

Life-history traits of Honey Buzzards (*Pernis apivorus*) in Africa

By Rob G. Bijlsma

Abstract: BIJLSMA, R. G. (2002): Life-history traits of Honey Buzzards (*Pernis apivorus*) in Africa. *Vogelwarte* 41: 240–248.

In February 2001, wintering Honey Buzzards were observed in southeastern Nigeria during systematic focal watches from fixed observation points. In an area of 600 ha, 34 records were obtained, among which 11 adults, 1 3rd calendar-year and 14 juveniles. At least 20 individuals were involved based on individual variations in plumage and moult. High altitude flights were typical between 10:00 and 12:40 h local time, during which the birds ranged widely (> 2 km) without showing intra-specific agonistic behaviour. Foraging commenced in early morning (birds with small crops seen) and -most likely- in the afternoon. Rainforest was the preferred habitat. Adult Honey Buzzards were in advanced primary moult, with females slightly ahead of males; both sexes had (almost) finished the moult in rectrices.

It is argued that Honey Buzzards in Africa are closely associated with lowland rainforest and moist woodlands. This would indicate a much smaller wintering region than hitherto surmised (less than 25% of the breeding range), and one that is seriously threatened by habitat destruction. An age-specific dichotomy in wintering quarters is likely, with juveniles on average residing more often in central parts of Africa. Adult Honey Buzzards remaining in Africa during the breeding season may have experienced adverse conditions during breeding and moulting in the preceding year.

Key words: Honey Buzzard, *Pernis apivorus*, density, home range, diurnal rhythm, feeding, moult, age-specific migration strategy, rainforest, Afi Mountain, Nigeria.

Address: Doldersummerweg 1, 7983 LD Wapse, The Netherlands. E-mail: rob.bijlsma@planet.nl

1. Introduction

„Honey Buzzards are, in fact, altogether something of a mystery in Africa.“ With this remark, BROWN (1971) aptly summarized the available evidence. Since then, little progress has been made in clarifying the status of this common Palearctic breeding bird (probably > 1 million birds; BIJLSMA 1997a) in its African environment. BROWN et al. (1982) still described the species as little known, occurring mainly in West-African and equatorial forest and *Brachystegia* woodland south of the equator, a description echoed by KOSTRZEWA (1998). In Nigeria it is considered an uncommon Palearctic migrant, widespread from early October to early April, especially on the southern escarpment of the Jos Plateau and in the south (ELGOOD et al. 1994). However, the available evidence is still scanty.

In late winter 2000/2001, I had the opportunity to study Honey Buzzards in Nigeria, with special attention to age- and sex-composition, moult, habitat choice, home range, diurnal activity pattern and behaviour. Collection of such data is particularly opportune in the light of the degradation of lowland rainforest and forest of the southern Guinea zone by farming and timber extraction (ELGOOD et al. 1994, GATTER 1997, 2000). The substantial contraction of the rainforest range in West-Africa may negatively impact survival, and therefore population size, of Honey Buzzards breeding in Europe. Long-term population declines have been implied for Sweden (TJERNBERG & RYTTMAN 1994), several regions in Germany (ARBEITSGRUPPE GREIFVÖGEL NORDRHEIN-WESTFALEN DER NWO 2000, KOSTRZEWA 1998) and The Netherlands (BIJLSMA 2002), but fluctuating or stable populations still seem to prevail over much of its range (BIJLSMA 1997a).

2. Study area, weather and methods

The study site is situated in the foothills of the Afi Mountain on the Obudu Plateau (6°38' N, 9°00' E), lying largely between 200 and 500 m and being one of the few pockets of primary rainforest left in Nigeria (extending into Cameroon). The area is rugged, except for the valleys where oil palms, cocoa, banana, plantain and yam are cultivated in clearings in the forest. Some of the foothills of the Afi Mountain had been cleared of forest and are

now covered with large areas of *Pennisetum* grass, an habitat rarely found elsewhere in Nigeria. The observations were centred at a site 3 km north of the village Ebakken, with intermittent observations halfway Ebakken and the main observation site, and on the Afi Mountain itself, covering an area of about 2 x 3 km.

