent to the Kalahari system of south-eastern Namibia, it gives some insight into when breeding is initiated in seldom visited parts of southern Namibia.

However, this is not the end of the story - worrying reports kept surfacing that birds were breeding during these proposed seasons and suggested something was wrong. This also occurred in Kenya where authorities have also set hunting seasons to avoid the breeding seasons (for Blackfaced and Chestnut-bellied Sandgrouse). A recent analysis of 11 year's data on breeding condition of birds that were shot, indicated that a substantial proportion of these birds were in breeding

condition when they were killed. In one year (in August), 75% of the birds shot were in breeding condition and in February in another year, the figure was 100%. However, in other years, in these months, no birds were about to, or in the process of breeding (Njoroge *et al.* 1997). Their conclusion was that for some areas of Kenya, the hunting season of 1 July to 31 October is incorrectly set because it coincides with breeding and it should begin earlier and *end* by late June. Similar analyses of gonad development of birds shot in Namibia should be undertaken with the same goals in mind. How can these problems be avoided?

Predicting sandgrouse breeding

Important for predicting how good or bad the upcoming breeding season might be was the finding of Njoroge *et al.* (1997) that cumulative rainfall in the period 4-6 months before breeding was significantly related to the proportion of birds in breeding condition. Rainfall two months before was unrelated to the breeding condition of birds in Kenya. In other words, if good rains promoted plant growth 4-6 months earlier, then breeding was likely to be good when plants finally set abundant seed. (Sandgrouse feed on seeds of dicots which are annual flowering plants). Rain two months before was too late to promote dicot growth and may have germinated the seeds that the sandgrouse were eating. This has yet to be analysed in southern Africa (P.L.) but examination of the growing season in conjunction with rainfall may help.

Setting hunting seasons

Since sandgrouse chicks become independent 2-3 months after eggs are laid (Lloyd 1997), any hunting season would best be placed 2-3 months after the main breeding season. This is even more critical for sandgrouse since even if one of the two parents is shot during breeding, the attempt fails (pers. obs.). This is because the pair shares incubation and the male is the main water provider to the chicks. Both are vital for the survival of the next generation.

By placing a hunting season 3 months after the apparent peak in May, we arrive at the month of August. The 3-month open season for sandgrouse, therefore, should encompass the months of August, September and October. However, this is not so, instead we have chosen the months of September, October, November (Fig. 2) - a month later. Why this month's lag time? The Burchell's (some

call it the Spotted) Sandgrouse is the problematic species. Burchell's Sandgrouse are very common in eastern Namibia and across Botswana (Harrison *et al.* 1997) and apparently breed when the proposed season would be ideally suited - in August/September. We say *apparently* because we have not enough data in our nest record scheme to show this, and data from northern Botswana (Maun district) show 37% of 19 records in May and few from August/September (5 of 19). By putting the season later we hoped to avoid at least some of these birds. It is not a very satisfactory way of doing so. Are there other ways of avoiding this problem?

Re-analysing breeding data

Since both Kenyan and Namibian conservation biologists appear to have been misled by simple breeding season analyses such as shown in Figures 1 - 3, there was an urgent need to re-analyse the data to determine if sandgrouse were (i) either changing their breeding seasons (as implied by the Kenyan data), (ii) breeding twice in the year in different areas (Lloyd 1998), or (iii) simply breeding at different times in different regions. We have the required data to analyse any geographic variation in breeding for the commonest species - the Namaqua Sandgrouse. In his doctoral thesis PL looked at geographic variation and concluded that in some areas (i.e. Namibia) breeding occurs throughout the year. However, once broken down into broad geographic regions a trend begins to emerge (Fig. 4). In the northern Namib Namaqua Sandgrouse breeding peaks in May as shown previously. In the southern Namib, however, breeding peaks two months later in July. In the Nama-Karoo breeding peaks 3 months after that in October, and in the southern-most regions (western Cape), breeding peaks 1 month later in November. Thus we see a geographic trend for sandgrouse peak breeding to begin increasingly later, the further south one goes (Fig. 4). Throughout we concentrate on the "peak" rather than "spread" of breeding because (i) it is easier to identify this than the start and end of breeding and (ii) it is the peak we wish to avoid in setting hunting seasons.

