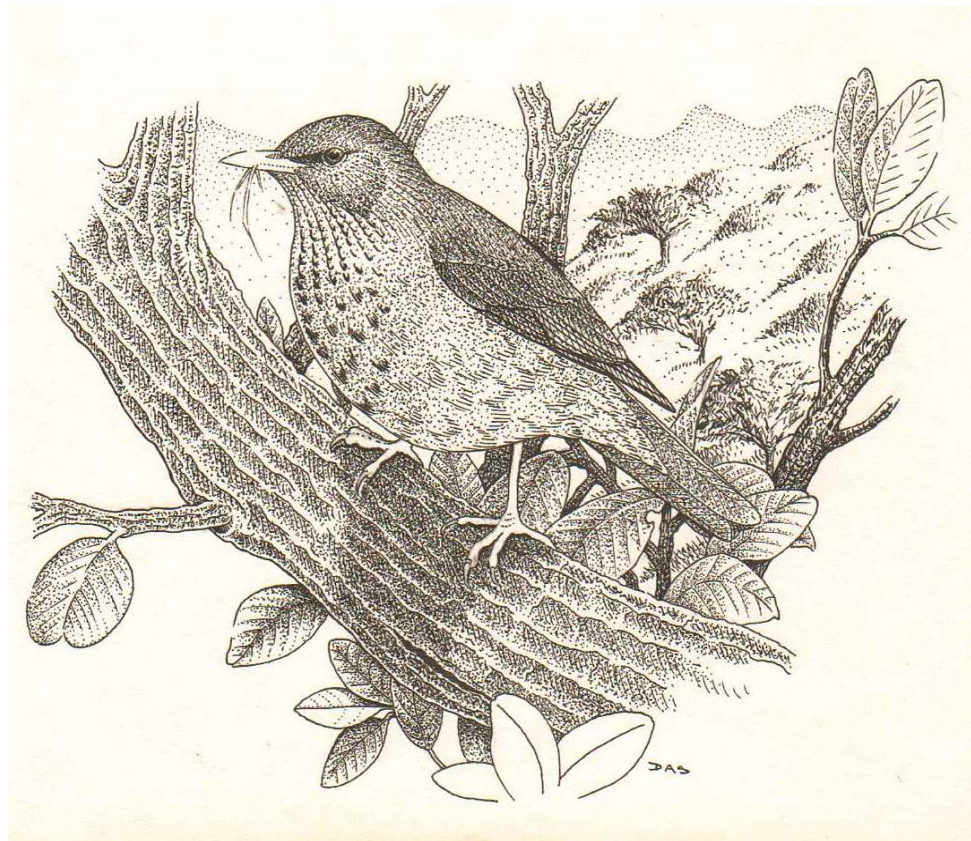


**THE BIRDS OF THE HIGHLANDS OF
SOUTH-WEST SAUDI ARABIA
AND ADJACENT PARTS OF THE TIHAMA:
JULY 2010 (ABBA SURVEY 42)**

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SUMMARY

The objective of the survey was to compare habitats and bird life in the Asir region, particularly Jebal Souda and the Raydah escarpment protected area of the Saudi Wildlife Commission, and adjacent regions of the tihama, with those observed in July 1987 (Jennings, et al., 1988). The two surveys were approximately the same length and equal amounts of time were spent in the highlands and on the tihama. A number of walked censuses were carried out during 2010 on Jebal Souda, using the same methodology as walked censuses in 1987, and the results are compared. Broadly speaking the comparison of censuses revealed that in 2010 there were less birds and reduced diversity on the Jebal Souda plateau, compared to 1987. However in the Raydah reserve the estimates of breeding bird populations compiled in the mid 1990s was little changed as far as could be assessed in 2010. The highland region of south-west Saudi Arabia, especially Jebal Souda, has been much developed since the 1987 survey and is now an important internal recreation and resort area. This has led to a reduction in the region's importance for terraced agriculture. These changes may be a contributing factor to changes in bird numbers on the plateau. Subsidiary tasks that arose during the 2010 survey were to help locate satellite tagged Bald Ibises *Geronticus eremita* from Syria which were transiting Saudi Arabia at the time. Secondly to search for the Asir subspecies of the Eurasian Magpie *Pica pica asirensis*, which is endemic to the south-west Saudi Arabia highlands, and is reported to be in decline. A separate team searching for the Bald Ibis located some individuals and one was found dead. Few Magpies were located and it seems clear that this very scarce bird has declined further in numbers in recent years. A number of interesting records of birds were obtained, especially on the tihama, where two new birds for Saudi Arabia were observed, Black-headed Heron *Ardea melanocephala* and Painted Snipe *Rostratula benghalensis* and one species, Glossy Ibis *Plegadis falcinellus* was found breeding for the first time in the Arabian Peninsula. Some recommendations for the protection and management of the Raydah reserve are presented. A systematic list of all birds seen is provided.

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INTRODUCTION TO THE STUDY AREA

01. In July 1987 the first author and Mohammed al Salamah of SWC Riyadh, with the help of Dr Hassan Felemban of King Abdulaziz University, Jeddah made a survey of the birds of the Asir Province of Saudi Arabia, concentrating on the Jebal Souda region of the highlands as Atlas of the Breeding Birds of Arabia (ABBA) Survey 4. At just over 3000 m Jebal Souda is the highest peak of Saudi Arabia and includes the Raydah protected area on its western escarpment, its immediate hinterland is a plateau, mostly over 2500 m. The 1987 team also visited adjacent parts of the tihama and Jebal Faifa. Although the birds of the Asir were generally well known at that time (Bates, 1937; King, 1977), their report (Jennings et al 1988), presented the first detailed picture of birds in the area. Since then much work has been done in the area, especially the Raydah reserve, notably Newton and Newton, 1996. The main objective of the July 2010 survey (ABBA Survey 42) was to review bird diversity, populations and habitats in the same regions, with a view to comparing what, if any, changes had occurred in the region during a period of considerable development, especially in respect of internal tourism.

02. The 2010 team was comprised of the first author for the whole period (4-23 July), Amar Al-Momen (4-13 July) and Jabr Haresi (15-19 July). At the same time Mohammed Al Salamah was present on the tihama with two Syrian ornithologists, Ahmed Abdullah and Mahmood Abdullah, in a separate project concerning migrating Bald Ibis with which the first team also became involved. Amar Al-Momen joined the Bald Ibis team 13- 26 July.

03. The south-west of Arabia is the stronghold of the Arabian endemic bird fauna. Of the 11 endemic species in Arabia (Jennings, 2010), all except the Arabian Accentor *Prunella fagani* occur in this area. In addition the highlands of south-west Saudi Arabia is the only place in Arabia where the Asir endemic race of the Eurasian Magpie occurs. Some authorities give specific status to this taxon. This region is also a stronghold for several species of Afrotropical realm birds, including some that are breeding summer visitors.

04. The region has a wide diversity of bird life, vegetation and topography. Altitudes reach just over 3,000 m and the juniper *Juniperus procera* forests in the highlands are probably the most extensive anywhere in Arabia. Also in the highlands there are thickly wooded acacia valleys of various species but *Acacia tortilis* and *A. mellifera* were the most common noted during the present survey. Terraced agriculture growing cereals, notably wheat (being harvested in July) and maize (not fully grown in July) is in decline and many fields, especially in the Jebal Souda area have been abandoned. However this was not the case everywhere in the highlands, to the north and south of Jebal Souda agriculture was more in evidence, possibly because there may have been more reliable rainfall in these areas in recent years. There is limited animal husbandry, small flocks of goats and sheep occur in the highlands and cows often wander untended in the undisturbed areas. Bee-keeping and honey production is an important occupation in the region. In the foothills below 1,500 m vegetation becomes much more Afrotropical with numerous *Ficus* trees and genera such as *Commiphora*, *Aloe*, *Ceropegia* and *Caralluma* being well represented. These lush habitats of the foothills soon give way on the tihama to arid sandy deserts interspersed with very fertile irrigated fields where water run off from the highlands can be controlled or where water is close to the surface. These tilled areas usually have high bunds around them and grow a variety of crops, including sugarcane, millet and maize.

05. The Raydah reserve area (estimated at 12 km² by Newton & Newton (1996), is a largely undeveloped section of the western escarpment of Jebal Souda that has been protected to some degree since the 1980s. It encompasses a strata of highland and foothill habitat from 2800 m to Wadi Jaw at (1350 m), including a succession of vegetation from juniper dominated upper regions, with olive *Oleo europaea*, through to the Afrotropical foothills at Wadi Jaw with *Ficus* trees and where coffee

growing occurs. Ten Arabian endemic bird species have been recorded in this reserve, as well as the Asir subspecies of the Eurasian Magpie and there are numerous Afrotropical species in the lower altitudes.

06. Throughout the region the predominant rocks are basalts (there are relatively recent lava fields slightly to the north), significant granite outcrops, especially south of Abha the main provincial Asir city, and well known sandstone regions, notably Jebal Gaha (2100 m) and at Habala. Jebal Gaha has extensive juniper forest on its plateau summit but in 2010 this was mostly dead, or much stressed, as a result of poor rains in recent years. Jebal Faifa (1950 m) is much better positioned to catch rainfall, is remarkably green and one of the few places in Saudi Arabia where the mildly narcotic ghat plant *Cartha edulis* is grown and consumed.

07. Being on the periphery of the major weather systems of the northern Indian Ocean (notably the South-west Monsoon) the weather in July in the study area was generally unsettled. Mornings were often cloudy and clouds would build during the day with rain occurring most afternoons in the highlands. There was also fog and low cloud several afternoons. On drier days visibility was often very poor from dust in the atmosphere blown from elsewhere. Apparently there were exceptional rains elsewhere in the highlands during the survey and reports of heavy flooding were received at several places between Taif and Abha. At the same time there was also much rain on the tihama, causing wadis to run and local flooding, where during the survey the sun was hazy or obscured on most days, with low cloud or dust in the atmosphere. Sunrise was generally about 0545 and sunset about 1845.

08. In this report species scientific names are given on first use although scientific names are not shown in tables or plates because of space constraints. However all scientific names appear again in the systematic list at Appendix 1. The taxonomic order used is that of Dickinson, 2003.

Itinerary

09. An itinerary of the daily activities and places visited is provided at Appendix 2, along with a simplified Gazetteer and some relevant waypoints. The location of the main sites visited, and ABBA grid squares can be seen at Fig. 1.

METHODS USED IN ASSESSING BIRD POPULATIONS AND HABITATS

Field observations

10 All birds seen or heard were recorded including observations from the start of the fieldwork at Riyadh on 4 July, on the way to the Asir via Wadi Dawasir, visits to the tihama and the return to Riyadh via Rhanyah on 23 July. Recording was organised under the grid squares of the distributional grid of the ABBA project (Fig 1) and breeding evidence was collected in accordance with the Breeding Evidence Code (BEC) used by the project, see Appendix 3. Bird breeding activity had almost ceased in the region of central Arabia, was coming to an end in the Asir highlands but was continuing on the tihama. Appendix 4 provides the highest BEC recorded for each species in each square visited.

11. During the course of the survey two issues arose that required a change in the emphasis of field work. Firstly, news was received that the last remaining members of the Asian population of the Bald Ibis, which had been satellite tagged in Syria, were passing through south-west Saudi Arabia and, as the team was the only SWC field-workers in the area at the time, it was asked to try to locate these birds, determine the habitats they use on migration and to conduct a risk assessment for the stay of the species in that part of Saudi Arabia. The second issue was that in the first few days of the survey

members had not recorded the Asir subspecies of the Eurasian Magpie anywhere in the Jebal Souda area, one of its previous strongholds. This was a cause for concern and after consultation with the SWC and Dr Mohamed Shobrak (Taif University) it was decided to make a special search for it at the locations it had previously been recorded in order to obtain an idea of its present day range and population.

Walked transects

12. On 12 days a walked transect census of 30 minutes duration was carried out at dawn, the time when most birds are active, singing and feeding. A transect was not possible every day because of accommodation constraints, the need for an early start for other work or adverse weather. Census sites tended to be away from human accommodation to avoid intrusion into the lives of local residents. Of the 12 censuses accomplished eight were within the highlands of Jebal Souda (IA13), two were in the tihama region (JA12, IB12) and two others on the return to Riyadh (IB14, JA23), details of all sites are at Table 1. Photographs of the census sites appear at Plates 1-12.

13. During the censuses all birds seen or heard, including those flying, were counted. Most were recorded within 30 m of the observer although some particularly vocal species, with far carrying calls (e.g. Tristram's Starling *Onychognathus tristramii* and Fan-tailed Raven *Corvus rhipidurus*) could be heard at 400 m or more distance. In view of this bias and that quiet skulking species might be missed, census results should not be regarded as an assessment of relative abundance of species. However they are an indication of the number of each species present in a given habitat and the results can be compared with the results of other censuses using the same methodology, in similar habitats in other areas, or in the same site many years apart.

14. The census report form also recorded times and coordinates of the census, the weather at the time (including visibility and wind), time of sunrise, altitude, habitat elements (including the superficial geology and soils, vegetation and manmade habitats), human usage within the site and the approximate distance and width of the census (this depended on terrain). A note was made of how the census site generally represented habitats within the whole atlas square. A sketch was prepared in each case of the route of the census, showing main features such as roads, rocks, wadis in the area and a photo taken of the habitat (Plates 1-12). Birds were counted and for each species the highest BEC noted during the census was recorded with the overall status, such as breeding resident, breeding summer visitor etc.

Timed counts

15. A small number of five minute timed point counts were carried out on Jebal Souda, see Table 6.

Examination of birds in the hand

16. On the afternoon of 9 July birds were trapped using a mist net at the abandoned farm on the Raydah escarpment, so they could be examined in the hand. Notes on moult and breeding condition and some biometric measurements of the birds trapped can be seen at Table 2.

Fig 1.