This area was under constant surveillance from 31 January through 24 February 2001. In early morning and evening, between one and four hours were spent in catching and handling Barn Swallows at a large roost in dense *Pennisetum* grass. During these periods, watching raptors was necessarily much restricted. Focal watches between 6.30 and 18.45 hr of 1–4 hours each were carried out from a vantage point some 100–150 m above the valley floor, totaling 82.5 hours. Visibility was restricted (800–1500 m) during the harmattan, the dry and dust-laden desert wind from the western Sahara that dominated much of the observation period. This was exacerbated by the smoke of numerous bush fires. In early February, visibility was much better (up to 5 km). Cloud cover was non-existent until 18 February. From then on, some cloud formation occurred in the morning with very slight rainfall on 20 February. Maximum temperatures in the shade varied between 31 and 40 °C, minimum temperatures between 14 and 21 °C (just before sunrise).

During the systematic watches, the forest canopy and sky were continuously scanned for raptor activity by naked eye and with a binocular (10 x 40 Leitz). Raptors were recorded on a minute by minute basis, including their sex and age, moult, behaviour and flight patterns. Individual recognition of Honey Buzzards was sometimes possible by describing in detail underwing and body patterns, moult, and position of damaged flight feathers. Missing, growing or damaged primaries were counted descendantly, secondaries ascendantly and rectrices centrifugally. Missing rectrices or remiges were almost impossible to detect in birds > 300 m away from the observer and flying at low or mid-high altitudes (< 100 m) and high altitudes (> 500 m). Birds flying below 50 m were just above the canopies of the largest trees in the valley, those between 50–100 m at eye level up to the top of the nearest mountain ridge. Raptors flying at over 500 m were barely visible with the naked eye (hazy sky) and not identifiable without the use of a 10x binocular. All other birds were assigned to the intermediate height category. Rather than taking these heights as absolute figures, they should be used as a fairly reliable index of height. Notes on moult and damaged feathers were only taken from birds circling straight overhead for at least 30 seconds, and preferably at heights mid-way of the intermediate category or lower.

Acknowledgements: Without the permission and hospitality of the villagers of Ebakken, especially of chiefs FRANCIS, SIMON and BONIFACE, and BRIAN MKPE and his helpers, this study would have been impossible. Much help was also received from PIERFRANCESCO MICHELONI, OSCAR FRIAS, PHILIP HALL (Pro Natura International, Lagos), the Nigerian Conservation Society, LIZA GADSBY and PETER JENKINS (Pandrilus, Calabar) and the Cross River State Forestry Commission. BENNIE VAN DEN BRINK, FRANCESCO FRANCIONI and BALÁZS KARAFI were my companions in the bush. The paper was improved by comments of BENNIE VAN DEN BRINK, WILLEM VAN MANEN and ANITA GAMAUF.

3. Results

3.1. Density, age and sex

During February 2001 a total of 34 Honey Buzzards were recorded (0.41 birds/observation hour), relating to 20–30 different individuals when plumage variation, age and sex are taken into account. All birds behaved like residents, spanning an area of > 600 ha forest. Age- and sex-identified birds involved 7 adult males (plumage types: 1 light, 5 intermediate, 1 dark), 4 adult females (all intermediate) and 14 juveniles (1 light, 3 intermediate, 10 dark-brown). A third calendar-year female with yellowish iris and green-yellowish cere was seen at close range.

3.2. Home range

Several individually recognisable birds were recorded twice or three times. A dark-brown juvenile with broken wing tip (8th primary, left) was seen on 9, 11 and 13 February, spanning an area of at least 1.6 x 2.2 km (352 ha). Another juvenile (light plumage, spotted and streaked underparts, mottled head with conspicuous dark eye-mask) was seen on two consecutive days (14–15 February) only 500 m apart. This bird was active in and over the same patch of degenerated rainforest, especially in early morning. An adult female with a prominent translucent roundish patch on the primaries (also clearly visible on the upper wing) was observed on 31 January and 12 February, ascending from the forest at

sites 2.5 km apart and covering an area of > 450 ha during flights at medium and great heights. In general, high altitude flights indicated wide-ranging behaviour of Honey Buzzards. Birds leaving thermals typically followed a straight horizontal course over distances of >2 km, disappearing in the haze when still at great heights.