In Namibia however, this trend is complicated by east-west differences in the breeding season. Whereas most nesting takes place in the period April-July in the southern Namib (most nest records for the southern Namib are from the Sesriem-Walvis Bay region), the nesting season in the Nama Karoo at the same latitude to the east, is from August to January. In the Namib, nesting takes place

soon after the peak rainfall month, but in the Nama Karoo nesting starts 6 months after the peak rainfall month and ends just before the peak rainy season. It may be that sandgrouse are moving between these two regions and breeding twice in the year - but this has not been proven.

How does this affect hunting seasons?

This means that hunting seasons, which are traditionally placed in the winter months, can now be more accurately set depending on region. For example, **in the north, hunting is best from August to October** - 3 months after the peak of breeding. This is a time when apparently no birds are breeding at all. In the **southern Namib hunting is best** set later rather than earlier - 3 months after peak breeding puts it **from October to December**. These are hunting seasons similar to that already designated for these birds. However, the biggest switch comes for the **inland areas comprising the Nama-Karoo**, which includes areas from Windhoek south across the Orange River. Here hunting is best suited *before* peak breeding in the months **May to July**. Nesting commonly ends in January with the last chicks becoming independent towards the end of March. Nesting also commences only after the season has finished. This **May to July season**, has one advantage and one disadvantage. The advantage is that it avoids killing breeding Namaqua Sandgrouse as would a season set for September-November (the traditional time), but the disadvantage is that it may result in the killing of breeding Burchell's Sandgrouse which appear to nest in these areas between April and October (Harrison *et al.* 1997). This analysis, therefore, provides a method of resetting biologically meaningful hunting seasons by region.

Breeding seasons and rainfall?

While Figure 4 suggests that breeding peaks get later as one moves south, the biological reasons for this are poorly understood (Lloyd *et al.* 2000). We do know that in many areas, sandgrouse egg-laying peaks when seeds are set (released) by plants at the end of the rains (Lloyd 1998. Lloyd *et al.* 2000). So is the difference due to differences in the timing of rain seasons as found for the Kenyan sandgrouse?

Rainfall peaks are known to get progressively later in Namibia as one travels from the far north-east (East Caprivi) to the far south west (Oranjemund). This

is because the zone of tropical convergence pushes moist air further south from equatorial regions into southern Africa in the same north-east to south-west manner. To illustrate this phenomenon we took Namibian rainfall records from a recently analysed data set (Bernardi 1997). We noted the peak months of rains for 18 stations covering the entire country and then joined all those stations that had their peak rains in January. We did the same for all areas with their peak rain month in February and for March and so on. The resultant map (Fig. 5) shows this progressively later peak rainfall as one moves from north-east to south west. In the far south-west, winter-rains occur and the peak is well beyond March. When we relate this to breeding seasons in the northern Namib we see a weak trend emerging. In northern areas, rains peak in Feb-March and sandgrouse breeding peaks 2 months later in May. In the south, rains peak from March onwards: in Ais-Ais in the Fish River Canyon the peak is in April, the peak for Oranjemund is May and it can be as late as June in the winter-rainfall area of Lüderitz (Kilian 1995). If we take the median peak rainfall month as May, then here too, sandgrouse egg-laying peaks 2 - 4 months after peak rains. The trend therefore is for sandgrouse to breed about 2 months after the last rains in both regions. We would expect greater variability in sandgrouse breeding in southern desert regions with low rainfall because rainfall events themselves are highly variable, and one shower may exceed the annual mean rainfall, promoting an explosion of breeding in seed-eating birds such as Larklike Buntings, Finch-Larks and sandgrouse (Simmons MS, W. Tarboton pers. comm., Lloyd 1999). Add in the complication of winter rains up to about Lüderitz and the variation inherent within that, and one might expect a greater spread in breeding than in other areas, as one sees in the southern Namib (Fig. 4).