Location of main sites south-west Saudi Arabia, July 2010

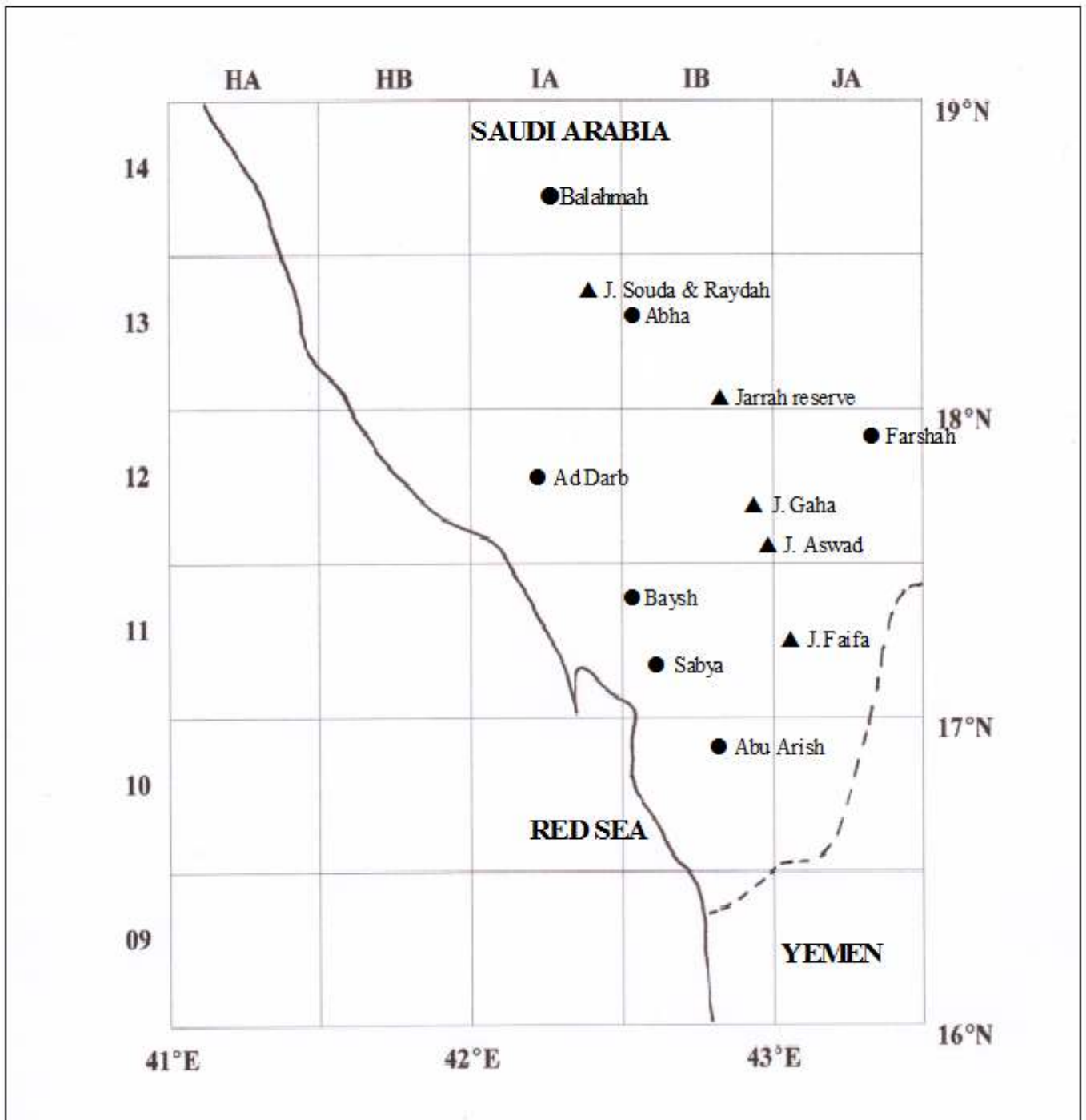


Table 1.**Details of early morning censuses: Habitat description and vegetation**

No	Date	Sq Ref	Coordinates	Alt (M)	Location and habitat description, including vegetation
1	6.7.10	IA13	18°14·403'N, 42°23·599'E	2761	Electricity pylon access road through juniper on lip of escarpment, small stream, Jebal Souda. <u>Vegetation noted:</u> <i>Juniperus procera</i> , <i>Acacia tortilis</i> , <i>Dodonaea viscosa</i> , <i>Rosa abyssinica</i> , <i>Lonicera etrusca</i> , <i>Echinops</i> sp, herbs, grasses.
2	7.7.10	IA13	18°11·876'N, 42°24·579'E	2438	Asphalt road above Raydah escarpment farm, juniper forest, herbs, road scar, Jebal Souda. <u>Vegetation noted:</u> <i>Juniperus procera</i> , <i>Acacia tortilis</i> , <i>Olea europaea</i> ssp <i>africana</i> , <i>Dodonaea viscosa</i> , <i>Rosa abyssinica</i> , <i>Jasminum grandiflorum</i> , <i>Opuntia ficus-indica</i> , <i>Nicotiana glauca</i> .
3	9.7.10	IA13	18°14·150'N, 42°23·930'E	2732	Terraced fields (tilled, fallow, stubble, growing crops) and some scrub at the back of the 'I'm Hotel', Jebal Souda. <u>Vegetation noted:</u> <i>Acacia tortilis</i> , <i>Juniperus procera</i> , <i>Ficus</i> sp, <i>Dodonaea viscosa</i> , grasses, <i>Triticum sativum</i> ,
4	10.7.10	IA13	18°14·380'N, 42°23·562'E	2736	Steep sided juniper clad valley with running water and pools over most of its length. Much vegetation, Jebal Souda. <u>Vegetation noted:</u> <i>Juniperus procera</i> , <i>Acacia mellifera</i> , <i>Ficus</i> sp, <i>Dodonaea viscosa</i> , <i>Rosa abyssinica</i> , <i>Hypericum revolutum</i> , grass.
5	13.7.10	IA13	18°13·536'N, 42°26·211'E	2580	Hillside with abandoned terraces, well tended recently ploughed terraces and scrub covered hillsides, Jebal Souda. <u>Vegetation noted:</u> <i>Acacia tortilis</i> , <i>Juniperus procera</i> , <i>Dodonaea viscosa</i> , <i>Opuntia ficus-indica</i> , grasses.
6	15.7.10	IA13	18°13·303'N, 42°26·436'E	2535	Road with wooded slope to valley on one side and scrub covered hillside on the other, Jebal Souda. <u>Vegetation noted:</u> <i>Acacia tortilis</i> , <i>Juniperus procera</i> , <i>Dodonaea viscosa</i> , <i>Ochrademus bacatus</i> , grass, wheat (<i>Triticum sativum</i>).
7	17.7.10	JA12	17°43·492'N, 43°10·357'E	1315	Rocky hillside, cross road, wadi bed and steep hillside. Below Farshah. <u>Vegetation noted:</u> <i>Acacia tortilis</i> , <i>Acacia mellifera</i> , <i>Commiphora</i> sp, <i>Zizyphus spinachristi</i> , <i>Adenium obesum</i> , <i>Cissus rotundifolius</i> , <i>Ceropegia</i> sp, <i>Argemone mexicana</i> .

No	Date	Sq Ref	Coordinates	Alt (M)	Location and habitat description, including vegetation
8	19.7.10	IA13	18°18'036"N, 42°21'312"E	2796	Juniper plateau with acacia near escarpment, Jebal Souda. <u>Vegetation noted:</u> <i>Juniperus procera</i> , <i>Acacia tortilis</i> , <i>Dodonaea viscosa</i> , grasses.
9	20.7.10	IA13	18°14'176"N, 42°25'826"E	2650	From road mostly, rocky hillside with acacia, abandoned terraces and tilled terraces and growing wheat (<i>Triticum sativum</i>), back of Green Plaza hotel, Jebal Souda. <u>Vegetation noted:</u> <i>Acacia mellifera</i> , <i>Juniperus procera</i> , <i>Dodonaea viscosa</i> , grasses, <i>Zea mays</i> .
10	21.7.10	IB12	17°38'085"N, 42°53'645"E	1850	Cliff top and slope, overlooking tilled terraces and ficus trees, many dead junipers, few olives, no acacia, Jebal Gaha. <u>Vegetation noted:</u> <i>Juniperus procera</i> , <i>Dracaena serrulata</i> , <i>Ficus</i> sp, <i>Lycium shawii</i> , <i>Olea europaea</i> , grasses.
11	22.7.10	IB14	18°50'091"N, 42°50'430"E	1770	Granite inselberg surrounded by acacia with <i>Lycium</i> and <i>Chenopoiaceae</i> spp, few herbs, no grasses, south of Bishah. <u>Vegetation noted:</u> <i>Acacia mellifera</i> , <i>Zizyphus spinachristi</i> , <i>Lycium shawii</i> , grasses.
12	23.7.10	JA23	23°26'698"N, 43°04'341"E	1074	Sandy gravel surrounded on three sides by granite outcrops (80 m high) and a sand dune at the mouth, few grasses and herbs, two small acacia, NE of Zalim. <u>Vegetation noted:</u> <i>Acacia</i> sp, <i>Chenopoiaceae</i> sp, <i>Panicum turgidum</i> , <i>Citrullus colocynthis</i> .

Plates 1-3, walked census sites

Census 1, Jebal Souda, 2761 m.



Census 2, Raydah escarpment, 2438 m.



Census 3, Jebal Souda terraced fields, 2732 m.



Plates 4-6, walked census sites

Census 4, small stream and juniper, Jebal Souda, 2736 m



Census 5, hillside with abandoned terraces, Jebal Souda, 2580 m



Census 6, Jebal Souda, 2535 m



Plates 7-9, walked census sites

Census 7, rocky hillside in foothills below Farshah (JA 12), 1315 m.



Census 8, Jebal Souda, juniper forest north of summit, 2796 m.



Census 9, terraced fields Jebal Souda, 2650 m.



Plates 10-12, walked census sites

Census 10, Jebal Gaha
(IB 12), 1850 m.



Census 11, granite
inselberg south of Bishah
(IB 14), 1770 m.



Census 12, and sandy
gravel area with granite
outcrops, central Arabia
(JA 23), 1074 m.



Table 2

Birds examined in the hand, Raydah Reserve, Jebal Souda, south-west Saudi Arabia, 9 July 2010

Species (chronological order)	Time	Age and sex	Wing (max chord)	Tail	Tarsus	Bill	Notes
White-spectacled Bulbul	1500	Adult male	97	93	24	22	No moult. No brood patch. (Photo 1)
Tristram's Starling	1600	Adult	158	126	46	31	No moult. No brood patch. (Photo 2)
White-spectacled Bulbul	1615	First year	87	78	24	19	No moult. No brood patch.
Yemen Warbler	1630	One year old	71	65	24	17	No moult. Brood patch. (Photo 3)
Brown Woodland Warbler	1645	Adult	54	42	20	11	No moult. Brood patch. (Photo 4)
Dusky Turtle Dove	1715	Adult	205	142	24	19	Old primaries, new secondaries. Brood patch feathers in pin.
Palestine Sunbird	1815	Adult male	54	39	NR	17	No moult. No brood patch.
Abyssinian White-eye	1845	Adult	59	NR	NR	NR	No moult. Brood patch.

Notes

1. Coords: 18°11.876'N 42°24.579' E; Altitude: 2438 m; Times: 1500-1845.
2. One mist net was put up beside bushes. All measurements were made with a metal end-stopped rule which was not best suited to tail, tarsus and bill measurements.
3. NR = Not recorded



RESULTS

17. Results are presented under three headings, Asir highlands, Tihama and Other Records; the latter includes notes on other fauna and flora and records of birds on the journeys to and from the Asir Region. A systematic list of all birds observed is at Appendix 1.

ASIR HIGHLANDS

General Changes and threats to the environment

18. The whole of the Jebal Souda area has been subject to much development in the years since 1987. This development was consistent with the region having become a major centre for internal tourism in Saudi Arabia and a limited amount of tourism from other Arab countries. This has meant the construction of a number of hotels, guesthouses and apartment blocks, private holiday homes and new compounds. There are many officially provided tourist facilities and infrastructure improvements, such as new roads, car parks, public picnic parks and cable cars (at Jebal Souda summit, Abha city and at Habala) and many private developments such as buggy parks, fun-fairs, horse riding centres, roadside markets. Some of these developments have taken up previously pristine montane habitat which inevitably has meant less suitable habitat for some indigenous montane bird species. The greater human presence is a cause of increased litter and pressure on the remaining terraced agriculture and on the remaining undisturbed parts of the region. It was noticed for example that farmers now put fences and blocking hazards round fields and physical barriers across private tracks to stop access by tourists seeking casual usage, for example to picnic or drive a buggy. This practice was not recorded in 1987 when access was generally free to all. In public areas where there is very high pressure from tourists, for example Dalagan park, the birdlife was noted as predominantly scavenging or human commensal species, such as House Sparrow *Passer domesticus*, ravens *Corvus* sp, and Tristram's Starling. Tourist development was also very apparent at Habala which the first author first visited in the late 1970s. At that time it was a tiny cliff settlement surrounded by untouched sandstone escarpments with not even an access road. Today there is a huge area for parking, a large camping site, horse riding, funfair, cable car and hotels. It was noted that much firewood was available for sale in all areas for tourists to use. The origin and the species of tree used was not clear but somewhere many trees are being cut down to supply this trade.

19. It was apparent that camels had been introduced to the region of Jebal Souda since 1987. Camels were seen at 2700 m on Jebal Souda and at 1350 m in Wadi Jaw. Camels are indiscriminate browsers and cause major detriment to the environment if they are introduced in large numbers. In Wadi Jaw it was noted that they were gnawing the bark from some trees. No camels were seen on the Raydah reserve and the SWC authorities should make sure they never are allowed there.

20. As in 1987 cows were wandering in the Raydah reserve and are still a cause for concern. It may seem superficially that they have a benign effect on the environment but they graze the under story of plants and grasses and browse branches of bushes and trees they can reach, thereby reducing the vegetational diversity which is so important for the diversity of wildlife. Cows roaming free within a reserve such as Raydah are incompatible with the objectives of the reserve. Cows were also recorded as present in the Al Jarrah reserve (a protected area of the Asir Emirate) south of Abha and the negative effect of their grazing and browsing was also noted there.

21. On the Raydah escarpment it appeared that there has been considerable die back of the juniper forest at all levels. It is very difficult to judge this effect properly without detailed specialist monitoring over a many years but, at the anecdotal level, the juniper die back was

most noticeable at the lower altitude limits of the species range. At 1800-1837 m there was complete death of all examples and most trees were dead up to 1850 m. The cause of the die back is not known but the most likely reasons are increased aridity of the region in recent years, or a possible shift of local weather patterns at this site as we did not notice this same effect in the northern (An Numas) and southern (Al Jarrah) extremes of the juniper areas visited. It may be that general climate change may be affecting the region, resulting in an increase in temperatures in these highlands, with juniper being no longer able to survive in the lowest altitudes of its range only two or three decades previously.

22. In 1987 the threat to the environment and birds posed by hamadryas baboons *Papio hamadryas* was noted. No comparative counts were made but the numbers of these baboons would appear to have greatly increased in the intervening period, perhaps as many as five fold since 1987, and their range has also extended, for example they were seen down to 200 m on the tihama. In tourist areas baboons become bold and sometimes aggressive, sitting on cars and pestering people for food. They are often fed from cars by tourists. On the Raydah reserve there seemed to be more baboons than in 1987 but it was noticed that they were keeping a good distance (100+ m) from humans. This shyness away from tourist areas was noted elsewhere and suggests that baboons are at least not encouraged by the local inhabitants and farmers and may be shot at or trapped.

23. No information is available about rainfall timing and amount in the region in recent years but there were some indications of poor rainfall in 2010, for example, some wheat crops had not grown and ripened and many fields were unsown. It was thought the drier conditions may have resulted in less breeding activity in 2010 compared to 1987.

Endemic birds

24. Of the ten Arabian endemic species that occur in Saudi Arabia nine were recorded on Jebal Souda and the Raydah escarpment during the survey. The tenth, Arabian Waxbill *Estrilda rufibarba* (which was recorded once in 1987 on Jebal Souda) was only found in the tihama region. A special note on the endemic subspecies of the Eurasian Magpie appears at paragraphs 29-33.

25. The status and habitat of each endemic observed in the highlands in 2010 is shown, with a comparative summary of observations in 1987.

Philby's Partridge *Alectoris philbyi* A rare resident, a single bird was seen in scrub beside terraces on Jebal Souda plateau at 2680 m and another was heard at 2535 m in similar habitat nearby on a subsequent day. One was also heard near Balahmah. In 1987 it was regarded as an uncommon resident in terraced fields of Jebal Souda. At that time it was suggested that encroachments of buildings and other development to its favoured habitat in the terraced fields would probably be a significant threat to it. The apparent decline in the Jebal Souda area may have been due to this pressure.

Arabian Partridge *Alectoris melanocephala* A common resident of the highlands, especially steep wooded hillsides of the western escarpment where it was recorded on most visits. It was also heard at terraced fields on the Souda Plateau. In 1987 it was a widespread not uncommon species. There has been no apparent change in numbers since 1987.

Arabian Woodpecker *Dendrocopos dorae* An uncommon but widespread resident of the highlands, Jebal Souda plateau, Raydah escarpment and Wadi Jaw 1350 m. Usually associated with acacia trees but found in a variety of wooded habitats. In 1987 it was recorded less often than in 2010 but no change in numbers can be determined from the

small sample of observations.

Yemen Warbler *Parisoma buryi* Common resident in bushy areas especially on the Raydah escarpment, less frequent similar habitats on the Jebal Souda plateau. In 1987 it was recorded more frequently than in 2010, especially on the plateau area.

Yemen Thrush *Turdus menachensis* Common and widespread resident in the highlands, particularly in areas of thick bushes. Also Al Jarrah. In 1987 it was also common and widespread in the highlands, no change.