3.3. Diurnal rhythm and flight behaviour

The observed above-canopy flights were restricted to the period between 8:44 and 17:05 hr. The majority (85 %, n = 34) of such flights were recorded between 10:10 and 12:40 hr local time, mostly while soaring, circling and gliding between 50 and >500 m during the hours of strongest thermal activity. Few birds were observed during the afternoon. This was in accordance with overall raptor activity. It cannot be ruled out that birds were too high to be visible from the ground in the afternoon: between 10:00 and 13:00 h soaring height gradually increased (Table 1).

Table 1: Hourly distribution and flying height of Honey Buzzards observed during systematic observations between 31 January and 24 February 2001 near Afi Mountain, southeastern Nigeria.

Tab. 1: Wespenbussard-Beobachtungen während einer systematischen Erfassung zwischen 31. Januar und 24. Februar 2001 in südöstlichen Nigeria: Verteilung der Beobachtungen über den Tag und nach Flughöhe

Local time (h)	6	7	8	9	10	11	12	13	14	15	16	17	18
Observation time (min)	505	190	75	310	630	630	375	405	250	285	265	455	575
Low (<50 m)	-	-	-	1	2	-	-	-	-	-	-	-	-
Mid-high (>50-100 m)	-	-	1	-	3	1	1	1	-	-	-	-	-
High (>100-500 m)	-	-	-	-	1	9	3	1	1	-	-	-	-
Very high (>500 m)	-	-	-	-	1	3	3	-	-	-	1	1	-
Total	0	0	1	1	7	13	7	2	1	0	1	1	0
Birds/100 minutes	0.0	0.0	1.33	0.32	1.11	2.06	1.87	0.49	0.60	0.0	0.38	0.22	0.0

In the course of the morning, Honey Buzzards were observed leaving the forest to use thermals for soaring, often singly or in the company of local Palmnut Vultures (*Gypohierax angolensis*), Gymnogenes (*Polyboroides typus*), Red-necked Buzzards (*Buteo auguralis*), Black Sparrowhawks (*Accipiter melanoleucus*), Yellow-billed Kites (*Milvus migrans parasitus*) or African Hobbies *Falco cuculieri* (BIJLSMA 2001a). Some agonistic behaviour was noticed whenever soaring with other species occurred, always directed towards the Honey Buzzard (not vice versa). Such attacks were counteracted with evasive flights and shallow wing-dipping. In four cases, a Honey Buzzard was seen gliding in a straight horizontal flight towards another Honey Buzzard soaring at some distance. Upon reaching the latter, communal soaring commenced without indications of agonistic behaviour. Time spent in soaring, from ascent till disappearance from view, was considerable. During soaring, the birds slowly gained height and sometimes drifted over > 1 km, before the top of the thermal was reached. The transition to a straight gliding flight was made in varying directions (3 x N, 1 x NE, 6 x E, 1 x ESE, 3 x S, 1 x SW and 2 x W). Gliding flight was rarely accompanied by wing-flaps, resulting in a leisure advancement in the preferred direction and very different from the wing action of migrating Honey Buzzards.

3.4. Food and foraging

Five out of six birds emerging from the forest in the late morning were observed well enough to notice a small crop, indicating recent food intake. An adult male with a small crop was observed on 24 February at 10:55 hr, sitting in the forest edge of the Afi Mountain and overlooking a valley. At two sites on the Afi Mountain, fragments of wasp combs were found on the forest floor; in both cases the identification of the predator remained a mystery.

3.5. Moul t

All adult Honey Buzzards observed closely were in active primary moult, with the females in a more advanced stage than males. Some birds also showed moult in their secondaries, but the precise location in the wing was more difficult to assess (Table 2). The 3rd calender year female had apparently finished moulting except for the 10th primary in the right wing, which was almost fully grown.