Do these trends (egg-laying 2-4 months after peak rainfall) hold for South African birds? The SABAP maps of rainfall (Harrison *et al.* 1997, p. lxviii) indicate that main rains in the southwestern Cape occur in the months May-June-July. The peak of breeding in this area is November (Fig. 4), 5 months after the peak. The difference between this region and the Namib is the *length* of rains. While rain in the Namib stops abruptly (all finished in about 3 months), southwest Cape rains are prolonged and occur in every month. Thus the food plants only dry out and set seed at the end of the rainy season, and the birds begin nesting soon thereafter. What is needed to formally answer the main question of how sandgrouse

time their breeding in relation to rainfall is how the growing (and seed setting) seasons are influenced by rain in different regions. This may give a clue as to why sandgrouse are egg-laying 2 months after the peak in the northern and southern Namib, while they egg lay 6 months after main rains in the southwest Cape.

The breeding seasons in the Karoo are the most difficult to predict because nesting here and in the Kalahari starts up to 5 months later than expected. The reasons are not clear but the high risk of nest predation (Lloyd *et al.* 2000), has been suggested as playing a prominent role.

Thus while these trends show weak correlations with rainfall, other variables such as the length of the growing season (seed germination to seed set), temperature (Dixon & Louw 1978), and predation levels (Lloyd 1998) may all affect sandgrouse breeding. Many years of data in areas with accurate rainfall records will have to be collected before a more complete picture can be formed. This is currently being explored by student Tristan Cowley who is marking birds in the pro-Namib and watching for breeding.

Summary

To summarise, sandgrouse hunting seasons are set to avoid the main breeding period of the species involved. However, in both Kenya and Namibia, there is evidence that sandgrouse breed during the open seasons. By re-analysing the peak breeding periods for different regions in southern Africa, we see a trend for later breeding, the further south and east in southern Africa one travels. The peak in the Nama-Karoo (approximately Windhoek south) is in the middle of the open season, so hunting seasons here are best set before breeding occurs (May-June-July). This may be associated with rainfall in Namibia where we show that peak months of rain are also progressively later the further south one travels. Sandgrouse appear to breed about 2 months after these peaks, and the high variability in breeding is a reflection of the high variability in rainfall events in the drier areas of Namibia. Much more work is needed to answer questions such as: do predators and temperature play a role in setting breeding seasons and do some birds in the Nama-Karoo breed twice - in the west then the east.

Acknowledgments

Contributors to the Namibian Nest record Scheme made this analysis possible and we thank them for their records. Future records will help clarify the ecological factors determining breeding. Data extraction was undertaken by Uatjavi Uanivi (MET) and Alice Jarvis (Biodiversity Programme), while Stephanie Tyler facilitated access to Botswana records. Mark Anderson initiated the cooperation between South Africa, Botswana and Namibia over sandgrouse conservation, and thereby encouraged this analysis. We thank them all for their input. This paper is partly based on a similar contribution made by PL (Lloyd 1999).