Arabian Wheatear *Oenanthe lugentoides* A rather scarce resident of rocky, bushy sites but widespread on the Jebal Souda plateau and Wadi Tale'a (but not recorded Raydah escarpment) also Farshah, Gara'a and Tanumah. In 1987 it was recorded more frequently so the species may have declined slightly. Disturbance is not thought likely to be the reason as it is often associated with gardens and regularly breeds near human sites.

Arabian Serin *Serinus rothschildi* A rather scarce resident of scrub land and acacia sites, recorded twice on Raydah escarpment and once on the plateau at Azeezah. In 1987 it was recorded more frequently than in 2010, suggesting a possible decline in numbers.

Yemen Serin *Serinus menachensis* Only recorded once at the Raydah farm. In 1987 it was seen on three occasions but the small sample of observations defies conclusions on changes in commonality.

Yemen Linnet *Carduelis yemenensis* A common resident frequenting weedy terraced fields which had been harvested. Often in flocks, also recorded Raydah escarpment and Al Jarrah and Al Azah. In 1987 it was also common and widespread so there is no apparent change in commonality.

The vertical distribution of birds on Raydah Reserve

26. During the various visits to the Raydah reserve a record was kept of the altitude at which each bird species was seen, from the entrance gate (just below 2800 m) to Wadi Jaw (1350 m) and along that wadi (which becomes Wadi Maraba) to where it joins the main Ad Darb to Abha road. Records of the altitudinal distribution of birds was also maintained for other highland areas but not so consistently or over such a wide range of altitudes. The results are shown at Table 3. Some of the commoner species do not appear on the table as they may occur at any altitude.

27. Where the same species also occurred on the plateau area of Jebal Souda they generally occurred at the same altitudes, some example of where species occurred higher on the plateau than on Raydah are indicated at Table 3. Some species were found on the Raydah escarpment but not on the Jebal Souda Plateau, and vice versa, these are shown at Table 4.

Observations elsewhere in the highlands

28. Species found elsewhere in the highlands which were not observed on the Souda/Raydah areas are as follows:

Little Grebe *Tachybaptus ruficollis*: Abha dam and Tendaha dam,

Common Coot *Fulica atra*: Abha dam and Tendaha dam

Klaas's cuckoo *Chrysococcyx klaas*: Al Jarrah

African Silverbill *Lonchura cantans*: Dalagan Park.

Asir Magpie distribution and numbers

29. By 17 July no examples of the Asir subspecies of the Eurasian Magpie had been recorded on Jebal Souda, the Raydah Escarpment, at the Al Jarrah reserve or on short visits to Jebal Aswad and Jebal Gaha. This was a cause for concern as Jebal Souda/Raydah were in the past regarded as stronghold areas for the species.

30. On 19 July a trip was made to north in the highlands to Tanumah and An Numas where the species has been recorded on numerous occasions before. It was not an ideal day for a quick survey of this nature as there were strong winds and low cloud throughout, the team also lacked precise location details for previous observations. No magpies were seen at these locations but a pair of adults and four juveniles were observed a few kilometres north of Balahmah near the village of Al Azah (2606 m). The juveniles were mostly able to fend for themselves but at least two food begged adults. The habitat of the area was rather open hillsides with scattered juniper trees and terraced fields. They were feeding mainly at a manure heap at a small farm which had goats, sheep and chickens. The site appeared to be attracting insects and it seemed likely there was also plenty of grain around. They were quite shy and could not be approached within about 40 m and typical of this subspecies, when in a family group, they were very vocal, calling regularly presumably to help keep the group together.

31. The isolated Jebal Gaha has also previously been reported as a stronghold site for this species (Yahya & Salamah, 1996; Jennings, 2010). A short visit on 16 July to look for the Magpie was abandoned because low cloud offered nil visibility. However local people on the nearby Jebal Aswad had advised they had heard it there 'recently'. On 21 July the team returned to Jebal Gaha and spent several hours searching the plateau at 1900 - 2000 m and camped the night. With the help of local people we were taken to a site on the lip of the plateau where the species had been seen recently. We found a pair there at 1850-1950 m. The habitat was a cliff edge of the sandstone plateau, an area of mainly dead juniper trees. The birds appeared to prefer the places of heavy shade of leafy fig and other trees in gullies just below the plateau lip. There were also small cultivated plots here. The Magpies were not very vocal but were very shy and could not be approached within 100 m. What appeared to be old nests of this species were seen on several occasions on Jebal Gaha, situated in dead juniper trees. One was heard early morning the next day in the same area.

32. On 23 July a report was received from Mohadi Asiri that he had seen three Magpies that morning at Sharma village in the Tale'a valley on the Souda plateau area. Also since the end of the survey Prof. Brendan Kavanagh has reported that in September, whilst he was conducting a bird ringing demonstration for the SWC at the Raydah protected area, he saw a Magpie on the radio antennae at the reserve entrance (2795 m).

33. The results of this short Magpie survey with records of small numbers from four widely separated locations presents a picture of a taxon in decline, it is certainly much less numerous than in previous years and probably the estimate of total world population of 135 pairs contained in Jennings (2010) may actually be on the high side rather than the low side. As this taxon is only found in Saudi Arabia and it appears important that the present day range and numbers should be reviewed by a better structured and more focussed study, it is recommended that the SWC should take steps to put such a survey in hand in the near future.

Table 3

Altitudinal distribution of bird species, Raydah Escarpment and Wadi Jaw/Maraba to the Abha - Ad Darb Road (2795m- 603 m), July 2010

Alt(m)	Arabian Partridge	Common Kestrel	Shikra *	Long-legged Buzzard	African Olive Pigeon	Dusky Turtle Dove	Namaqua Dove	Hume's Owl	Abyssinian Nightjar	Little Swift	Grey-headed Kingfisher	White-throated Bee-eater	Hoopoe	African Grey Hornbill	Arabian Woodpecker	African Paradise Flycatcher	Fan-tailed Raven	Red-rumped Swallow	Desert Lark	Scrub Warbler	Yemen Warbler	Brown Woodland Warbler	Arabian Babbler	Abyssinian White-eye	Violet-backed Starling	Tristram's Starling	Yemen Thrush	Black Scrub Robin	Red-breasted Wheatear	Blackstart	Little Rock Thrush	Palestine Sunbird	Shining Sunbird	Rüppell's Weaver	Long-billed Pipit	Arabian Serin	Yemen Serin	Yemen Linnet	Cinnamon-breasted Bunting			
NB 2700																																										
2700	X	X			X	X											X	X		X	X	X			X	X		X		X	X			X	X							
2600						X																																				
2500	X			X		X														X		X				X	X															
2400	X					X		X	X				X				X	X			X	X		X		X	X															
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700							X				X	X						X									X															
600											X	X		X				X							X		X	X														

Notes

This list excludes Laughing Dove, Crested Lark, White-spectacled Bulbul and House Sparrow which might occur at any altitude.

The summit of Raydah escarpment is at 2,795 m, the reserve track joins Wadi Jaw at 1350 m.

The highlighted squares are selected altitudinal records for the species on the Jebal Souda plateau area.

Species with an asterisk were only recorded on the Raydah escarpment

Table 4: Species occurring on Raydah (above 2000 m) but not on the plateau - and vice versa

Recorded on the Raydah escarpment but not on the Jebal Souda plateau	Recorded on Jebal Souda plateau but not on the Raydah escarpment
Shikra*	Philby's Partridge#
African Olive Pigeon#	Dideric Cuckoo*
Hume's Owl*	
Abyssinian Nightjar#	
African Grey Hornbill#	
African Paradise Flycatcher#	
	Brown-necked Raven*
	Pale Crag Martin *
	Blanford's Lark #
	Graceful Prinia #
	Arabian Warbler*
	Common Stonechat#
	Arabian Wheatear#
	Gambaga Flycatcher*
Yemen Serin*	

* Small sample, species may occur in both zones.

Suitable habitat may only be present in this zone.

Migrants in the highlands

34. Bird migration is at its lowest level during July in the highlands of south-west Arabia and not surprisingly only three species of migrants were recorded:

Green Sandpiper *Tringa ochruros*: Individuals were seen at two wetland sites in the highlands at 2750 m.

Common Sandpiper *Actitis hypoleucos*: There were two at Tendaha dam

Barn Swallow *Hirundo rustica* : Small numbers recorded in the highlands, 5-19 July.

Exotic species

35. No exotic species were recorded in the highlands.

Walked Censuses

36. One objective of the walked census transects on Jebal Souda was to try to compare species diversity and numbers in 2010 with the results from censuses in the same general area and using the same methodology as in July 1987. A total of eight early morning walked censuses were carried out on the Jebal Souda highlands in 2010. The location of these censuses and the eight censuses of 1987 are shown on the map at Fig 2. It was not possible to exactly replicate the census routes and times of the censuses in 1987 for two reasons. Firstly in 1987 it was not possible to obtain exact coordinates for census start and finish points which GPS technology allowed in 2010 and secondly the considerable degree of building development, of houses, hotels and other tourist infrastructure, in the intervening years meant that many habitats had irrevocably changed. Nevertheless it is clear from Fig 2 that several of the 2010 censuses were very close to some of the eight censuses in 1987.

37. The results of the census transects on Jebal Souda in 1987 are shown at Table 5. In all 34 breeding species were recorded and a single migrant species, Green Sandpiper, on one census. The total of individual birds on all censuses was 327 with an average of 41 birds on each census. Eight endemic species, which show as a yellow highlight on Table 5, were recorded on the censuses, totalling 67 birds with an average of more than eight birds on each census. There were six other important highland species recorded (77 birds with an census average of more than nine birds on each) these are highlighted in blue. The corresponding scores during the eight censuses in 1987, average number of birds seen during both years and changes in these averages, are also recorded at Table 5.

38. In comparing the results of the censuses in 2010 with 1987 the following observations are made, see discussion for further comments and analysis.

a. In 2010, 34 species were recorded compared to 33 in 1987. During the 2010 censuses the following species recorded in 1987 were not seen on Jebal Souda; Black Kite *Milvus migrans*, Bruce's Green Pigeon *Treron waalia*, Eurasian Magpie (important highland species), Brown-necked Raven *Corvus ruficollis*, Graceful Prinia *Prinia gracilis* and Golden-winged Grossbeak *Rhynchostruthus socotranus* (important highland species). However the following were recorded in 2010 which were not present on 1987 censuses. Arabian Partridge (endemic species), Common Kestrel *Falcon tinnunculus*, Arabian Woodpecker (endemic species), Pale Crag Martin *Pytonoprogne obsoleta*, Crested Lark *Galerida cristata*, Arabian Warbler *Sylvia leucomelaena* (important highland species) and Arabian Babbler *Turdoides squamiceps*.

b. In 2010 the total of all birds counted on eight censuses was 327, compared to 609 on eight censuses in 1987.

c. In 2010 although more endemic species were recorded during censuses (eight compared to six in 1987), the total of all endemic birds counted was only 67 compared to 174 in 1987. Similarly with important highland species (six species in 2010 and seven in 1987), the total of all birds counted was 77 and 150 respectively.

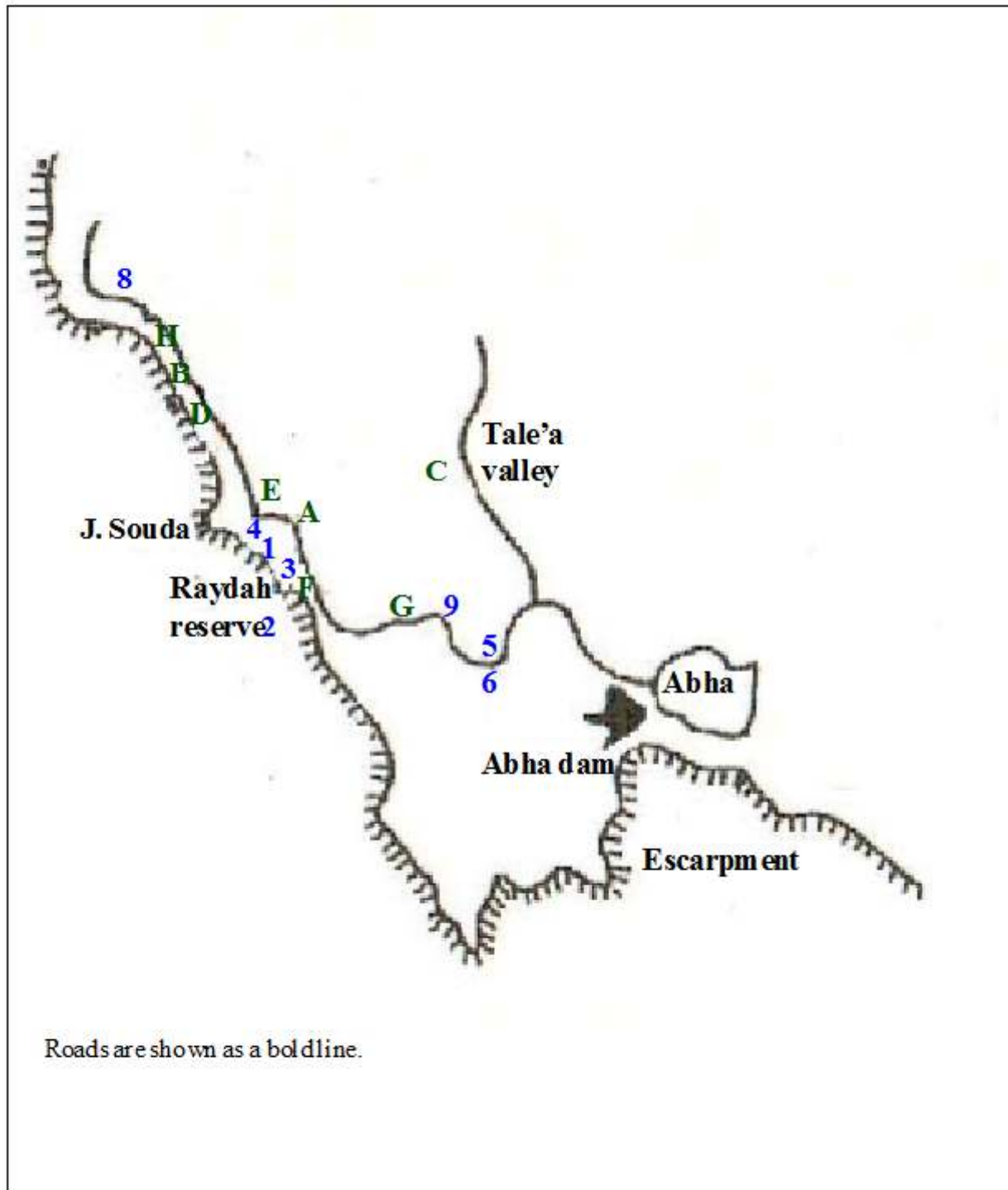
d. In terms of overall diversity the average number of species seen on each census in 2010 was 13.125 species compared to 15.25 in 1987.

Timed Point Counts

39. Two five minute point counts were carried out, the result are at Table 6.

Fig 2.

Position of walked censuses in 1987 and 2010, Jebal Souda, south-west Saudi Arabia



The eight censuses in 2010 are numbered in blue. (Details at Table 4)
The eight censuses in 1987 are lettered in red.