Table 2: Moul t in adult Honey Buzzards in SE-Nigeria, February 2001 (P = Primary, S = Secondary, T = Rectrice, 5/6 = 5th or 6th, L = left, R = right, + = moulting, - = no visible moult, growing feathers in italics).

Tab. 2: Mauser adulter Wespenbussarde im südöstlichen Nigeria, Februar 2001 (P = Handschwingen, S = Armschwingen, T = Schwanzfeder, 5/6 = 5. oder 6., L = links, R = rechts, + = mausernd, - = keine sichtbare Mauser, wachsende Federn Kursivdruck.

Sex	Date	Flight feather moult (missing)	Remarks
Male	1 February	P5/6L, P5/6R, SL+, SR+, T-	
Male	1 February	P6L, P6R, S-, T4L, T4R	
Male	11 February	P8L, P8R, S-, T-	
Male	11 February	<i>P7L, P7R</i> , S-, T5L	
Female	31 January	P8L, P8R, S-, T-	
Female	12 February	<i>P8L, P8R</i> , S3/4L, S3/4R, T-	same as on 31 January
Female	17 February	P9R, S-, T-	
Female	18 February	P8L, P8R, SL+, SR+, T-	

4. Discussion

4.1. Density

Observations of Honey Buzzards in Africa are sparse, even in relatively well-studied regions like Liberia (COLSTON & CURRY-LINDAHL 1986, GATTER 1997), Ivory Coast (THIOLLAY 1977), Ghana (GRIMES 1987), Togo (CHEKE & WALSH 1996) and Nigeria (ELGOOD et al. 1994). This dearth of information is partly explained by the unobtrusive behaviour of Honey Buzzards in their winter quarters (CRAMP & SIMMONS 1980). Moreover, methods of data collection in Africa have not been particularly appropriate for detecting and observing Honey Buzzards, varying from road counts of raptors (THIOLLAY 1977; covering 200,000 km during 50 months from Mauritania through Nigeria) to collation of chance observations from holidays or field work directed at other subjects. Much better results can be obtained while watching from high vantage points for prolonged periods of time, both on the breeding grounds (BIJLSMA 1997c) and in the winter quarters (BIJLSMA 1997b, GAMAUF et al. 1998).

Near Afi Mountain in SE-Nigeria, Honey Buzzards were both abundant and high-profile. The 34 observations involved a minimum of 20 individuals, taking into account individual variations in plumage and moult stage. Even compared to densities in optimal habitats in various parts of the breeding range in Western and Central Europe (KOSTRZEWA 1999), such a density is very high indeed. Elsewhere in Africa, reported numbers are much smaller (STEYN 1982, BROWN et al. 1982, see above). My finding is probably a combination of the presence of prime wintering habitat (edges, clearings and rainforest) and a species-specific method of data collection.

4.2. Distribution in Africa

According to Moreau (1972), the wintering range of Honey Buzzards in Africa encompasses the entire region between 10° N (but excluding Ethiopia, Somalia and northern Kenya) and roughly 25°

S. This would imply only a slightly smaller wintering than breeding range, i.e. $10.18 \text{ km}^2 \times 10^6$ respectively $10.92 \text{ km}^2 \times 10^6$ (NEWTON 1995). Recent evidence, however, suggests quite a different picture. South of 18° S Honey Buzzards are scarce or absent, as in southern Angola, Namibia, Botswana, Mozambique, much of Zimbabwe (possibly except the northeast) and South Africa (BIJLSMA et al. 1994, JENKINS 1997, PARKER 1999, DEAN 2000). Similarly, it is of uncommon occurrence in Kenya, where 89% of the records fall within 500+ mm rainfall areas (LEWIS & POMEROY 1989), and in much of West-Africa outside rainforest regions. Indeed, it seems that records in dry woodlands, steppe and desert are scarce throughout except during migration. The majority of Honey Buzzards likely winters in lowland forest and moist woodlands, which restricts the main wintering range in Africa to less than 25% of the range proposed by MOREAU (1972), probably even less regarding the large-scale destruction of this habitat type in much of Africa (OATES 1999). This should have far-reaching repercussions for the size of the European breeding population, unless overwinter survival is not density-dependent.