References

- Bernardi, M. 1997. Monthly and annual rainfall normals for selected stations in Namibia. Windhoek, Met Office, Windhoek.
- Dixon, J. & Louw, G. 1978. Seasonal effects on nutrition, reproduction and aspects of thermoregulation in the Namaqua Sandgrouse. *Madoqua* 11:19-29
- Harrison, J.A., Allan, D.G., Underhill, L.G., Herremans, M., Tree, A.J., Parker, V. & Brown, C.J. 1997 *The atlas of southern African birds*. Cape Town: Birdlife South Africa.
- Kilian, J.W. 1995. The ecology of Gemsbok (*Oryx gazella gazella*) in the southern Namib. Unpubl. Internal Report, Ministry of Environment & Tourism, Windhoek.
- Lloyd, P. 1997. Desert nomads extraordinaire. *Birds & Birding* (Dec/Jan): 26-32.
- Lloyd, P. 1998. Ecology and movements of sandgrouse in southern Africa. Ph.D. thesis, University of Cape Town
- Lloyd, P. 1999. Rainfall as a breeding stimulus and clutch size determinant in South African arid-zone birds. *Ibis* 141:637-643.
- Lloyd, P. 1999. The science and policy behind managing sandgrouse for sustainable utilisation in southern Africa. *South Africa Journal of Wildlife Research* 29:35-42.
- Lloyd, P., Plaganyi, E., Lepage, D., Little, R.M. & Crowe, T.M. 2000. Nest-site selection, egg pigmentation and clutch predation in the ground-nesting Namaqua Sandgrouse *Pterocles namaqua*. *Ibis* 142:123-131.
- Lloyd, P., Little, R.M., Crowe, T.M. & Simmons, R.E. 2001. Rainfall and food availability as factors influencing the migration and breeding activity of Namaqua Sandgrouse. *Pterocles namaqua*. *Ostrich* 72: 50-62.
- Njorge, P., Lens, L., Sutton, J. & Bennun, L.A. 1997. The validity of open seasons for sandgrouse shooting: analysis of an 11-year data set from Kenya. *Afr. J. Ecol.* 35: 186-193.
- Simmons, R.E. (MS). Haib River - Orange River, bird diversity and bird densities. Unpubl. report. Windhoek.
- Skinner, N.J. 1996. The breeding seasons of birds in Botswana II: Non-passerine families (sandgrouse to woodpeckers). *Babbler* 31: 6-16.

