

Site fidelity of Palearctic passerine migrants in the Northern Guinea savanna zone, West Africa

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Between spring 1994 and spring 1997 329 birds of 15 Palearctic passerine species and the Wryneck (*Jynx torquilla*) were ringed in the Comoé National Park, Ivory Coast. The species which were caught most frequently were Willow Warbler (*Phylloscopus trochilus*, $n = 110$), Pied Flycatcher (*Ficedula hypoleuca*, 94) and Melodious Warbler (*Hippolais polyglotta*, 69). From most species there are no retraps or resightings. This might be due to low numbers except in the Willow Warbler. Site fidelity is also low in the Melodious Warbler and it is suggested that these two species are only passage migrants in the area. Site fidelity and duration of stay are high in the Pied Flycatcher. It is suggested that from the species caught in sufficient numbers, only the Pied Flycatcher uses the Northern Guinea savanna as the final wintering ground. Observations, without ringing evidence, suggest that this might also be the case for the Whinchat (*Saxicola rubetra*).

Key words: Palearctic migrants, West Africa, Guinea savanna, site fidelity

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1. Introduction

Palearctic passerine long-distance migrants cannot fly directly to their afrotropical winter quarters. In Europe and North Africa they must break their journey in stopover areas to accumulate fat for the next migration step, especially before crossing the Mediterranean and the Sahara (BERTHOLD 1996). On these stopover sites, some species like the Pied Flycatcher (*Ficedula hypoleuca*) establish territories for up to nine days (BIBBY & GREEN 1980, LORENZO 1996) which might be used in subsequent winters (MOREAU 1972, VEIGA 1986). When sub-Saharan Africa is reached, most migrant species show “itinerancy” (MOREAU 1972). They do not fly directly to their final winter quarters, but perform further intra-African migrations (JONES 1998). For example, in East Africa heavy midwinter migration occurs in December at Ngulia, Kenya (PEARSON & BACKHURST 1976) and it can take up to four months for the birds to reach their most distant winter quarters whereas the return flight to Europe takes only about six weeks (PEARSON & LACK 1992). In West Africa midwinter itinerancy does not occur over vast distances due to topographic and climatic reasons (JONES 1998) but the phenomenon is widespread and is shown by species like Nightingale (*Luscinia megarhynchos*), Great Reed Warbler (*Acrocephalus arundinaceus*) and Spotted Flycatcher (*Muscicapa striata*). Others like Whinchat (*Saxicola rubetra*), Melodious Warbler (*Hippolais polyglotta*) and Pied Flycatcher are supposed to fly directly to their final (most distant) winter grounds (JONES 1985). Itinerancy is thought to be a response to declining resources as the dry season progresses in areas north of the equator, such that birds follow the shifting inter-tropical convergence zone southwards to more favourable areas (JONES 1998).

From spring 1994 to spring 1997 we stayed in the Comoé National Park, Ivory Coast, to investigate the ecology of Palearctic passerine migrants. We concentrated on their spatiotemporal use of the area, and how long individuals of different species remain there to assess for which species the area serves as the wintering ground and which species are only itinerant there. In this paper we present data on site fidelity in 15 passerine species and the Wryneck (*Jynx torquilla*).

2. Study Area

The Comoé National Park lies in the north-east corner of the Ivory Coast, West Africa, in the Northern Guinea savanna zone. It extends from about 08°30' to 09°40'N and from 03°00' to 04°30'W. The park is largely situated on a plateau at 250–300 m. The study was performed in the south-west of the park, at about 8°45'N where the rainy season usually lasts from March/April to October. Annual rainfall varies from 1,100–1,300 mm, the average annual temperature is ca 27 °C (POILECOT 1991).

3. Methods

Palaearctic migrants were mistnetted in four different habitats: isolated forest, savanna, gallery forest and alluvial plain with *Dichrostachys cinerea* bushes. A constant effort site was established in the latter habitat in autumn 1994. In other habitats this was not suitable for other aims of the project. The constant effort site was used during four northern winters at intervals of about ten days, whereas mistnetting was performed irregularly in the other habitats in permanent study plots, mainly to mark individual birds for behavioural observations (SALEWSKI 1999).

All birds were marked with an aluminium ring („Vogelwarte Helgoland“) and a unique combination of one to three colour-rings which made it possible to recognise every individual in the field. Regular mistnetting and observations were carried out from mid-September to the end of April and the presence of colour-ringed birds was recorded. From these data minimum residence times of retrapped/resighted birds were calculated. For calculations, only those birds were used that were caught in areas visited regularly throughout the study period. One of the study sites was visited only at 10-day intervals. Therefore, minimum stay duration was only given when it exceeded the period of ten days to avoid a bias due to different observation intensities.