4.3. Habitat and behaviour

Soaring Honey Buzzards were wide-ranging, spanning an area larger than the surveyed plot of $2 \times 3 \text{ km}$ (600 ha). Their behaviour was remarkably similar to that of non-breeding birds in Europe: prolonged periods of soaring and gliding during the warmer part of the day, heading for conspecifics when noticed some distance away, lack of intra-specific agonistic behaviour and covering long distances during such exploits. The presence of a crop in some of the birds ascending from the forest in mid-morning suggests foraging in the early morning. Chance observations seemed to indicate that early morning foraging of Honey Buzzards in Nigeria is in synchrony with peak foraging activity of social wasps *Belonogaster* spp. and *Ropalidia* spp., which were mainly – but in small numbers – seen foraging before noon. Many social wasps in temperate zones show an early morning peak in foraging rates, and lower, fairly constant levels afterwards (SPRADBERY 1973). Tropical bees are known to profit from earlier nectar secretion by flowers in direct sunlight (ROUBIK 1989), which also may explain the early morning foraging of Honey Buzzards in more fragmented habitats outside the rainforest. Ascending Honey Buzzards were mostly observed along the edges of undisturbed rainforest and near degenerated rainforest with small clearings and ditto farms. This can be partially explained by the better chance of detection in such habitats, as compared to primary rainforest. However, 11 out of 16 high-altitude flights were heading towards primary rainforest, especially after noon when ambient temperatures rose to $> 35^\circ \text{C}$ and thermal activity decreased. The cooler rainforest may offer better foraging opportunities during the hottest part of the day, especially regarding tropical bees (ROUBIK 1989). The storeyed primary rainforest of Afi Mountain, with a high diversity of tall trees, undershrubs and lianas but with little herbaceous growth, represents ideal foraging habitat for Honey Buzzards because the closed canopy prevents lower strata to form a dense impenetrable vegetation cover. Foraging Honey Buzzards in the temperate regions typically use perches between 3 and 10 m high to scan the environment for wasp and bee activity, frequently making short flights between perches and alternated with hunts on foot (GAMAUF 1988, BIJLSMA 1998a). The intensive exchange of Honey Buzzards between primary rainforest and adjacent secondary forest, as witnessed near Afi Mountain, suggests that rainforest is far more important as a wintering habitat for Honey Buzzards than hitherto realised (THIOLLAY 2000). The described preference for clearings, edges, forest trails and galleries (THIOLLAY 1989, GATTER 1997, BIJLSMA 1997b) is probably biased because of far better chances of detection in such habitats.

4.4. Age distribution in African winter quarters

Reliable, unbiased samples on sex and age distributions of Honey Buzzards wintering in various parts of Africa are lacking. Recent evidence from radio-tracking and ringing indicates that adult and

juvenile Honey Buzzards have, on average, different migration strategies in autumn. Adult Honey Buzzards from Europe leave the breeding areas 2–3 weeks ahead of juveniles (KJELLÉN 1992, BIJLSMA et al. 2001), when soaring conditions in Europe are still good. Upon reaching the Mediterranean Sea, most adults follow the coast towards Gibraltar (southwest) or Bosphorus/Middle East (southeast), where the crossing is made. Juveniles face less favourable soaring conditions, have a narrower time slot for their flight to Africa, follow a more southerly course and often cross the central Mediterranean in a direct flight (MEYER et al. 2000, SCHMID 2000). Four adult Honey Buzzards from Sweden fitted with satellite transmitters indeed ended up in West-Africa (Sierra Leone, Liberia, Ivory Coast, Ghana) after having made the crossing in southern Spain; a single juvenile, however, flew straight south through Italy and over the Mediterranean Sea towards northern Nigeria (HAKE et al. 1999). This outcome is suggestive, if anecdotal.