FIG 1: Namibia sandgrouse breeding

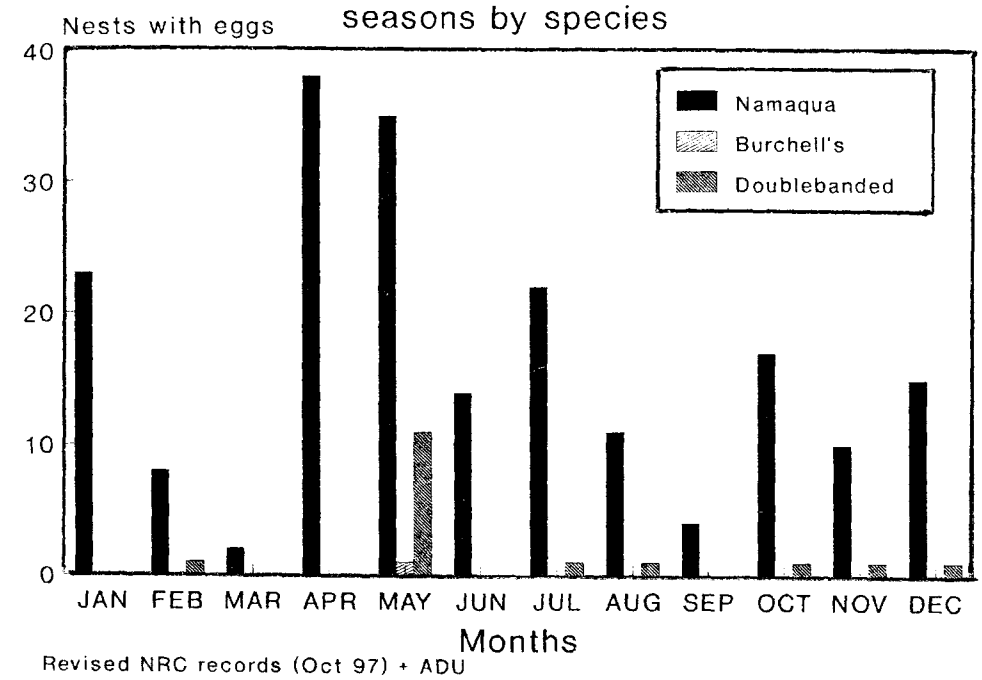


FIG 2: Namaqua Sandgrouse breeding

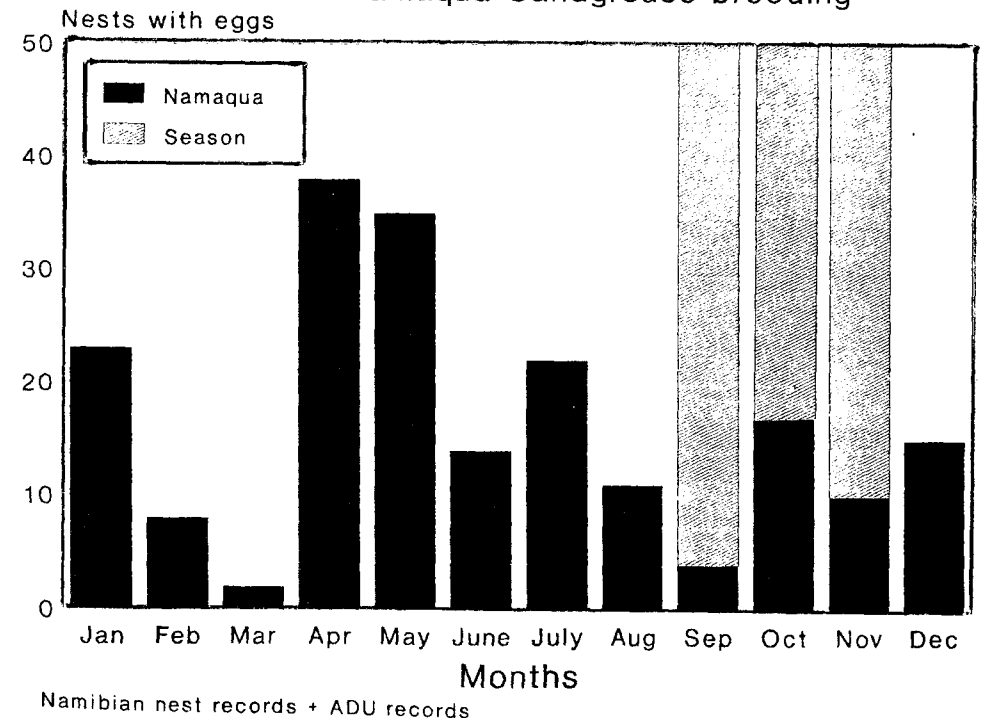