Table 5

Comparison of Census Results, July 1987 & July 2010; Jebal Souda, South-west Saudi Arabia

Species (Excludes migrants)	2010										1987										Ave birds per census	Change in ave 1987-2010	Change in total of each species 1987-2010
	Census No	1	2	3	4	5	6	8	9	Tot	1	2	3	4	6	7	8	10	Tot				
1 Philby's Partridge						1				1			2		1	1	2		6	0.75	-0.63	-5	
2 Arabian Partridge	4	2								6									0	0.00	0.75	6	
3 Common Kestrel	1			1	1					3									0	0.00	0.38	3	
4 Black Kite										0		1							1	0.13	-0.13	-1	
5 Rock Dove			4			2		3	9	1.13	3						3		6	0.75	0.38	3	
6 Dusky Turtle Dove	2	9	8	10		1	6		36	4.50	9	2	4	10	8	17	3	53	6.63	-2.13	-17		
7 Palm Dove	4	3	5	3	2	2	3	6	28	3.50	2	6	2	7	6	8	6	1	38	4.75	-1.25	-10	
8 Bruce's Green Pigeon									0	0.00			3						3	0.38	-0.38	-3	
9 Hoopoe						1			1	0.13	1	3		2			1		7	0.88	-0.75	-6	
10 Arabian Woodpecker								1	1	0.13									0	0.00	0.13	1	
11 Eurasian Magpie									0	0.00		3							3	0.38	-0.38	-3	
12 Brown-necked Raven									0	0.00		1				5			6	0.75	-0.75	-6	
13 Fan-tailed Raven	2			4			3		9	1.13	2		10	1	2				15	1.88	-0.75	-6	
14 Pale Crag Martin							1		1	0.13									0	0.00	0.13	1	
15 Red-rumped Swallow		5	1	3					9	1.13			1		5			2	8	1.00	0.13	1	
16 Crested Lark			1			1			2	0.25									0	0.00	0.25	2	
17 Scrub Warbler					1		3	2	6	0.75	4	5	5				2		16	2.00	-1.25	-10	
18 Graceful Prinia									0	0.00	2						2		4	0.50	-0.50	-4	
19 White-spectacled Bulbul	1	4	2		5	7	7	1	27	3.38	1	3	3	1	1	3	5	2	19	2.38	1.00	8	
20 Brown-woodland Warbler	4	1	1	7		4	1		18	2.25	8	6	15	7	5	2		4	47	5.88	-3.63	-29	
21 Arabian Warbler						1			1	0.13										0.00	0.13	1	
22 Yemen Warbler			1						1	0.13		2			1	1			4	0.50	-0.38	-3	
23 Arabian Babbler								1	1	0.13									0	0.00	0.13	1	
24 Abyssinian White-eye		1					2		3	0.38	2	10					15		27	3.38	-3.00	-24	
25 Violet-backed Starling								1	1	0.13			1						1	0.13	0.00	0	
26 Tristram's Starling	2	1	4	2		1			10	1.25	1	6	2	2		2	5	18	2.25	-1.00	-8		
27 Yemen Thrush	1	5		3			1		10	1.25	2	3	1	1	10	5	2	24	3.00	-1.75	-14		
28 Eurasian Stonechat			4	2					6	0.75	3	5		2	2	8		20	2.50	-1.75	-14		
29 Red-breasted Wheatear			2					2	4	0.50	9							9	1.13	-0.63	-5		
30 Arabian Wheatear					3	4		3	10	1.25			7					7	0.88	0.38	3		
31 Little Rock Thrush	2	1		2		5	2		12	1.50			1	3		1		1	6	0.75	0.75	6	
32 Gambaga Flycatcher				1	1		1	4	7	0.88			3			1	1		5	0.63	0.25	2	
33 Palestine Sunbird	1	2				2			4	0.50	3		7			2	1		13	1.63	-0.50	-4	
34 House Sparrow			19			3		4	26	3.25	40		2			1	25		68	8.50	-5.25	-42	
35 Rüppell's Weaver			2					2	4	0.50			3				10		13	1.63	-1.13	-9	
36 Long-billed Pipit				2	11			3	16	2.00	3	1	4		2	1	4		15	1.88	0.13	1	
37 Arabian Serin					2				2	0.25				4		3			7	0.88	-0.63	-5	
38 Golden-winged Grosbeak								0	0	0.00	4			2				6	1.2	1.50	-1.50	-12	
39 Yemen Linnet	2	5	17	3		4	3	2	36	4.50	23	3	4	3	18	31	39	5	126	15.75	-11.25	-90	
40 Cinnamon-breasted Bunting	2			1		4		4	11	1.38						2			2	0.25	1.13	9	
Total species recorded	13	12	14	13	7	18	12	16	34	Av 13.13	14	13	21	12	13	17	22	10	33	Av 15.25	-2.13		
Total birds recorded	28	39	71	42	15	56	33	43	327	40.88	97	62	65	54	57	84	159	31	609	76.13	-35.25	-282	
Total endemic birds	7	12	18	6	3	9	4	6	65	8.13	27	5	18	4	22	43	47	13	179	22.38	Yellow	Endemics	
Total other highland birds	8	11	15	21	0	12	9	2	78	9.75	12	22	12	22	23	16	30	8	145	18.13	Turquoise	Highland species	

Birds examined in the hand

40. On the afternoon of 9 July a total of eight birds (seven species) were trapped with a mist-net at the farm on the Raydah escarpment (2438 m). No birds were found in active primary moult indicating, for these species at least, that breeding was not complete. Yemen Warbler, Brown Woodland Warbler *Phylloscopus umbrovirens* and Abyssinian White-eye *Zosterops abyssinicus* were found to have an active brood patch indicating that they were currently breeding. White-spectacled Bulbul *Pycnonotus xanthopygos*, Tristram's Starling and Palestine Sunbird *Cinnyris osea* did not have an active brood patch and a Dusky Turtle Dove *Streptopelia lugens* appeared to have new secondaries whilst the brood patch feathers were in pin. The details of birds examined in the hand are at Table 2.

TIHAMA

41. The tihama is a hot and humid lowland region, it is mainly arid deserts, often with acacia, but there are many well vegetated wadis where water may flow or occur just below the surface. Small scale agriculture is practised in many parts where water for irrigation is available. In this report the tihama region includes observations from the isolated Jebals of Faifa (1950 m), Aswad (2034 m) and Gaha (2100 m) and the foothills between Raith and Farshah (2400 m). Much time was spent in the vicinity of Sabya and Shuqayri seeking the Bald Ibis and making visits to the nearby sewage lagoons.

Breeding/Resident birds

42. Some notable observations of likely breeding/resident species on the tihama are:

Helmeted Guineafowl *Numida meleagris*: Scarce and range restricted in Saudi Arabia, up to four adults were present on several occasions near Shuqayri.

Black-headed Heron: One was flying over Wadi Dhamat, the first record for Saudi Arabia of a species that is gradually expanding its range in south-west Arabia having colonised Arabia from Africa.

Glossy Ibis: Breeding was confirmed at the sewage lagoons near Sabya, the first breeding occurrence in Arabia. Breeding was in an acacia tree on a small island at the site and the same tree held a colony of Cattle Egrets *Bubulcus ibis*.

Painted Snipe: At least eight were present at sewage lagoons near Sabya. This is the first record for Saudi Arabia. The species has not bred before in Arabia but number of birds present at the site suggests that breeding is at least possible.

Jacobin Cuckoo *Clamator jacobinus*: Usually thought of as a breeding summer visitor to the foothills of south-west Arabia this species was seen twice in lowland agricultural areas on the tihama, once associated with a Rüppell's Weaver *Ploceus galbula* colony.

Black-shouldered Kite *Elanus caeruleus*: This species is scarce in south-west Arabia, and there have been very few records from the extreme south-west of Saudi Arabia. One was seen over an area of irrigated fields.

Singing Bush Lark *Mirafra cantillans*: Very few records for south-west Saudi Arabia, small numbers were seen and heard singing in banded sugar cane fields.

Common Myna *Acridotheres tristis*: This exotic species was common in and around Sabya, Abu Arish and Shuqayri. The species was not recorded in these places in 1987.

Table 6: Results of Five Minute Point Counts, Jebal Souda, South-west Saudi Arabia July 2010

No	Date	Coords	Start Time	Habitat	Conditions	Species Recorded *									
						Philby's Partridge	Rock Dove	Dusky Turtle Dove	Palm Dove	Yemen Thrush	White-spectacled Bulbul	Palestine Sunbird	Tristram's Starling	Ruppell's Weaver	Yemen Linnet
1	10.7.2010	18° 49.799'N, 42° 23.385'E	0645	Steep sided juniper clad valley with stream and pools at bottom. Much grass and herbs. No acacia, no buildings or disturbance.	Visibility: Good, Wind: Calm, Cloud: 0-33% cover, Temp: <20° C.			3	3	1	1				3
2	13.7.2010	18° 13.858'N, 42° 26.045'E	0659	Terraced fields and rocky hillside, much vegetation. Most terraced fields had not been tiled recently (they were probably abandoned not fallow).	Visibility: Good, Wind: Light, Cloud: 0-33% cover, Temp: <20° C.	1	1					1	7	2	

* Birds were recorded at 0-25 m, 25-100 m and 100m + distance from the recording point, with birds flying over also recorded. Only the total of all four categories appears here.

Endemics

43. Endemic species recorded in the tihama region are shown at Table 7.

Table 7: Endemics recorded in the tihama region.

	Jebal Aswad	Jebal Gaha	Jebal Faifa	Raith Dam	Raith/ Farshah
Arabian Red-legged Partridge	✓	✓			✓
Arabian Woodpecker		✓		✓	
Yemen Thrush	✓	✓			
Arabian Wheatear	✓	✓			
Arabian Waxbill		✓	✓		
Arabian Serin		✓			
Yemen Serin		✓			

Migrant Species

44. There were slightly more migrant species on the tihama in July than in the highlands (see para 34). Some 'migrant' birds observed were likely to have been over-summering. The few species recorded were Bald Ibis (see separate note), Glossy Ibis, Black-tailed Godwit *Limosa limosa*, Wood Sandpiper *Tringa glareola*, Common Sandpiper and Barn Swallow. Details are at Appendix 1.

Walked Censuses

45. Two walked censuses were carried out, at Jebal Gaha and a site in the foothills between Raith and Farshah. For details of the sites see Table 1, the birds observed are shown at Table 8.

Bald Ibis search Tihama

46. As explained above the team received reports of the transit of at least one satellite tagged Bald Ibis through south-west Saudi Arabia during the survey and therefore travelled to the Sabya area to look for them and if possible gather information about habitat usage and possible threats at the migration stopover site. Searches were concentrated near coordinates provided by Birdlife Middle East (Jordan) and the RSPB UK from recent satellite transmissions.

47. Searches made on 8, 11 and 12 July, and were fruitless. However the subsequent dedicated Bald Ibis search team, led initially by Mohamed Al-Salamah successfully located an adult on 14 July at the site near Sabya and then two adults were found two days later. A juvenile was found near Shuqaiq on 21 July. . On 19 July a dead immature bird was brought to the rangers camp of the Raydah protected area. It had been found emaciated and dying on 17 July by the army near Al Birk. It carried a satellite transmitter (No 94586) and was ringed

(BTO ring No 195931). It appears to have starved to death. It was a bird that had hatched this year in Syria. Its two brood companions and two reintroduced Turkish birds were also thought to be in the vicinity of Al Birk and Shuqaiq.

48. The habitat that the Bald Ibises were using near Sabya was a fertile area of agriculture mainly growing sugarcane in small fields (2-6 ha.) bounded by high banks of sand/clay. They were also using the lush and more varied vegetation found in the bed of the Wadi Dhamat (100-300 m wide). It was relevant that good numbers of Glossy Ibis and Abdim's Storks *Ciconia abdimii* were present in the area and the latter were nesting on pylons in some of the villages. These birds were clearly not molested by the local people and there was no evidence found of hunting or other persecution in the area.

Jebals Aswad, Gaha and Faifa

49. Jebal Aswad is primarily basalt and lies slightly to the east of Jebal Gaha. The access track, off the Raith to Farshah asphalt road, serves a village that straggles along the ridge line. There are small terraced fields in places and rather rugged rocky slopes with juniper and acacia. The jebal was visited on the afternoon of 15 July and a camp was made at 2034 m near its summit that night. Visibility was poor throughout the visit due to low cloud. Birds of interest recorded were three endemics (Table 7), also Griffon Vulture *Gyps fulvus*, Hume's Owl *Strix butleri* (five local youths all knew the call and said it was common), Abyssinian Nightjar *Caprimulgus poliocephalus* and higher altitude species such as Dusky Turtle Dove, Little Rock Thrush *Monticola rufocinereus*, Brown Woodland Warbler and Long-billed Pipit *Anthus similis*.

50. Jebal Gaha is in two parts, the first mainly basalt does not have any houses, the second and highest is sandstone forming a plateau, where there is agriculture practised in small terraced fields and in ravines off the summit area. Ploughing was still by oxen. The sandstone areas formerly had forests of juniper however others and the villagers have reported a considerable drought since the 1990s which has resulted in many of the juniper dying. In fact most seemed to be dead. The best trees were found in ravines off the summit where water run off would be concentrated. Here there were also dense stands of deciduous trees including *Ficus* sp. and *Lycium* bushes. The slopes adjacent to the plateau had several examples of mature *Dracaena serrulata* an indicator of long term semi-arid conditions. Olive trees were only noticed on the basalt part of the jebal. During July 2010 a new asphalt road was being built up to the summit from Raith and had reached the junction of basalt and sandstone (1530 m). At that time the only access to the summit was along a extremely rough track from Raith at approximately 1000 m.

51. The jebal was visited initially on 16 July. Visibility on that occasion was extremely poor, with dense low cloud from about 1500 m, allowing no opportunities to see or hear birds and the visit was abandoned. The jebal was visited again on 20 July, camping that night at 1850 m. Seven endemic species were recorded on the Jebal (Table 7) and other interesting observations were Eurasian Magpie (see paras 29-33), Verreaux's Eagle *Aquila verreauxii*, a probable small colony of Griffon Vulture, African Paradise Flycatcher *Terpsiphone viridis*, Grey Hornbill *Tockus nasutus*, Abyssinian Nightjar and a possible second nightjar species.

52. Jebal Faifa is an isolated and heavily populated, green mountain close to the Yemen border. It is mostly covered by terraced agriculture growing ghat, remnant junipers grow along field divides and on rough ground not suitable for agriculture. A brief visit was made on 12 July. The only endemic seen was the Arabian Waxbill. Other birds of interest noted were Red-eyed Dove *Streptopelia semitorquata*, White-throated Bee-eater *Merops albicollis*, Grey-headed Kingfisher *Halcyon leucocephala*, African Grey Hornbill, Red-rumped Swallow *Cecropis daurica* and Brown-Woodland Warbler.

Table 8

**Birds recorded during walked censuses at locations away from the Asir highlands, July 2010
(Tihama sites group and on return to Riyadh)**

	Census No ABBA Square Altitude (m)	7 JA12 1315	10 IB12 1850	11 IB14 1770	12 JA23 1074
Species (Excludes migrants)		Rocky hillside with wadi bed below Farshah	Jebal Gaha sandstone plateau and terraced plots	Granite inselberg and acacia scrub	Arid Sandy gravel plain with granite outcrops
Arabian Partridge			2	X	
Sand Partridge					2
Barbary Falcon					X
Black Kite				3	
Rock Dove		X			X
Eurasian Collared Dove					6
African Collared Dove					1
Palm Dove		17		9	3
Bruce's Green Pigeon		X		4	
Desert Eagle Owl					X
Hume's Owl		X			
Abyssinian Nightjar		X			
Plain Nightjar		X			
Grey-headed Kingfisher		1			
White-throated Bee-eater		1			
African Grey Hombill		X			
Eurasian Magpie				X	
Brown-necked Raven					2
Fan-tailed Raven				5	1
Pale Crag Martin				1	
Red-rumped Swallow				2	
Greater Hoopoe Lark					X
Desert Lark					2
White-spectacled Bulbul		7		3	5
Brown-woodland Warbler				1	
Arabian Babbler					3
Abyssinian White-eye				3	
Violet-backed Starling		1		4	
Tristram's Starling				22	X
Yemen Thrush				X	
Blackstart		6			2
Little Rock Thrush				1	
Nile Valley Sunbird					X
Palestine Sunbird				7	
Shining Sunbird		2			
House Sparrow					29
Rüppell's Weaver				2	
Long-billed Pipit				X	
Total species recorded at site		14	18	13	4
Total birds recorded on census		35	67	52	4

OTHER RECORDS

Field observations

53. Bird observations on the journeys to and from the study area are provided here along with notes and comments on other fauna observed at any time during the survey. Details of some prominent plants recorded are given at Appendix 5.