This differential migration strategy may result in a predominance of adult Honey Buzzards in western parts of West-Africa, and a higher proportion of juveniles in eastern parts and in Central-Africa. The present scanty information seems to corroborate this view, with 2 out of 7 Honey Buzzards in Ghana being juvenile in 1997 (BIJLSMA 1997c) and 14 out of 26 in Nigeria in 2001 (this study). The juvenile proportion in Nigeria may have been slightly exaggerated since individual identification of juveniles is more difficult than in adults, possibly resulting in a higher frequency of double-counting. Moreover, both samples are very small and based on a single year. The latter is of particular significance as Honey Buzzards show distinct annual variations in reproductive output, as evident from various long-term studies in Europe where the average number of fledglings per pair ranged between 0 and 1.65 from one year to another (review in SCHMID 2000). In The Netherlands, where Honey Buzzard studies incorporate non-laying pairs, the annual variation in reproductive output varied between 0.06 and 0.96 fledglings per pair (SCHMID 2000, VAN MANEN 2001, VOSKAMP 2001). When reproductive failure is synchronised over much of Europe, this must have a tremendous impact on the number of juveniles wintering in Africa.

4.5. Moulting

Honey Buzzards moult in their winter quarters, sometimes after having renewed 1–3 primaries and 1–2 rectrices in the breeding area (ARBEITSGRUPPE GREIFVÖGEL NORDRHEIN-WESTFALEN DER NWO 2000, FORSMAN 1999). On average, females moult more flight feathers during summer than males, and more feathers are moulted in the breeding areas under favourable conditions (warm and dry, high wasp numbers) than in years with low prey stocks and adverse weather (BIJLSMA 1998a). Moulting is suspended well before autumn migration, to be resumed in the wintering grounds (STRESEMANN & STRESEMANN 1966, FORSMAN 1999, own observations in The Netherlands).

Adult birds in Nigeria showed a well-advanced moulting score by February, with females on average ahead of males. Most adults had already completed the moulting of rectrices (Table 2). This pattern fits descriptions of moulting of live birds in December 1997 in Ghana (mostly P5–7; BIJLSMA 1997b), and of specimens collected in Africa (finished or almost finished primary moulting by March; STRESEMANN & STRESEMANN 1966, FORSMAN 1999). The 3rd calendar-year female seen on 20 February had renewed all primaries except one, possibly indicating that birds summering in Africa start moulting earlier than adults arriving in autumn. Such birds probably complete their primary moulting ahead of adults, as also suggested for the migratory Steppe Buzzard *Buteo buteo vulpinus* (GORNEY & YOM TOV 2001).

The rate of feather growth in Honey Buzzards is fast: on average 8.9 mm/day in the 8th primary and 6.5 mm/day in the central tail feather. It takes approximately 29–35 days to renew the longest primary, and 38–42 days to renew the central rectrix (own observations on captive and wild birds in The Netherlands). These data suggest that completing a full moulting cycle before initiating the flight to the breeding grounds is only just possible in the available time. Apparently, Honey Buzzards are time-constrained both in the breeding grounds (raising a brood between late May and late

August) and in the wintering quarters (completing moult between late October and late March). Moulting several flight feathers on the breeding grounds when conditions are favourable, and the fact that feather renewal is fast, may be adaptations to constraints dictated by long-distance migration and a fixed and restricted breeding period. It would be interesting to know whether Honey Buzzards staying in Africa in May through August experienced serious setbacks in breeding or moulting the year before. Under such circumstances, it may pay for a K-selected bird to skip migration and breeding for one year, in order to fully recuperate.