FIG 3: Botswana breeding sandgrouse

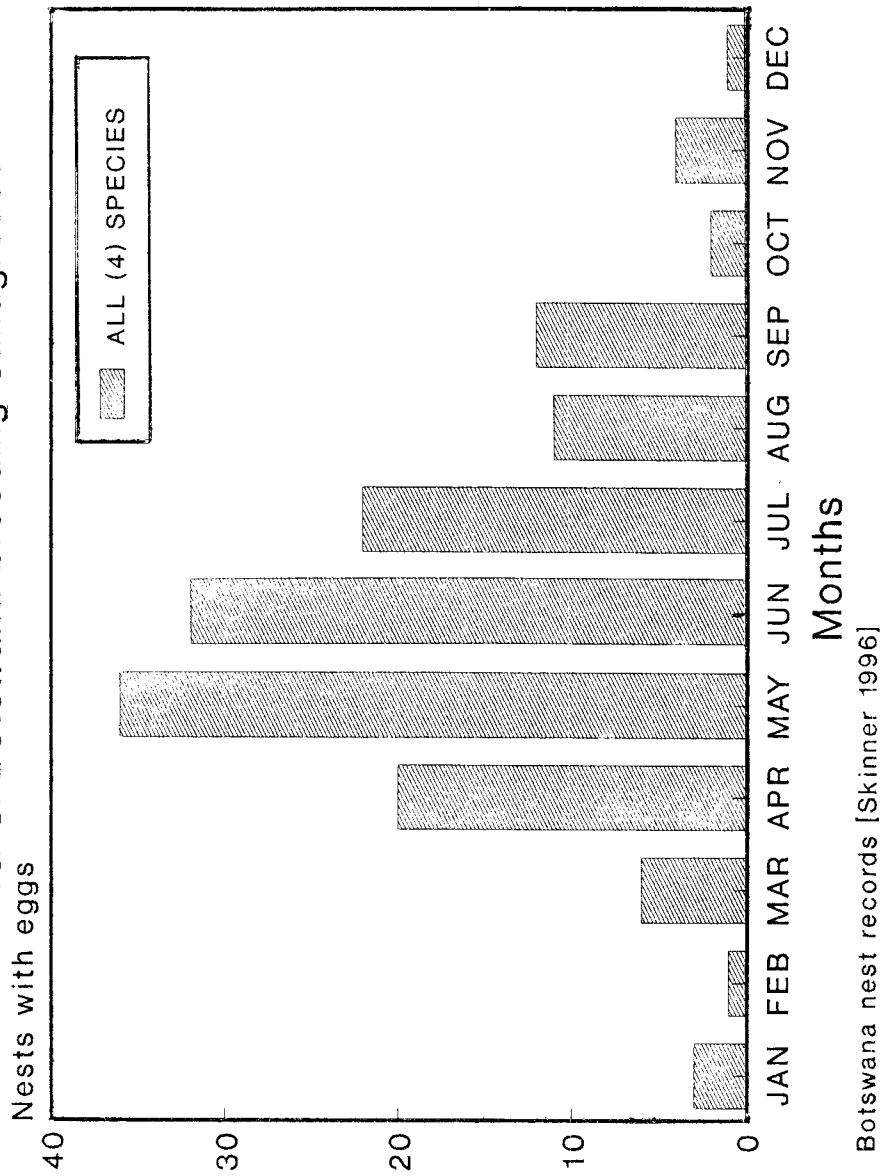


FIG. 4: Namaqua Sandgrouse breeding seasons by region (North to South)