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Table: Numbers and site fidelity of ringed Palaearctic migrants in Comoé National Park. – Anzahl und Ortstreue beringter paläarktischer Zugvögel im Comoé Nationalpark.

Species	Number ringed	n (%) site fidelity	average (max. recorded) minimum duration of stay [days]
Wryneck	2	–	–
Nightingale	15	1 (7)	58
Redstart	1	–	–
Whinchat	9	–	–
Sedge Warbler	3	–	–
Reed Warbler	7	–	–
Melodious Warbler	69	4 (6)	15.5 ± 5.3 (21)
Willow Warbler	110	1 (0.9)	17
Wood Warbler	1	–	–
Chiffchaff	1	–	–
Garden Warbler	9	–	–
Blackcap	2	–	–
Whitethroat	2	–	–
Pied Flycatcher	94	37 (39)	81.0 ± 54.7 (188)
Spotted Flycatcher	1	1	75
Woodchat Shrike	3	–	–

4. Results

During the study period 329 individuals of 15 Palearctic passerine species and the Wryneck were mistnetted (Table). For 11 of these species there are no retraps or resightings. However, marked individuals of Nightingale, Melodious Warbler, Willow Warbler (*Phylloscopus trochilus*), Pied Flycatcher and Spotted Flycatcher were retrapped or resighted in the winter when they were marked.

Only one of 15 Nightingales was recorded again in the winter it was marked. The time between the records was 58 days. There were also only single records for a Willow Warbler and a Spotted Flycatcher, with intervals of 17 and 75 days respectively. Four (6%) of the 69 marked Melodious Warblers were resighted in the same winter. Their average minimum stay was 15.5 ± 5.3 days with a maximum of 21 days. Thirty-seven (39%) of the marked Pied Flycatchers (94) were recorded again in the winter when they were marked. The average minimum stay was 81.0 ± 54.7 days. The longest recorded minimum stays for two birds were 188 and 187 days.

5. Discussion

The majority of species recorded in the Comoé National Park showed no site fidelity. However, most species were caught in low numbers and a higher trapping rate might increase the number of retraps/resightings. This might be the case for the Nightingale for which territoriality was recorded in Nigeria (NICOLAI 1976) or the Whinchat which was under-represented in the catches. Whinchats were observed throughout the winters but most birds (5 out of 9) were caught in April and presumably migrating. More remarkable is that only a single Willow Warbler was resighted despite the fact that 110 birds were ringed. This is similar to the situation in South Africa, where recapture rates were low (~1%) and most of them occurred within a few days of the original capture (HOPCROFT 1984, BLABER 1986). It appears, therefore, that individual Willow Warblers do not stay in the same area for very long although the species is recorded between the beginning of November and the end of January and again from the end of February to the end of April (SALEWSKI 1999). It is not clear whether individuals move randomly around or constantly southwards until all birds have passed in January to return slowly again by the end of February. The latter possibility is supported by our own observations from Lamto (6°13'N) in the northern winter 1998/1999 (beginning of October to end of April, no observations in January) where Willow Warblers were observed only in February and March. Melodious Warblers might behave in the same way, although some birds showed site fidelity. However, the observed stay was rather short and there was no indication that Melodious Warblers were territorial (SALEWSKI 1999). In contrast to the Willow Warbler, some Melodious Warblers recurred in a subsequent winter (SALEWSKI et al. 2000). It is therefore suggested that Melodious Warblers also migrate through the area but do so on more fixed routes in subsequent winters than Willow Warblers.

The Pied Flycatcher was the only species with prolonged residence periods in the area. Pied Flycatchers were also territorial (v. STÜNZNER-KARBE 1996, SALEWSKI 1999) and the residence periods of territorial birds were probably much longer than indicated in this study because our dataset included individuals which were ringed rather late in the season.