54. The journey south by road from Riyadh to Asir via Wadi Dawasir on 4-5 July was completed quickly and few records of interest were obtained. However the return journey took three days via Bishah, Ranyah and Zalim. Details of birds seen are at Appendix 1, some observations of note follow.

55. At a granite inselberg just north of the Asir study area (IB14) both African Collared Dove *Streptopelia roseogrisea* and Eurasian Collared Dove *S. decaocto* were present and both were singing. The latter is continuing its colonisation toward the south-west but it has been slow to colonise the eastern slopes of the highlands of south-west Arabia. Possibly through competition with the former species which is mainly a breeding summer visitor to the region. It was interesting that the song of both species noted at this site was not quite typical of the respective species. The African Collared dove had an extra syllable at the end and the Eurasian Collared Dove song was barely recognisable with jumbled syllables. Quite why this should be is not clear but similar observations are reported previously from Saudi Arabia, where the range of both species meet and may indicate hybridisation.

56. A large pool of rainwater in central Arabia (JB23) was attracting vultures of three species to drink and bathe on 23 July. The gathering included 35 Lappet-faced Vultures *Torgos tracheliotos*, including several juveniles; two adult Griffon Vultures, and 16 Egyptian Vultures *Neophron percnopterus*, including eight juveniles/immatures. In late July it is unlikely that any of these birds would have been migrants, except perhaps for some immature Egyptian Vultures which elsewhere are known to spend early years on their 'winter quarters'. The Griffon Vultures were a surprise on the plains but it was particularly encouraging that there are still some Egyptian Vultures left in the area. The numbers of Lappet-faced Vultures is indicative of their status as the most common vulture of central Arabia. About 40 Brown-necked Ravens were also at these pools, which probably represented their post breeding quarters.

Early Morning Walked Transects

57. Two walked censuses were carried out on the journey back to Riyadh, at sites south of Bishah and north-east of Zalim. For details of the sites see Table 1, the birds observed are shown at Table 8.

Mammals

58. During the survey, notes were made of observations of mammals and other fauna. A camera trap was set at camp sites but with only limited success. Unidentified bats were seen on several occasions. Other mammal records, including some notes on domestic species, are as follows:

Hamadryas baboon *Papio hamadryas* A very widespread and in some places very common mammal often in groups of 50 or more. Not all observations were recorded but it was present in at least the following ABBA squares: IA15, IA14, IA13, IB13, IB12, JA12, IB11 and JA11. It is present from the summit of Jebal Souda down to 200 m on the tihama.

Red fox *Vulpes vulpes* This is the common fox of western and central Arabia, it was seen or camera trapped in ABBA squares IB11, IB14 and JA23.

Feral cat *Felis (silvestris) catus* Very common at most sites, the most common mammal caught in photo traps. They were noted at Jebal Gaha, Jebal Aswad and IB14.

Long tailed jird *Meriones crassus* A colony of long tailed jirds, probably this species, were seen at 2700 m at the back of the Im Hotel on Jebal Souda with adults active late afternoon and early morning and others were seen on terraces nearby.

Cape hare *Lepus capensis* One was seen on Jebal Souda at 2580 m.

Porcupine *Hystrix indica* One was camera trapped on Jebal Gaha at 1850 m.

Domestic cow *Bos taurus* These were present roaming free in the Raydah escarpment protected area, in Wadi Jaw and evidence was also found for their presence in the Al Jarrah reserve.

Domestic donkey *Equus africanus* Very numerous on Jebal Gaha where they were previously used for transport on the mountain and for agricultural purposes.

Domestic Arabian camel *Camelus dromedarius* The first examples recorded in the highlands were seen in an abandoned terraced field at 2700 m on Jebal Souda. Untended camels in Wadi Jaw were causing damage to trees.

Plates 13 - 15.

Highlands east of the escarpment are much drier with restricted vegetation, 2681 m. Blanford's Lark occurred at this site.



The Al Jarrah protected area (IB13) of the Asir Emirate, 2499 m. An important area of plant and animal diversity which is compromised by grazing domestic stock which have access to the park.



Undemeath the sandstone cliffs of Habala (IB 13) 2378 m, a dense cover of mainly deciduous trees and bushes presents suitable habitat for many bird species. A noisy pair of Shikras here on 10 July almost certainly had fledged young at the time.



Plates 16 - 18.

Cows and some other domestic stock have access to the Raydah protected area. Their browsing and grazing reduces ground and low vegetation thereby decreasing the habitat diversity available to birds and other fauna.



Bees and honey production is an important local industry. Bee hives are transported to areas where blossoms and other nectar sources are prevalent.



One of the botanical highlights of the Raydah protected area are the impressive stands of tree aloe *Aloe saba*, between 1800 - 2150 m



Plates 19 - 21.

A bha dam lake (2269 m), is probably important to migrant birds passing through the area. During July 2010 Little Grebe, Common Coot and Graceful Prinia were among the residents present.



The sewage dumping area east of Sabya on the tihama (IB11). At this site Black-winged Stilt and Spur-winged Plover were breeding and at least eight Painted Snipe were observed in the short grassy area, the first record of this species in Saudi Arabia.



At the Sabya sewage site an acacia tree on a small island held a mixed colony of Cattle Egrets and three pairs of Glossy Ibis, two of the latter had large young. This is the first breeding occurrence of the species anywhere in Arabia.



Plates 22 - 24.

The region east of Sabya where the migrating Bald Ibises from Syria were located was one of small, crop fields with date and other trees, banded by earth banks. Helmeted Guineafowl, Black-headed Heron, Black-winged Kite and Singing Bushlark were also present in similar areas.



Breeding summer visitors to the tihama include Abdim's Stork, Jacobin Cuckoo and these White-throated Bee-eaters.



The summit area of Jebal Gaha (IB12) 2000 m, appears to have suffered drought conditions for a number of years resulting in many of the juniper trees and bushes having died. This desiccation may be a reason for the apparent decline of the Eurasian Magpie at this site in recent years.



DISCUSSION AND CONCLUSIONS

59. Comparison of some photos taken on the Raydah escarpment in 1987 to 2010 was inconclusive in determining whether there had been any gross change in vegetation cover and habitats in the intervening period. These indicated that vegetation was perhaps slightly greener and more lush in the vicinity of the farm (alt 2438 m) in 1987. However at the bottom near Wadi Jaw (at about 1600 m) vegetation appeared to be similar or greener in 2010.

Comparison of early morning censuses

60. The results of the census work in the highlands (paras 36-38) in 2010 indicate a slightly increased species diversity over all censuses compared to 1987 (one extra species). However this apparent improvement might be regarded as of no great significance considering the overall sample size. More important is the overall drop in the total of all birds counted and the average number of species recorded on censuses in 2010, compared to 1987. These changes are significant and need to be explained, perhaps through further, more detailed study. It is worrying that within the total figures there are significant reductions in the numbers of some endemic species and other important highland species, which indicate a reduction in total numbers by at least half.

61. Some theoretical explanations for these reductions are suggested below, more likely a combination of these and other factors may be responsible:

- a. The general development of the highland areas, particularly more houses, hotels, roads and tourist infrastructure that has occurred since 1987, has created more disturbed conditions that are not attractive to birds generally and endemic/highland specialists in particular.
- b. Although in 2010 the weather and conditions seemed very similar to 1987, the weather conditions in recent years may have included long periods of less than normal rainfall which may have created conditions less favourable for birds generally. The authors have not had access to meteorological data for the area to check such a hypothesis.
- c. Climate change may have slightly altered conditions on the mountain to make them less attractive to birds generally. For example a general raising of average temperatures may have produced the conditions that had resulted in the noted die-off of juniper trees at the lower elevations.
- d. Some other change may have occurred to affect bird numbers. For example the noted rise in hamadryas baboon populations locally may, perhaps through predation of eggs and nestlings, have had an impact on tree and rock nesting species.

62. Of the candidates for an explanation the most obvious and perhaps the most likely is that development in the area has been to the general detriment to bird populations and notably to the number of endemic species and highland specialist species.

Breeding Progress and Seasons

63. In comparing general breeding progress to that observed in 1987 it was apparent that in 1987 more species were actively breeding in July than in 2010. There could have been several reasons for this, for example late rains in 1987 may have delayed breeding of some species until mid summer or rainfall had been particularly good and had encouraged more birds to have second broods. On the other hand, 2010 may have been much drier in midsummer than in 1987 and smaller numbers of birds had continued to breed late or had not had second broods. In the case of the Gambaga Flycatcher *Muscicapa gambagae*, a breeding summer visitor from Africa, it appears to have been very scarce in the Asir until mid July in 2010, whereas in 1987 some pairs already had nestlings on 30 June and it was much more numerous.

Access road to the Raydah escarpment

64. The asphalt road through the Raydah reserve is for the public use of the inhabitants of the villages of upper Wadi Jaw. There is a second access route from Wadi Jaw to 2900 m on Jebal Souda along a rough track which follows a line of power cables. However that road is difficult and impracticable for every day use. (The only other access to these villages is a long and arduous journey down the wadi to the Abha - Ad Darb road). It was noted that usage of the asphalt road had greatly increased since 1987, in line with the increase in the size of the villages. The road creates some problems for the reserve area because the reserve rangers are unable to prevent access to visitors to the villages. This can result in the integrity of the reserve being compromised because some visitors may stop in the reserve area to collect firewood, picnic or tend to cattle and may even take part in hunting activities (although this was not observed). Some method should be found to restrict the use of this access road as it inevitably causes disturbance to the reserve area and wildlife present.

Breeding bird populations of the Raydah reserve

65. Although the results of censuses on Jebal Souda, particularly its summit area, suggest that there has been a reduction in species diversity and populations there since 1987, this situation did not appear to be repeated on the Raydah escarpment. The bird populations of the Raydah reserve were estimated by Newton & Newton, 1996, on the basis of point counts, mist netting and general observations over the years 1992-1995. They estimated the populations of all species. Breeding species (residents and visiting breeders) were estimated in terms of breeding pairs (BPs) within the reserve (total area 12 km²) in four population size categories; Cat R, 1-5 BPs; Cat S, 6-50 BPs; Cat C, 51-500 BPs and Cat A, over 500 BPs. The breeding species population estimates of Newton & Newton have been reviewed in the light of observations in July 2010, when virtually every species seen was a breeding species. Although the survey in 2010 was not as thorough as the long term study of Newton & Newton it is considered that the 1990s estimates of commonality still generally pertain to population levels noted in 2010 in the Raydah reserve. However one or two species appear to have changed slightly. For example the African Olive Pigeon *Columba arquatrix* may have decreased from Cat S to Cat R, as there appeared to be less birds present in 2010, certainly fewer than in 1987. Four species might have become more numerous, for example Bruce's Green Pigeon, African Paradise Flycatcher and Violet-backed Starling might be regarded as Cat S (not the Cat R of Newton & Newton). The Cinnamon-breasted Bunting *Emberiza tahapisi* might be Cat C instead of Cat S.

66. The Golden-winged Grosbeak, which was recorded at the site in the 1970s, possibly bred there and was seen on four occasions on Jebal Souda during the 1987 survey, was not recorded by Newton & Newton and neither was it seen in 2010. It appears to have been lost from the local avifauna.

67. The most noticeable absence from the Jebal Souda area today is the Bearded Vulture *Gypaetus barbatus*. In the 1970s this species could be seen regularly on Jebal Souda, up to four have been recorded there together, 1976 (King, 1977), it was still regular in the early 1980s (Stagg, 1985) but then became increasingly scarce so that Shobrak (2003) mentioned only three records in the previous 15 years and considered it to be heading for extinction in Saudi Arabia. The last claimed record for Jebal Souda (and Saudi Arabia) was in 2000 (Sowerby, 2000).

RECOMMENDATIONS

68. The SWC Raydah escarpment reserve is an important protected area in the highlands of south-west Saudi Arabia, harbouring all ten Arabian endemic bird species that occur in Saudi Arabia and other important fauna and flora resources. The SWC should continue to protect the integrity of the reserve boundaries, police access and put in place long term procedures to regularly monitor its

environmental resources there.

69. It was noticed that domestic camels are now kept close to the reserve boundaries. Camels are extremely destructive browsers and it is therefore very important that the SWC should take effective measures to ensure that free ranging camels do not ever gain access to the Raydah protected area.

70. Domestic cows are already present in some number in the protected area. These animals remove the grass and ground vegetation cover and browse bushes very effectively. This results in decreased habitat diversity within the reserve. This has possibly already reduced the species diversity in the reserve of birds and mammals

71. The hamadryas baboon is a natural part of the fauna of the Raydah reserve, however where it is very common at other places on Jebal Souda its numbers may be to the detriment of some bird species. The SWC should take steps to ensure that baboons are not encouraged to pester visitors to the Raydah reserve for food as this may allow them to become especially common there too, which could have a negative effect on other animals and birds in the reserve.

72. The Asir race of the Eurasian Magpie is a taxon restricted to a small region within Saudi Arabia. It appears to be decreasing in number and it is therefore important that the present day range and numbers should be reviewed by a special study. It is recommended that the SWC should take steps to put such a survey in hand in the near future.

73. The asphalt access road through the Raydah reserve to the Wadi Jaw villages is a cause of disturbance to the fauna and a possible interference to the integrity of the reserve, e.g by allowing villagers to place and manage cows within it. Obviously this access cannot be denied but the SWC should look into whether some alternative to the present access road can be found that would not interfere with the running of the reserve. Failing this the reserve rangers should be more proactive in prohibiting entry to casual visitors who do not have valid access to the villages.

ACKNOWLEDGEMENTS

74. The survey team received much help from a number of people both in Saudi Arabia and outside. The first author is extremely grateful to the Secretary General of Saudi Wildlife Commission, Prince Bandar bin Saud bin Mohammad al Saud for his encouragement and assistance to visit Saudi Arabia and to repeat the 1987 survey in the Asir region. He is also very grateful to members of the SWC staff, notably Tarik al Abbassi and Mohamed Al Salamah, for help on this and previous ABBA surveys. Dr Mohammed Shobrak was very helpful in the search for the Asir subspecies of the Eurasian Magpies and thanks also go to Mohadi Asiri and Prof. Brendan Kavanagh for additional recent records of the species on Jebal Souda. The Bald Ibis search was encouraged and helped by Richard Porter (Birdlife International, Cambridge), Jeremy Lindsell (RSPB UK) and Sherif Jbour (Birdlife Middle East, Jordan). Sheila Collenette helped identify some plants and provided botanical advice. The rangers of the Raydah protected area made us very welcome at their guard post and provided much hospitality and help within the reserve.

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APPENDICES

Appendix 1

SYSTEMATIC LIST OF BIRDS OBSERVED 4-25 JULY 2010 DURING ABBA SURVEY 42 TO SOUTH-WEST SAUDI ARABIA

Birds are arranged generally in accordance with the order and nomenclature of Dickinson (2003). Dates, places and number of birds seen in each area. Comments are provided of apparent range, status or population changes since 1987.

Records and notes are scheduled against each species as appropriate in two main divisions, for the highlands and the tihama. However a third category is provided for records in other areas, including records going to and returning from the south-west. The divisions are defined as follows and shown against individual species where relevant:

42a South-west Highlands: Includes all highlands east of the escarpment, notably Jebal Souda but also including the Tendaha dam, Farshah, Habala and north to An Numas; the whole of the Raydah escarpment including Wadi Jaw (1350 m) is included.

42b Tihama: Includes all lowlands areas west of the escarpment and Jebals Aswad, Gaha and Faifa.

42c Other areas: Observations at Riyadh, and the journey south, via Wadi Dawasir, to but not including Tendaha dam, and return journey from the campsite of 21 July, south of Bishah, to Riyadh.