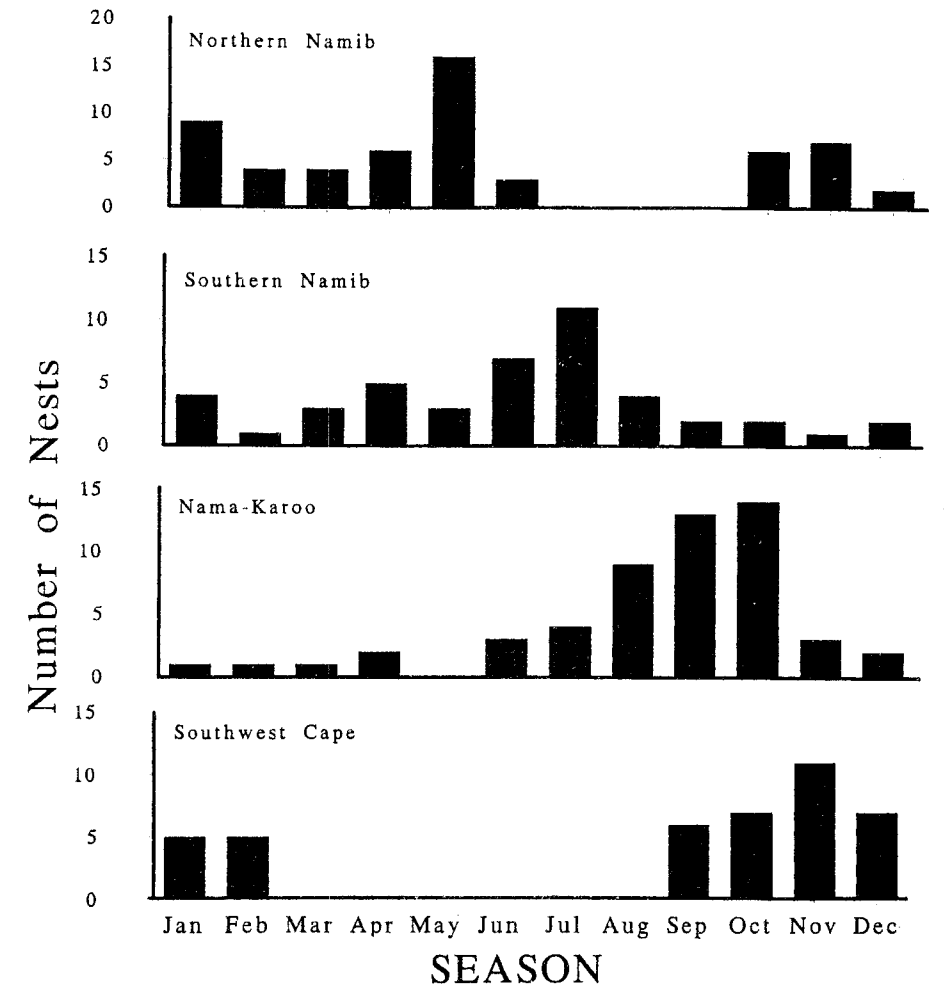


Table 1.

Summary of Namibia's huntable gamebirds shooting seasons and bag limits for 1998. The birds listed below may be hunted only within the open seasons indicated, under permit from the Ministry of Environment & Tourism.

Huntable species	Open Season	Length in months	Bag limit birds/person/day	Changed from 1997 gazette
Rock Pigeon	1 July-31 Oct.	4	10	-
Cape Turtle Dove	1 May-31 Oct.	6	10	-
Laughing Dove	1 May-31 Oct.	6	10	-
Kurriehane Buttonquail	1 May-31 Jul.	3	10	-
Harlequin Quail	1 June-31 Aug.	3	5	New: only in Caprivii/Kavango
Helmeted Guineafowl	1 June-30 Sep.	4	10	Season extended 1 month
Swainson's Francolin	1 June-31 Aug.	3	5	-
Orange River Francolin	1 June-31 Aug.	3	10	-
Redbilled Francolin	1 June-31 Aug.	3	10	-
Namaqua Sandgrouse	1 Sept-30 Nov.	3	10	-
Doublebanded Sandgrouse	1 Sept-30 Nov.	3	5	-
Burchell's Sandgrouse	1 Oct-30 Nov	2	5	New: huntable for only 2 months
Egyptian Goose	1 Jan-31 Mar.	3	5	-
Cape Teal	1 Aug-31 Oct.	3	10	-
Redbilled Teal	1 Aug-31 Oct.	3	10	-

Bird club Weekend Windpoort Farm

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The Namibia Bird Club ventured forth during the long weekend of 8-12 May to the farm Windpoort, Outjo District. We had been expecting Sheila Blaine from the Wits bird club during the end of April but she pitched up by herself on 8 May in search of the elusive Hartlaub's Francolin and Chestnut Weaver. She had been traveling with a friend but after 2 flat tyres on the Aus-Walvis Bay road her friend got nervous (she lives in Joburg!) and flew home. Four club members (Nigel Steyn, Alex Singer, Peter and Anke Steinfeldt) and one guest (Betsy Fox) arrived on 9 May. Everyone was on the lapa admiring the view and kudu while Sheila and I were driving around looking for the weavers. We arrived back and everyone told Sheila to hurry as the Hartlaub's were 5 m below the lapa. We rushed up and she ticked her 700th bird in southern Africa. She rushed off to her chalet to get her video and the birds followed so she ended up taking video from the doorway of the chalet while the birds walked past. It was quite a start to the weekend. We had a late night sitting around the lapa discussing birds.

Next morning we drove around the next door game farm and climbed to a Secretarybird nest but found only an incubating egg. On Windpoort the mist nets were open so we were catching birds and showing the finer details to all. We also checked the hornbill nesting boxes and ringed the Yellow-billed and Grey hornbill chicks. In the afternoon we drove around the farm and saw a Chestnut weaver but Sheila had opted to stay at home!

On the Saturday we drove north to another neighbour's farm and attempted to catch a Red-crested Korhaan but while very friendly, it let us drive within 1m of it, in the end it did not cooperate and ran off away from my net. We did find a black Korhaan who was more cooperative and after ringing with metal and colour rings we released it. That evening we took a night drive but did not see any birds, only 2 kudu, jackal and 2 African Wild Cats.

On Sunday everyone packed up and drove back to Windhoek after a good time and some new birds seen.