4.6. Importance of African rainforest in the life cycle of Honey Buzzards

Taking into account the short presence on the European breeding grounds (5 months at most, often only 4 months or less), the delayed return to the breeding grounds by juvenile birds (in their second or later years of life) and the likelihood that adult birds may intermittently skip a breeding cycle and remain in Africa, it is fair to say that Honey Buzzards reside in Africa during the major part of their life. From an evolutionary point of view, it can even be argued that Honey Buzzards and their close relatives (genera *Pernis*, *Henicopernis*, *Aviceda*, *Elanoides*) are of tropical origin that migrate northwards to breed in the European and Asian forests. These genera show a high diversity in the tropics, especially in Australasia, and feed extensively on insects, a presumably primitive trait (THIOLLAY 1994). The main breeding habitats of Honey Buzzards in Europe and West Asia are mostly of recent origin, as the northern boreal forest belt only came into existence after the Pleistocene glaciations. During the coldest phases of the glacial times European forests were confined to the narrow limits of the Mediterranean basin (BLONDEL 1990). The expansion of forests greatly increased in the postglacial period, and must have offered grand opportunities as to breeding and foraging during summer for the Honey Buzzard that may have found a refuge in Africa during the glaciations. During the last millennium European forests became depleted and fragmented by over-exploitation, a trend that has been partly reversed with large-scale planting of – mainly exotic – coniferous trees during the last 50 years (GATTER 2000). The situation in tropical Africa is entirely different. The rainforest in large parts of West-Africa has been clear-cut and cultivated, a trend which is accelerating and expanding into parts of Central-Africa. The considerable outpour of protection plans from European and North American conservation and developmental organizations since the 1970s has aggravated this situation by linking big money with conservation, as lucidly explained by OATES (1999). The already quite small area of suitable Honey Buzzard habitat, i.e. lowland rainforest and moist woodlands, in Africa (less than 25 % of the size of the breeding range) will continue to decline rapidly in the near future. The bottleneck for Honey Buzzards may therefore lie in Africa, rather than in Europe and West-Asia where prospects are actually improving. This contrasts sharply with the majority of Palearctic migrant passerine species – that mostly winter in savannas, shrublands and steppes-, but is similar to the position of Nearctic migrants of which 75 % winters in evergreen Neotropical forests (TERBORGH 1989, MÖNKKÖNEN et al. 1992). The worrying decline of Nearctic migrants is therefore a telltale of what may happen to Honey Buzzards.

5. Zusammenfassung

Lebenszyklus-Merkmale von Wespenbussarden (*Pernis apivorus*) in Afrika.

Im Februar 2001 wurden im südöstlichen Nigeria überwinternde Wespenbussarde systematisch beobachtet (systematische Fokus-Tier-Methode). In einem 600 ha großen Gebiet gelangen 34 Aufzeichnungen, darunter waren 11 Adulte, 1 Individuum im 3. Kalenderjahr sowie 14 Juvenile. Individuelle Gefieder- und Mausermerkmale ließen erkennen, dass mindestens 20 verschiedene Vögel erfasst worden waren. Flüge in großen Höhen erfolgten meist zwischen 10:00 u. 12:40 Ortszeit. Dabei verstrichen die Vögel mehr als 2 km, ohne dabei Anzeichen agonistischen Verhaltens gegenüber Artgenossen zu zeigen. Einige Vögel ließen bereits in den Morgenstunden eine Kropffüllung (Nahrungsaufnahme) erkennen; die Hauptnahrungssuche erfolgt aber wohl erst am Nachmittag.

Typisches Vorzugshabitat ist der Regenwald. Die Hauptschwingenmauser war bei Altvögeln stark fortgeschritten – insbesondere bei Weibchen, die Mauser der Schwanzfedern war in beiden Geschlechtern (nahezu) abgeschlossen. Es wird dargelegt, dass Wespenbussarde in starkem Maße in Afrika an Tiefland-Regenwälder und (andere) Feuchtwaldgebiete gebunden sind. Danach ist das Winterquartier der Art wesentlich kleiner als bislang angenommen (umfasst weniger als ein Viertel der Fläche des Brutgebietes). Auch ist eine altersabhängige Aufteilung der Winterquartiere wahrscheinlich, wobei Jungvögel in der Regel eher die zentralafrikanischen Regenwaldgebiete beziehen. Widrige Bedingungen während der Brut- und Mauserzeit veranlassen Altvögel möglicherweise dazu, im Folgejahr im afrikanischen Winterquartier zu bleiben.

6. References

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Zeitschrift/Journal: [Vogelwarte - Zeitschrift für Vogelkunde](#)

Jahr/Year: 2001/02

Band/Volume: [41_2002](#)

Autor(en)/Author(s): Bijlsma Rob G.

Artikel/Article: [Life-history traits of Honey Buzzards \(*Pernis apivorus*\) in Africa 240-248](#)