405 HELMETED GUINEAFOWL *Numida meleagris*

42b Tihama: 2-4 birds seen at two sites (sugar cane fields) near Shuqayri 8 & 11 July. Not recorded in the area in 1987.

493 PHILBY'S PARTRIDGE *Alectoris philbyi*

42a South-west Highlands: Scarce, one on dry scrub covered hillside (2680 m) Jebal Souda 13 July, heard Azeezah road 15 July and also heard near Balahmah 18 July. Numbers appear to have decreased since 1987.

496 ARABIAN PARTRIDGE *Alectoris melanocephala*

42a South-west Highlands: Common on escarpment east of Jebal Souda especially Raydah protected area, also Farshah.

42b Tihama: Heard Jebal Aswad and present Jebal Gaha.

498 SAND PARTRIDGE *Ammoperdix heyi*

42c Other areas: Two central Arabia (JA23) 23 July.

792 LITTLE GREBE *Tachybaptus ruficollis*

42a South-west Highlands: One Tendaha dam 5 July and three pairs Abha dam 7 July.

42b Tihama: Few pairs with young Wadi Gizan high dam 8 July and pair Raith dam 21 July.

815 ABDIM'S STORK *Ciconia abdimii*

42b Tihama: Recorded on three days 8-12 July, up to 12 together on flooded fields and nesting on telecommunication towers Shuqayri and Aydabi. Not recorded in the area in 1987.

825 BALD IBIS *Geronticus eremita*

42b Tihama: Not found despite search on 7, 8 & 12 July, Sabya area. Dead bird brought to the rangers camp at Raydah protected area 19 July had a BTO ring 1295931 and transmitter No 94586. It had been found very weak on 17 July by the army near Al Birk and died. The army notified the SWC who sent the chief ranger from Raydah to collect it. It was 'Amir' a chick hatched this year in Syria. His two brood companions and two Turkish immatures were thought to be also in the vicinity of Shuqaiq. The body was stored in a freezer at Raydah.

The Ibis team found both birds at Shuqayri and then one of the juveniles near Shuqaiq (21 July). Not recorded in the area in 1987.

834 GLOSSY IBIS *Plegadis falcinellus*

42b Tihama: On 8 July several flocks (up to 35) around the sewage lagoons east of Sabya and three pairs found nesting in a acacia tree with Cattle Egrets. The tree was situated on a island of the sewage lagoon. Two nests had large young, the contents of the third were uncertain. Not recorded in the area in 1987.

871 CATTLE EGRET *Bubulcus ibis*

42b Tihama: Common on the Tihama. About 30 pairs nesting at sewage lagoon east of Sabya with Glossy Ibis 8 July.

874 BLACK-HEADED HERON *Ardea melanocephala*

42b Tihama: One Wadi Dhamat, nr Shuqayri, 12 July. First record for Saudi Arabia.

895 HAMERKOP *Scopus umbretta*

42b Tihama: Few in wadis and the foothills 8, 16 & 21 July.

952 COMMON KESTREL *Falco tinnunculus*

42a South-west Highlands: Uncommon but widespread in the highlands, mostly east of the escarpment, also one Al Jarrah protected area 13 July.

42c Other areas: One IB15, 22 July.

978 BARBARY FALCON *Falco pelegrinoides*

42b Tihama: One sewage lagoon east of Sabya 8 July.

42c Other areas: One south of Bishah (IB14) 21 July.

1001 BLACK-WINGED KITE *Elanus caeruleus*

42b Tihama: One near Shuqayri 11 July. Not recorded in the area in 1987.

1009 BLACK KITE *Milvus migrans*

42a South-west Highlands: Not recorded, it was noted as locally common in this area in 1987.

42b Tihama: Common at and near Tihama towns also Raith and Jebals Faifa and Gaha.

1018 EGYPTIAN VULTURE *Neophron percnopterus*

42a South-west Highlands: Not recorded; in 1987 a pair were seen once in this area.

42b Tihama: Not recorded; in 1987 it was recorded on five occasions, about 10 together at three sites.

42c Other areas: A nest thought to belong to this species on high cliff at JA23, 23 July. At a rain pool (JB23) 325 km from Riyadh, 16 (including eight juveniles and older immatures) were drinking and loafing with other vulture species 23 July.

1024 GRIFFON VULTURE *Gyps fulvus*

42a South-west Highlands: Eight on the Raydah escarpment 5 July. No evidence of breeding but it was apparently breeding on Jebal Souda in 1987 and was also breeding at Habala in 1977.

42b Tihama: One Jebal Aswad and three Jebal Gaha (possible breeding colony) 16 July.

42c Other areas: Two at a rain pool with other vultures (JB23) 325 km from Riyadh 23 July.

1027 LAPPET-FACED VULTURE *Torgos tracheliotos*

42c Other areas: There were 35 drinking at rain pool with other vultures (JB23) 325 km from Riyadh, 23 July.

1045 DARK CHANTING GOSHAWK *Melierax metabates*

42b Tihama: One near Shuqayri 11 July.

1054 SHIKRA *Accipiter badius*

42a South-west Highlands: A pair Habala, very noisy and territorial and almost certainly had fledged young at the time 10 July. One Raydah, 14 July.

42b Tihama: One near Shuqayri 11 July.

1122 LONG-LEGGED BUZZARD *Buteo rufinus*

42a South-west Highlands: One or two on three days.

1135 VERREAUX'S EAGLE *Aquila verreauxii*

42b Tihama: One, possibly a pair, Jebal Gaha, 16 July.

1262 COMMON MOORHEN *Gallinula chloropus*

42b Tihama: Chicks and large juveniles seen at a sewage lagoon east of Sabya 8 & 11 July. Not recorded in the area in 1987.

1271 COMMON COOT *Fulica atra*

42a South-west Highlands: One Tendaha dam 5 July and three pairs Abha dam 7 July. Not recorded in the area in 1987.

1329 BLACK-WINGED STILT *Himantopus himantopus*

42a South-west Highlands: One Tendaha dam 5 July. Not recorded in the area in 1987.

42b Tihama: Chicks at a sewage lagoon east of Sabya 8 & 11 July. Not recorded in the area in 1987.

1336 SPUR-WINGED LAPWING *Vanellus spinosus*

42b Tihama: Common sewage lagoon east of Sabya 8 & 11 July. Not recorded in the area in 1987.

1360 KENTISH PLOVER *Charadrius alexandrinus*

42c Other areas: Four at rain pool central Arabia (JB23) 23 July.

1377 PAINTED SNIPE *Rostratula benghalensis*

42b Tihama: About three at sewage lagoon east of Sabya 8 July with at least eight there (including 2-3 together) 11 July. These are the first records for Saudi Arabia

1408 BLACK-TAILED GODWIT *Limosa limosa*

42b Tihama: One sewage lagoon east of Sabya 8 July.

1424 GREEN SANDPIPER *Tringa ochruros*

42a South-west Highlands: Singles at Abha dam 7 July and stream in juniper 10 July.

42c Other areas: Two at rain pool in central Arabia (JB23) 23 July.

1425 WOOD SANDPIPER *Tringa glareola*

42b Tihama: One sewage lagoon east of Sabya 8 July.

1427 COMMON SANDPIPER *Actitis hypoleucos*

42a South-west Highlands: Two Tendaha dam 5 July.

42b Tihama: Two at a sewage lagoon east of Sabya 8 & 11 July.

42c Other areas: Two at rain pool central Arabia (JB23) 23 July.

1563 *Pterocles exustus* CHESTNUT-BELLIED SANDGROUSE

42b Tihama: Two (pair) Nr Sabya 12 July.

1574 ROCK DOVE *Columba livia*

42a South-west Highlands: Few most areas throughout the highlands, no large counts.

42b Tihama: Few several places including Jebals Gaha and Faifa.

42c Other areas: Few central Arabia (IB19) 22 July.

1586 AFRICAN OLIVE PIGEON *Columba arquatrix*

42a South-west Highlands: One Raydah escarpment 5 July and two there 14 July. The species was more common in 1987.

1609 DUSKY TURTLE DOVE *Streptopelia lugens*

42a South-west Highlands: Few all areas in the highlands sometimes common, especially Raydah, also Al Jarrah and north to Al Azah.

42b Tihama: Present Jebal Aswad 15 July.

1611 EURASIAN COLLARED DOVE *Streptopelia decaocto*

42c Other areas: Few by road south 4 July and near Tathlith 5 July. On the return journey to Riyadh, 22 & 23 July, it was present in ABBA Squares IB14 and JA14 just north of the Asir study area. It was not present in those squares in 1987. After that it was common on the return to Riyadh.

1612 AFRICAN COLLARED DOVE *Streptopelia roseogrisea*

42b Tihama: Common and widespread.

42c Other areas: At campsite south of Bishah 22 July.

1615 RED-EYED DOVE *Streptopelia semitorquata*

42b Tihama: Few Wadi Gizan high dam,

sewage lagoon east of Sabya and below Jebal Faifa. Not recorded in 1987.

1622 LAUGHING DOVE *Streptopelia senegalensis*

42a South-west Highlands: Common and widespread.

42b Tihama: Common and widespread including Jebal Gaha.

42c Other areas: Common on road south of Riyadh 4 July and on the return journey north 22 July.

1644 NAMAQUA DOVE *Oena capensis*

42a South-west Highlands: Bottom of Wadi Jaw, 14 July.

42b Tihama: Common.

42c Other areas: About eight south of Riyadh to Wadi Dawasir, 4 July, one on the road 5 July, and a few 22 July on the return journey to Riyadh.

1735 BRUCE'S GREEN PIGEON *Treron waalia*

42a South-west Highlands: Two in Habala forest, 10 July.

42b Tihama: Heard and young not quite fledged (JA12) 17 July, common Jebal Gaha 20 July.

2072 JACOBIN CUCKOO *Clamator jacobinus*

42b Tihama: Singles near Shuqayri 11 & 12 July, on the latter occasion hanging round a colony of Rüppell's Weaver. Not recorded in 1987.

2108 KLAAS'S CUCKOO *Chrysococcyx klaas*

42a South-west Highlands: One Al Jarrah 13 July.

2110 DIDERIC CUCKOO *Chrysococcyx caprius*

42a South-west Highlands: Singles Tendaha dam (singing) 5 July and at 2625 m, Jebal Souda plateau 20 July. Not recorded in 1987.

2170 WHITE-BROWED COUCAL *Centropus superciliosus*

42b Tihama: Six or more Wadi Dhamat, nr Shuqayri, 11 July. Not recorded in 1987.

2261 DESERT EAGLE OWL *Bubo ascalaphus*

42c Other areas: Calling evening at camp in central Arabia (JA23) 22 July and the following morning.

2281 HUME'S OWL *Strix butleri*

42a South-west Highlands: Heard Raydah farm 7 July.

42b Tihama: Local people confirm it to be present Jebal Aswad. Also heard foothills camp JA12 (1302 m) 16 July.

2439 ABYSSINIAN NIGHTJAR

Caprimulgus poliocephalus

42a South-west Highlands: Two unidentified nightjars calling and flying at dusk at Raydah farm on 6 July were later identified from photos taken at the same place and time 7 July. Also heard 9 July. This species was not identified to occur in Arabia until after the 1987 survey.

42b Tihama: Calling 15 July Jebal Aswad; calling JA12 (1302 m) from 1900 hrs 16 July and calling 1915 hrs onwards Jebal Gaha. (1850 m) 20 July. (No song heard, calling seemed to be a short contact note which was associated with the birds positively identified on 7 July).

2445 PLAIN NIGHTJAR *Caprimulgus inornatus*

42b Tihama: Two or three calling 1845-1930, JA12 (1302 m) 16 July. Not recorded in 1987.

2528 AFRICAN PALM SWIFT *Cypsiurus parvus*

42b Tihama: Common especially near doum palms, Ad Darb, Wadi Gizan high dam and nr Raith dam.

2530 ALPINE SWIFT *Tachymarptis melba*

42a South-west Highlands: About 30 feeding over terraces about 0700 hrs 11 July.

42b Tihama: Ten Aydabi 11 July.

2542 LITTLE SWIFT *Apus affinis*

42a South-west Highlands: About 20 Wadi Jaw 6 & 14 July and few south of Abha 10 July.

42b Tihama: Various localities Jebal Gaha, Jebal Faifa, Raith

2826 ABYSSINIAN ROLLER *Coracias*

abyssinicus

42b Tihama: Sabya area, three 8 July and one 15 July.

2870 GREY-HEADED KINGFISHER

Halcyon leucocephala

42a South-west Highlands: One or two, Wadi Jaw, 6 & 19 July.

42b Tihama: Two Jebal Faifa 12 July and two JA12 16 July.

2958 WHITE-THROATED BEE-EATER

Merops albicollis

42a South-west Highlands: Common Wadi Jaw 6 & 14 July.

42b Tihama: Common and widespread.

2960 GREEN BEE-EATER *Merops*

orientalis

42a South-west Highlands: Two (pair) Tendaha dam 5 July.

42b Tihama: Common and widespread.

42c Other areas: Few central Arabia 22-23 July.

2970 HOOPOE *Upupa epops*

42a South-west Highlands: Few but widespread, Raydah, Wadi Jaw, plateau and terraces, Tendaha dam, Al Jarrah, Al Azah.

42b Tihama: Jebals Gaha and Faifa.

2985 AFRICAN GREY HORNBILL *Tockus*

nasutus

42a South-west Highlands: Few Raydah and Wadi Jaw.

42b Tihama: Few in foothills, JA12, Jebal Gaha, Jebal Faifa, Raith.

3195 ARABIAN WOODPECKER

Dendrocopos dorae

42a South-west Highlands: One or two on five occasions Jebal Souda, at 2635 m and 2680 m on the dry east side and at Raydah farm and Wadi Jaw on west, also Yazeed south of Abha.

42b Tihama: Singles Jebal Gaha and Raith dam 21 July.

42c Other areas: Two IB16 22 July.

4808 SOUTHERN GREY SHRIKE *Lanius*

meridionalis

42b Tihama: One sewage lagoon east of Sabya

8 July.

42c Other areas: Two on journey south 5 July and few on the journey through central Arabia 22 July.

4989 AFRICAN PARADISE

FLYCATCHER *Terpsiphone viridis*

42a South-west Highlands: One or two on Raydah escarpment (once feeding juvenile) 6 & 14 July and three Al Jarrah 13 July.

42b Tihama: One Jebal Gaha 20 July.

5110 EURASIAN MAGPIE *Pica pica*

42a South-west Highlands: Six (including four large fledged but still dependent juveniles) north of Balahmah 18 July. It was not seen in the summit area of Jebal Souda or on the Raydah escarpment during the survey (compared to several observations there in 1987). However on 22 July Mohadi Asiri reported by telephone that he had seen three that morning at Sharma in the Wadi Tale'a, Jebal Souda and another report from Prof. B Kavanagh was of one seen at the top of the Raydah escarpment in September 2010.

42b Tihama: Local people on Jebal Aswad reported that the Magpie ('Ack-ack') was still present on that jebal 15 July. Two Jebal Gaha 20 July and heard before dawn at same site 21 July.

5148 BROWN-NECKED RAVEN *Corvus*

ruficollis

42a South-west Highlands: Rather scarce, one Raydah 5 July, a pair on the plateau 7 July and a few on the pipeline road east of the escarpment (including a bird at a pylon nest) 19 July.

Common south of Abha in the dry escarpment areas 10 July and about 50 Dalagan park, presumably there for the food scraps, 13 July.

42b Tihama: Rather scarce, few near Shuqayri on three days.

42c Other areas: Few central Arabia 22 July and about 40 at rain pool with vultures in central Arabia (JB23) 23 July.

5152 FAN-TAILED RAVEN *Corvus*

rhipidurus

42a South-west Highlands: Common and widespread, including Al Jarrah

42b Tihama: Present Jebals Aswad and Gaha.

42c Other areas: South of Bishah (IB14) 21-22 July.

5350 Hirundo rustica BARN SWALLOW
42a South-west Highlands: Single Souda 5 July, one south of Abha 16 July, ten on 18 July and 50 on 19 July.
42b Tihama: Few including Jebal Gaha 20-21 July.
42c Other areas: Ten at rain pool central Arabia (JB23) 23 July.

5364 PALE CRAG MARTIN Ptyonoprogne obsoleta
42a South-west Highlands: Scarce, up to three on four days.
42b Tihama: Few Jebal Gaha, Wadi Gizan high dam, Shuqayri.
42c Other areas: One on journey south 5 July.

5374 RED-RUMPED SWALLOW Cecropis daurica
42a South-west Highlands: Widespread, sometimes common, Jebal Souda, especially Raydah farm.
42b Tihama: Few Jebal Gaha 20-21 July.

5400 SINGING BUSHLARK Mirafra cantillans
42b Tihama: Few in fields near Shuqayri 11 July.

5440 GREATER HOOPOE LARK Alaemon alaudipes
42c Other areas: Few central Arabia JA23 22 July and JA23 23 July

5452 DESERT LARK Ammomanes deserti
42a South-west Highlands: Few lower Wadi Jaw 14 July, Farshah area 17 July.
42b Tihama: Few, Wadi Gizan high dam 8 July; IB12 15 July and Raith dam 21 July.
42c Other areas: Pair by road JA15 5 July and few on journey north 22-23 July.

5460 BLANFORD'S SHORT-TOED LARK Calandrella blanfordi
42a South-west Highlands: Three on pipeline road east of escarpment 13 July. More common in 1987.

5475 DUNN'S LARK Eremalauda dunnii
42c Other areas: Two central Arabia (JA23) 23 July.

5479 CRESTED LARK Galerida cristata
42a South-west Highlands: Rather scarce, up to 2940 m, but widespread, Tendaha dam, Jebal Souda, Abha dam and Dalagan park
42b Tihama: Scarce sewage lagoon east of Sabya 8 July and one or two other places on the Tihama 11-12 July.
42c Other areas: Few by road on journey south 5 July and also returning north 23 July.

5502 BLACK-CROWNED SPARROW-LARK Eremopterix nigriceps
42b Tihama: Up to 6 sewage lagoon east of Sabya 8 & 11 July and few Shuqayri 12 July.
42c Other areas: One central Arabia 22 July.

5567 SCRUB WARBLER Scotocerca inquieta
42a South-west Highlands: Scarce one or two groups on five occasions on Jebal Souda including Raydah, also Al Jarrah.

5581 GRACEFUL PRINIA Prinia gracilis
42a South-west Highlands: Heard Tendaha dam 5 July and Abha dam 7 July.
42b Tihama: Heard Wadi Gizan high dam 8 July and Shuqayri 11 July.

5672 WHITE-SPECTACLED BULBUL Pycnonotus xanthopygus
42a South-west Highlands: Common and widespread.
42b Tihama: Common and widespread.
42c Other areas: Common central Arabia 22 July.

5894 BROWN WOODLAND WARBLER Phylloscopus umbrovirens
42a South-west Highlands: Common in well vegetated areas including Al Jarrah, Habala and Wadi Jaw.
42b Tihama: Common Jebals Aswad, Gaha and Faifa.

5973 ARABIAN WARBLER Sylvia leucomelaena
42a South-west Highlands: Two Azeezah road, 15 July. Not recorded in the juniper zone in 1987.
42c Other areas: Two IB15 22 July.

5986 YEMEN WARBLER Parisoma buryi
42a South-west Highlands: Common in

suitable bushy areas, especially Raydah, but local.

6104 ARABIAN BABBLER *Turdoides squamiceps*

42a South-west Highlands: Rather scarce seen on six occasions Jebal Souda from Abha dam, pipeline site and Raydah also escarpment near Farshah.

42b Tihama: Common near Shuqayri, also heard Jebal Gaha.

42c Other areas: South of Bishah 22 July.

6296 ABYSSINIAN WHITE-EYE *Zosterops abyssinicus*

42a South-west Highlands: Frequent and widespread mostly recorded on Raydah escarpment. Common Habala.

42b Tihama: Few Jebals Aswad and Faifa.

6550 COMMON MYNA *Acridotheres tristis*

42b Tihama: Recorded at Baysh, Abu Arish, Sabya and a few Shuqayri.

42c Other areas: Common Riyadh 4-5 July.

6579 VIOLET-BACKED STARLING

Cinnyricinclus leucogaster

42a South-west Highlands: Common Wadi Jaw but scarcer in the highlands. Also Al Jarrah and Dalagan park.

42b Tihama: Few and widespread, common Jebal Gaha

6586 TRISTRAM'S STARLING

Onychognathus tristramii

42a South-west Highlands: Common and widespread, flocks roam throughout the highlands.

42b Tihama: Present Jebals Aswad, Gaha and Faifa and in foothills.

42c Other areas: South of Bishah 21 July.

6671 YEMEN THRUSH *Turdus*

menachensis

42a South-west Highlands: Common and widespread in suitable bushy areas of Jebal Souda also Al Jarrah.

42b Tihama: Few Jebals Aswad and Gaha.

6801 BLACK SCRUB ROBIN *Cercotrichas podobe*

42b Tihama: Common and widespread.

42c Other areas: One north of Bishah 22 July.

6839 COMMON STONECHAT *Saxicola torquatus*

42a South-west Highlands: Recorded Jebal Souda on five days, not present on the Raydah escarpment.

6849 RED-BREASTED WHEATEAR

Oenanthe bottae

42a South-west Highlands: Common on some terraced fields on Jebal Souda, Wadi Tale'a and pipeline road, Al Jarrah, Dalagan and Al Azah

6861 ARABIAN WHEATEAR *Oenanthe lugentoides*

42a South-west Highlands: Few various sites on Jebal Souda, Wadi Tale'a, pipeline road, escarpment near Farshah, Gara'a and Tanumah.

42b Tihama: Few Jebals Aswad and Gaha.

6865 WHITE-CROWNED WHEATEAR

Oenanthe leucopyga

42c Other areas: Two central Arabia (JA23) 23 July.

6871 BLACKSTART *Cercomela melanura*

42a South-west Highlands: Wadi Jaw only.

Not present in juniper or summit area.

42b Tihama: Widespread in the foothills, Raith dam, Shuqayri and Faifa.

42c Other areas: Few north south of Bishah 22 July.

6883 LITTLE ROCK THRUSH *Monticola rufocinereus*

42a South-west Highlands: Common and widespread, especially Raydah, also Al Jarrah.

42b Tihama: Common Jebals Aswad and Gaha.

6912 GAMBAGA FLYCATCHER

Muscicapa gambagae

42a South-west Highlands: Locally numerous from highlands to Wadi Jaw, including Pipeline road, Azeezah road, Al Jarrah and Al Azah.

7055 NILE VALLEY SUNBIRD *Hedydipna metallica*

42b Tihama: Widespread Wadi Gizan high dam, Jebal Gaha, Raith and Shuqayri.

42c Other areas: Just south of Bishah 21 July and IB16 22 July.

7105 PALESTINE SUNBIRD *Cinnyris osea*
42a South-west Highlands: Common and widespread especially Raydah, also Al Jarrah.
42b Tihama: Common Jebal Gaha and present Jebal Faifa.

7106 SHINING SUNBIRD *Cinnyris habessinicus*
42a South-west Highlands: One Wadi Jaw 6 July.
42b Tihama: Ar Raith dam and in the foothills.
42c Other areas: Two (IB14) 22 July.

7161 HOUSE SPARROW *Passer domesticus*
42a South-west Highlands: Common and widespread wherever there are human settlements. Scarce Wadi Jaw.
42b Tihama: Common and widespread but not recorded Jebals Aswad and Gaha.
42c Other areas: Common at settlements on the road to and from Riyadh.

7177 ARABIAN GOLDEN SPARROW *Passer euchlorus*
42b Tihama: Colony of old nests but no birds, near Shuqayri 11 July, group of about 20 birds in that area (including some yellow males) 12 July and some old nests near Sabya 15 July.

7214 RÜPPELL'S WEAVER *Ploceus galbula*
42a South-west Highlands: Common and widespread Tendaha dam, Raydah pipeline road, Wadi Jaw.
42b Tihama: Common most sites and in the foothills but few Jebal Gaha.

7307 ARABIAN WAXBILL *Estrilda rufibarba*
42b Tihama: One Jebal Faifa summit 12 July and two Jebal Gaha 20 & 21 July.

7343 AFRICAN SILVERBILL *Lonchura cantans*
42a South-west Highlands: A small group, Dalagan 13 July.
42b Tihama: Several records near Shuqayri, one group of about 50, 11 July.

7425 LONG-BILLED PIPIT *Anthus similis*
42a South-west Highlands: Widespread in small numbers, Raydah, Azeezah road,

common Al Jarrah also recorded Al Azah.
42b Tihama: Few Jebals Aswad and Gaha.

7471 ARABIAN SERIN *Serinus rothschildi*
42a South-west Highlands: Rather scarce recorded at Raydah farm (twice) and Azeezah road.
42b Tihama: Few Jebal Gaha 20 July.

7485 YEMEN SERIN *Serinus menachensis*
42a South-west Highlands: One Raydah farm 6 July.
42b Tihama: Pair Jebal Gaha 21 July.

7521 YEMEN LINNET *Carduelis yemenensis*
42a South-west Highlands: Common on terraced fields, sometimes very common, with a flock of 200 on one occasion, also Raydah, Pipeline road, Al Jarrah and Al Azah.

7785 CINNAMON-BREASTED BUNTING *Emberiza tahapisi*
42a South-west Highlands: Common and widespread on Souda plateau also Al Azah.
42b Tihama: Present Jebal Gaha 16 July.

Appendix 2

ABBA Survey 42: Itinerary, Gazetteer and Selected Waypoints

Itinerary

Date	Locations and Activities	Main ABBA Squares
04/07/2010	Riyadh to Wadi Dawasir	Various
05/07/2010	Wadi Dawasir, Jebal Souda, Raydah escarpment	Various
06/07/2010	Jebal Souda, Raydah escarpment	IA13
07/07/2010	Raydah escarpment, east of plateau, Abha dam	IA13
08/07/2010	Tihama: Sabya area, Wadi Gizan high dam (Bald Ibis search)	Various
09/07/2010	Souda plateau, mist netting Raydah escarpment farm	IA13
10/07/2010	South of Abha, Habala	Various
11/07/2010	Tihama, Sabya (Bald Ibis search)	IB11
12/07/2010	Sabya, Shuqayri, Jebal Faifa (Bald Ibis search), Abha	Various
13/07/2010	Al Jarrah reserve, Dalagan Park, Wadi Tale'a	IA13/IB13
14/07/2010	Raydah escarpment, Wadi Jaw, Ad Darb road	IA13
15/07/2010	Jebal Souda, tihama: Sabya and Jebal Aswad	IA13-IB12
16/07/2010	Jebal Aswad, Jebal Gaha, Raith, JA12	IB12/JA12
17/07/2010	JA12, Farshah, Abha	JA12/JA13
18/07/2010	Jebal Souda, Tanumah, An Numas (Magpie search)	IA14/IA15
19/07/2010	Raydah escarpment, Wadi Jaw, Wadi Tale'a	IA13
20/07/2010	Jebal Souda, Jebal Gaha (Magpie search)	IA13/IB12
21/07/2010	Jebal Gaha, Raith Dam, Abha, IB14	IB14,IB12/IB14
22/07/2010	Bishah, Ranyah, Kurmah, Zalim	IB14-JA23
23/07/2010	Return to Riyadh from JA23	JA23/JB23

Notes: All travel was by road. 1-3 July and 24-26 July were spent in Riyadh.

Gazetteer

Abha, regional town (2200 m) highlands, IB13
Abha dam, reservoir, recreation area, reedbeds (2269 m) highlands, IB13
Abu Arish, populated place - town, tihama, IB10
Aswad, J. (2034 m) basaltic/granite mountain, tihama, IB12
Aydabi, populated place, tihama, IB11
Azah, al, populated place - village, highlands, IA14
Azeezah, populated place - village, J. Souda plateau, highlands (IA13)
Balahmah, populated place, highlands, IA14
Baysh, populated place - town, tihama, IB11
Birk, al, populated place - town, tihama, IB13
Bishah, regional town, IB17
Dalagan Park, public recreation park, south highlands, IB13
Darb, ad, populated place, tihama, IA12
Dawasir, W., central region, KB17-LB17
Dhamat, W., tihama, IB11
Faifa, J., mountain and populated place (1950 m) tihama/foothills, JA11

Farshah, populated place - village (2400 m) highlands, JA12
 Gaha, J. (2100 m) sandstone mountain, tihama, IB12
 Gizan, W., dam, high dam (173 m), tihama, IB11
 Habala, populated place - resort area, sandstone precipice (2378 m) highlands, IB13
 Jarrah, al, Protected area, Asir municipal reserve (2499 m) highlands, IB13
 Jaw, W. (1350 m) foothills, IA13
 Khamis Mushait, populated place - town (2006 m) highlands, IB13
 Kurmah, regional town, IA20
 Numas, an, populated place, highlands, IA15
 Pipeline road, J. Souda plateau, highlands, IA13
 Raith, populated place, tihama, IB12
 Raith dam,(335 m) reservoir, tihama, IB12
 Ranyah, regional town, IB19
 Raydah escarpment, Jebal Souda, highlands, IA13
 Raydah farm, Raydah escarpment, Jebal Souda , highlands, IA13
 Riyadh, capital city, MB26
 Sabya, regional town, tihama, IB11
 Sharma, populated place - village, Souda plateau, highlands, IA13
 Shuqayri, populated place - village, tihama, IB11
 Souda, J. (3009 m) highlands, IA13
 Tale'a, W., Souda plateau, highlands, IA13
 Tanumah, populated place - town, highlands, IA14
 Tendaha dam, highlands, IB13
 Yazeed, populated place- village (2300 m), highlands, IB13
 Zalim, regional town, central region, IA22

SELECTED WAYPOINTS

Coordinates for some other sites are given elsewhere in the text

Date/Time	Ref No	Combined Coords	ABBA Sq	Alt (M)	Details
04/07/2010 00:00	42/1	N20 17.597 E44 16.533	IA17	864	Camp Wadi Dawasir
05/07/2010 09:52	42/2	N18 19.063 E42 53.126	IB13	2054	Tendaha dam
05/07/2010 10:53	42/3	N18 17.018 E42 44.075	IB13	2006	Khamis Mushait
05/07/2010 11:38	42/4	N18 14.022 E42 30.781	IB13	2215	Abha
05/07/2010 15:38	42/5	N18 12.374 E42 24.613	IA13	2795	Raydah reserve entrance gate
06/07/2010 16:19	42/6	N18 14.403 E42 23.599	IA13	2761	Census Site 1
06/07/2010 17:02	42/7	N18 11.876 E42 24.579	IA13	2438	Raydah Farm (abandoned)
07/07/2010 09:20	42/8	N18 14.181 E42 24.811	IA13	2637	Small dam Jebal Souda
07/07/2010 11:42	42/9	N18 12.930 E42 29.143	IA13	2269	Abha Dam
08/07/2010 09:14	42/13	N17 10.846 E42 48.105	IB11	97	Sewage lagoons east of Sabya
08/07/2010 16:22	42/14	N17 02.985 E42 57.583	IB11	173	Wadi Gizan High dam
09/07/2010 06:01	42/15	N18 14.150 E42 23.930	IA13	2732	Census Site 3
10/07/2010 06:10	42/17	N18 14.380 E42 23.562	IA13	2736	Census Site 4
10/07/2010 11:07	42/19	N18 01.348 E42 45.807	IB13	2303	Gaza dam south of Abha
11/07/2010 13:49	42/20	N17 14.196 E42 56.915	IB11	240	Aydabi village
11/07/2010 17:56	42/22	N17 07.616 E42 49.057	IB11	105	Wadi Dhamat
12/07/2010 15:24	42/23	N17 07.801 E42 49.358	IB11		Shuqayri village
12/07/2010 21:20	42/24	N17 17.224 E43 08.171	JA11		Jebel Faifa summit
13/07/2010 06:17	42/25	N18 13.536 E42 26.211	IA13	2580	Census Site 5
13/07/2010 11:00	42/29	N18 00.335 E42 44.925	IB13	2499	Al Jarrah protected area

13/07/2010 17:31	42/30	N18 20.232 E42 24.272	IA13	2681	Camp site
14/07/2010 14:27	42/32	N18 00.878 E42 22.916	IA13	603	W Jaw track joins Ad darb road
15/07/2010 06:11	42/33	N18 13.303 E42 26.431	IA13	2535	Census Site 6
15/07/2010 17:45	42/35	N17 33.012 E42 54.396	IB12	2034	Jebal Aswad
16/07/2010 18:10	42/36	N17 43.516 E43 10.374	JA12	1302	Camp & census
17/07/2010 12:36	42/39	N17 54.491 E43 14.062	JA12	2412	Escarpment at Farshah
18/07/2010 10:26	42/40	N18 37.262 E42 16.634	IA14	2606	Balahmah Magpie site
19/07/2010 06:10	42/41	N18 18.036 E42 21.312	IA13	2796	Census Site 8
20/07/2010 06:02	42/45	N18 14.177 E42 25.826	IA13	2650	Census Site 9
20/07/2010 17:32	42/48	N17 38.085 E42 53.645	IB12	1850	Camp on Jebal Gaha
21/07/2010 10:00	42/50	N17 39.235 E42 40.877	IB12	335	Raith Dam
21/07/2010 17:12	42/51	N18 50.091 E42 50.430	IB14	1770	Camp site south of Bishah
22/07/2010 17:43	42/53	N23 26.698 E43 04.341	JA23	1074	Camp site central Arabia
23/07/2010 10:36	42/55	N23 24.675 E43 59.097	JB23	834	Vulture watering site

Appendix 3

THE ABBA BREEDING EVIDENCE CODE

The Breeding Evidence Code (BEC) is the list of breeding category options used for records on the ABBA database. Records are grouped into before 1 January 1984 (these show as red symbols on the maps) and 1 January 1984 and later (these show as blue symbols on the maps and take precedence over red symbols of the same size).

<u>Code</u>	<u>Definition and Notes</u>
99	Does not show on the map. Can refer to <i>any</i> subject relevant to the species and need not be specific to breeding, e.g. habitat or pollution. (<i>This BEC is used mainly by the Coordinator</i>)

NB Records with BECs under 'Present' and 'Possible breeding' (small dot on the maps) are described generally as 'other records' in the final atlas because it is often difficult to differentiate between non-breeding visitors and those possibly breeding.

Present (Shows as small dot on maps)

XX	Mainly used for highly sedentary species observed at any time (ie those species identified as sedentary on Form 2) and miscellaneous records of other species. On ABBA data prints BEC XX shows as '20'.)
0	Species observed in the breeding season but not in breeding habitat.

Possibly breeding (Shows as small dot on maps)

1	Species observed in the breeding season in possible nesting habitat.
2	Singing male(s) present (or breeding calls heard) in the breeding season.

Probably breeding (Shows as middle sized dot on maps)

30	Unspecified probable breeding, e.g. in a published paper. (<i>This BEC is only used by the Coordinator when adding literature references to the database</i>)
3	Pair observed in suitable nesting habitat in the breeding season.
4	Permanent territory presumed through registration of territorial behaviour (song etc) on at least two different days, a week or more apart, at the same place.
5	Display and courtship (includes copulation)
6	Visiting probable nest site, but without any indication of eggs or young present.
7	Agitated or aggressive behaviour or anxiety calls from adults(s).
8	Brood patch on adult examined in the hand, indicating probably incubating. Also includes ovary eggs in female specimens and 'testes large' in male specimens.
9	Building nest or excavating nest-hole. Includes carrying nesting material.

Confirmed breeding (Shows as large dot on maps)

40	Unspecified confirmed breeding, e.g. in a published paper. (<i>This BEC is only used by the Coordinator when adding literature references to the database</i>)
10	Distraction display or injury feigning.
11	Used nest or eggshell found. (<i>Of any age, this could be from a previous year so a data against such a record is usually of little meaning</i>)

- 12 Recently fledged young (nidicolous species) or downy young (nidifugous species).
(Does not include juveniles that are clearly capable of strong flight)
- 13 Adult(s) entering or leaving nest site in circumstances indicating occupied nest including high nests or nest-holes, the contents of which cannot be seen, or adults(s) seen sitting on the nest.
- 14 Adult(s) carrying food for young or faecal sac.
- 15 Nest containing eggs.
- 16 Nest with young seen or heard.

Other Codes and Symbols

- 41 **Breeding in captivity.** Triangle. All other symbols of whatever size or shape take priority over this BEC.
- 42 **Breeding in Sheltered Conditions** Diamond. This symbol is used for breeding in semi-captive conditions, for example where food is provided to released birds, as in some open-air menageries in the UAE. Takes priority over small and medium sized symbols and BEC 41 but not 43.
- 43 **Breeding of reintroduced or relocated birds** Half-filled large circle. This symbol is always blue. This BEC takes priority over all small and medium symbols and BEC 41 and 42.

Appendix 4

Species breeding evidence: July 2010; South-west Saudi Arabia

The highest Breeding Evidence Code achieved for each ABBA Square is shown (See note below)

	IA 14	IB 14	JA 14	IA 13	IB 13	JA 13	IA 12	IB 12	JA 12	IB 11	IB 10
Arabian Partridge				12							
Little Grebe				3	2			3		12	
Abdim's Stork										13	
Glossy Ibis										16	
Cattle Egret										13	
Common Kestrel				16	1						
Griffon Vulture				1				6			
Shikra				1	7					1	
Common Moorhen										12	
Coot				3	1						
Black-winged Stilt					1					12	
Spur-winged Plover										3	
Chestnut-bellied Sandgrouse										3	
Rock Dove	1	1	3	1	1		1	1	1	1	
Eurasian Collared Dove		2	3								
African Collared Dove		2					1			15	1
Laughing Dove	1	2		2	3		3	3	1	3	1
Namaqua Dove			3				1	1	1	12	1
Bruce's Green Pigeon					1			1	12		
Dideric Cuckoo				6	2						
Abyssinian Nightjar				3				1	2		
African Palm Swift								1	1	6	
White-throated Bee-eater				1					1	5	
Green Bee-eater					1				1	3	
Hoopoe	1			13	1	3		1	1		
Arabian Woodpecker				1	3			1			
African Paradise Flycatcher				12	3			1			
Eurasian Magpie	12							3			
Brown-necked Raven		1		13	3	3				3	
Fan-tailed Raven	1	1		3	1	1		3	1		
Pale Crag Martin	1			2	1		1	9	1	3	
Red-rumped Swallow				9	1			3	3		
Desert Lark		1			2			3	1	1	
Crested Lark				12	1		1			1	
Black-crowned Sparrow-lark										3	
Scrub Warbler				3	1						
White-spectacled Bulbul	1	3			3	1		3	3	3	
Brown Woodland Warbler				8	14			3	1		
Arabian Warbler				3							
Yemen Warbler				8							
Abyssinian White-eye				8				9			
Common Myna										14	
Violet-backed Starling				3	14			3	1		
Tristram's Starling	3	1		3	3			3	3		
Yemen Thrush				3	1			1			
Common Stonechat				12							
Red-breasted Wheatear	1			3	3						

Appendix 5

Plants Recorded

The following plants were recorded during walked censuses and other fieldwork or are mentioned in reports and other notes of the survey. The list includes some of the most common and noticeable plants in the areas visited but are of course only a fraction of the species diversity present. The family, species and common names are provided. There was not a botanist in the team and hence these notes are only superficial. Some representative altitudes of occurrence are shown.

Agavaceae: *Dracaena serrulata*. Dragon tree growing in dry highland sites - e.g. Jebal Gaha (2000 m), and Farshah (2000 m).

Apocynaceae: *Adenium obesum*. A squat, water retaining tree/bush found on rocky hillsides. Notes up to about 1500 m.

Asclepiadaceae: *Ceropegia* sp. Succulent creeping plants (several species) that grow up through bushes on the tihama and in the foothills (1315 m).

Burseraceae: *Commiphora* sp. Trees and bushes of several species, may be 'thorny' and often look like acacias. Mainly on the Tihama and in the foothills.

Cactaceae: *Opuntia ficus-indica*. Introduced prickly pears grow at all altitudes from the tihama and to the top of Jebal Souda (to at least 2800 m). The fruits are sold commercially for human consumption. Known locally as 'talas'.

Caprifoliaceae: *Lonicera etrusca*. This honeysuckle is a common creeper, Raydah escarpment (2400 m).

Chenopoiaceae: (Chenopods). A numerous family of mostly halophytic herbs and shrubs often with fleshy leaves and stems, usually found in dry, salty environments.

Compositae: *Echinops* sp. Large thistles (several species) found in the Asir highlands (2700 m).

Cucurbitaceae: *Citrullus colocynthis*. The desert gourd is common throughout Arabian deserts (but not in the highlands) it produces fruit like a small melon.

Cupressaceae: *Juniperus procera*. The juniper is a common tree in the Asir from at least An Numas in the north to Al Jarrah in the south, it occurs on Souda above 1837 m. Also recorded on Jebal Aswad, Jebal Gaha (mostly dying) and Jebal Faifa.

Gramineae: *Triticum sativum*. Wheat grows on the Asir terraces, usually the 'eared' form which looks superficially like barley. Threshing was taking place at 2700 m on 6 July. Some fields were abandoned as crop had apparently not ripened, possibly due to local droughts. *Panicum turgidum*. Common jointed grass found throughout lowland Arabia. *Zea mays*. Maize is commonly grown on some terraces of the Asir and in irrigated plots on the Tihama. Crops in the Asir in July were young at about 30-60 cm. *Saccharum officinarum*. Sugarcane is commonly grown in irrigated fields on the tihama. It is a refuge for the Helmeted Guineafowl.

Hypericaceae: *Hypericum revolutum*. A stream side, spindly bush with bright yellow flowers, Jebal Souda, 2700m.

Labiatae: *Thymus* sp. Thyme is common in the Asir however in some notes it has been used to refer to any aromatic plant.

Leguminosae: *Acacia mellifera*. A tree frequent in the Asir highlands, it has cream coloured tassel

flowers. *Acacia tortilis*. The commonest acacia noted during the survey, its flowers are cream coloured pom-poms.

Liliaceae: *Aloe sabaia*. The tree aloe grows forming a trunk rather like a 'yucca plant' at 1800-2150 m on the Raydah escarpment.

Loranthaceae: *Loranthus* sp. Parasitic plants occurring on acacia throughout much of south-west Arabia. Seen at Tendaha dam (2054 m) and other sites.

Moraceae: *Ficus* sp. General name given to the several tree species bearing figs (2732 m).

Oleaceae: *Olea europaea ssp africana*. The wild olive of the Asir. On Jebal Gaha it did not appear to grow on the sandstone but was present on basalt. *Jasminum grandiflorum*. This jasmine is a sweet smelling climber in the Asir (2400 m).

Palmae: *Hyphaene thebaica*. The doum palm is restricted to the Tihama, it is the main nesting tree of the Palm Swift.

Papaveraceae: *Argemone mexicana*. The introduced and invasive Mexican poppy is now found from the tihama to the top of Jebal Souda (confirmed at 2800 m). Particularly by roads.

Resedaceae: *Ochrademus bacatus*. A common climbing shrub mostly in the Asir.

Rhamnaceae: *Zizyphus spinachristi*. Common tree/bush in lower altitudes, foothills with small apple-like fruit. Known locally as Elb and Sidr.

Rosaceae: *Rosa abyssinica*. A typical rose found in the Asir often climbing through bushes or otherwise supported.

Sapindaceae: *Dodonaea viscosa*. A bright green (evergreen) shrub found in the highlands, nothing eats it.

Solanaceae: *Lycium shawii*. A much browsed bush bearing red berries. *Nicotiana glauca*. An introduced spindly shrub with yellow trumpet flowers, often found on roadsides and near cuttings.

Vitaceae: *Cissus rotundifolius*. Common vine with large round leaves often totally covering trees, bushes and rock faces in lower altitudes where there is a good water supply (1300 m).

ABBA Survey Reports

A summary of the results of ABBA Surveys appears in *The Phoenix*, the newsletter of the ABBA Project. A full report has been prepared of some surveys which includes details of censuses and other observations, sites visited etc., these have been published as follows:

Survey 4. JENNINGS, M. C., M. I. AL SALAMA & H. S. FELEMBAN. 1988. *Report on an ornithological survey of the Asir National Park, Saudi Arabia 29 June to 18 July 1987*. N.C.W.C.D., Riyadh Report 4. (Pp 76).

Survey 5. JENNINGS, M. C., M. O. AL TOUM & A. A. A. AL ISSA. 1988. *Atlas of the Breeding Birds of Arabia: Survey 5, Results of an Ornithological Survey of Northern Saudi Arabia: 27 February - 26 March 1988*. N.C.W.C.D. Technical Report 10. (Pp 65).

Survey 6. JENNINGS, M. C. & M. I. AL SALAMA. 1989. *Results of an ornithological survey of the northern Asir & southern Hedjaz region of Saudi Arabia, 25 June - 16 July 1988*. N.C.W.C.D. Riyadh Tech. Report No.14. (Pp 65).

Survey 7. JENNINGS, M. C., S. A. AL SHODOUKHI, T. M. AL ABASS & S. COLLENETTE. 1990. *Results of an ornithological survey of central & north western Saudi Arabia; 12 March - 8 April 1989*. N.C.W.C.D. Riyadh Tech. Report No.19. (Pp 82).

Survey 8. JENNINGS, M. C., I. A. ABDULLA & N. K. MOHAMMED. 1991. *Results of an ornithological survey of South Yemen 23 October - 9 November 1989*. N.C.W.C.D. Technical Report 25: Riyadh, South Arabia. (Pp 63).

Surveys 9 & 10. JENNINGS, M. C., A. AL KRAIRY & R. AL HARBI. 1992. *Results of two ornithological surveys to Central Saudi Arabia, May 1990 and April- May 1991*. N.C.W.C.D., Riyadh Technical Report 28. (Pp 60).

Surveys 11 & 12. JENNINGS, M. C., M. I. AL SALAMA & C. T. RICHARDSON. 1994. *Results of two ornithological surveys to UAE and Oman and Northern Saudi Arabia, February-May 1992*. N.C.W.C.D. Tech. Report No 35. (Pp.75).

Surveys 13-16. JENNINGS, M. C., M. I. AL SALAMA, A. H. AL SUHAIBANI, H. S. A. YAHYA & C. E. QIRREH. 1996. *Results of four ornithological surveys to the southern Tihama of Saudi Arabia, north eastern Saudi Arabia, northern Oman and north western Saudi Arabia, during the period December 1992 to April 1994*. N.C.W.C.D. Riyadh Tech. Report No.36. (Pp.65).

Surveys 17-22. JENNINGS, M. C. 2004. *The birds of the Rub al Khali periphery: Results of six ornithological surveys to Saudi Arabia, Oman, Yemen & the UAE, March 1995-July 1997*. ABBA Report Somersham, Cambridgeshire, UK. (Pp.87).

Survey 35. JENNINGS, M. C. 2005. *Birds observed at Ghubrah Bowl, Saiq Plateau & Jabal Shams, Northern Oman 19 March-26 April 2005 with comments on status & population*. Report, Sultan Qaboos University, Al Khoud. (Pp16).

Survey 40. JENNINGS, M. C., M. I. AL SALAMAH, B. ABU QABOUS & H. N. AL SUBAIE. 2009. *Wintering Birds in Northern Saudi Arabia: February 2009*. Report to SWC Riyadh. (Pp 53).