According to this study only Pied Flycatchers use the Northern Guinea savanna as a permanent wintering ground. As the capture rates also reflect the rate of observations (SALEWSKI 1999) it is unlikely that the area is an important winter quarter for species rarely mistnetted, with the possible exception of the Whinchat. Other species like Willow Warbler or Melodious Warbler might only migrate through the area but it does not serve as a stopover site, because individuals do not stay longer and there is no indication of fat accumulation for further migration. The only exception was a Garden Warbler (*Sylvia borin*) which gained 4.8 g body mass in November 1997 within five days and phenology data indicate a migration through the area in October/November and again in March/April (SALEWSKI 1999). It is therefore probable, that itinerancy in West Africa is not expres-

sed by long-distance movements but by a continuous move in short steps. The different vegetation zones in West Africa are close to each other and a flight of just a few hundred kilometres can bring a bird to an area with different precipitation regime (JONES 1998). Therefore, these movements might not be very obvious. However, fattening of the Great Reed Warbler was found in northern Ghana in November/December before the birds disappeared again (HEDENSTRÖM et al. 1993) indicating that the results of this study cannot be generalized.

6. Zusammenfassung

Zwischen dem Frühjahr 1994 und dem Frühjahr 1997 wurden 329 Individuen von 15 Singvogelarten und dem Wendehals (*Jynx torquilla*) im Comoé Nationalpark, Elfenbeinküste, beringt. Am häufigsten gefangene Arten waren Fitis (*Phylloscopus trochilus*, n = 110), Trauerschnäpper (*Ficedula hypoleuca*, 94) und Orpheusspötter (*Hippolais polyglotta*, 69). Von der Mehrzahl der Arten liegen keine Wiederfänge oder Beobachtungen vor, was auch auf die niedrigen Fangzahlen zurückzuführen ist. Dies gilt nicht für den Fitis. Für den Orpheusspötter ist die Wiederfangrate ebenfalls gering, woraus geschlossen wird, dass beide Arten im Gebiet nur durchziehen. Ein hohes Ausmaß an Ortstreue und eine lange Aufenthaltsdauer zeigt nur der Trauerschnäpper. Es wird angenommen, dass von den Arten, welche in höheren Zahlen gefangen wurden, das Untersuchungsgebiet nur für den Trauerschnäpper das eigentliche Überwinterungsgebiet darstellt. Sichtbeobachtungen lassen schließen, dass dies auch für das Braunkehlchen (*Saxicola rubetra*) gelten könnte.

7. Literature

- Berthold, P. (1996): Control of Bird Migration. London: Chapman & Hall. * Bibby, C. J. & R. E. Green (1980): Foraging behaviour of migrant Pied Flycatchers, *Ficedula hypoleuca*, on temporary territories. J. Anim. Ecol. 49: 507–521. * Blaber, S. J. M. (1986): Willow Warblers at Darvill, Pietermaritzburg, Natal. Safring News 15: 11–14. * Hedenström, A., S. Bensch, D. Hasselqvist, M. Lockwood & U. Ottoson (1993): Migration, stopover and moult of the Great Reed Warbler *Acrocephalus arundinaceus* in Ghana, West Africa. Ibis 135: 177–180. * Hopercoft, C. (1984): A study of the Willow Warbler in South-Africa. Safring 13: 10–17. * Jones P. (1985): The migration strategies of Palearctic passerines in West Africa. Migratory birds: Problems and prospects in Africa. International Council for Bird Preservation. 14th conference of the European continental section: 9–21. * Idem (1998): Community dynamics of arboreal insectivorous birds in African savannas in relation to seasonal rainfall patterns and habitat change. In: D. M. Newberry, H. H. T. Prins & N. D. Brown (Hrsg.): Dynamics of Tropical Communities, 421–447. London. * Lorenzo, J. A. (1996): Pied Flycatcher (*Ficedula hypoleuca*) using the island of Fuerteventura (Canary Islands) as a 'stop-over' site during September 1989. Airo 7: 85–89. * Moreau, R. E. (1972): The Palearctic-African Bird Migration Systems. London, New York: Academic Press. * Nicolai, J. (1976): Beobachtungen an einigen paläarktischen Wintergästen in Ost-Nigeria. Vogelwarte 28: 274–278. * Pearson, D. J., & G. C. Backhurst (1976): The southward migration of Palearctic migrants over Ngulia, Kenya. Ibis 118: 78–105. * Pearson, D. J., & P. C. Lack (1992): Migration patterns and habitat use by passerine and near-passerine migrant birds in eastern Africa. Ibis 134 (Suppl. 1): 89–98. * Poilecot, P. (1991): Un écosystème de savanne soudanienne: Le Parc Nationale de la Comoé (Côte d'Ivoire). Paris: UNESCO. * Salewski, V. (1999): Untersuchungen zur Überwinterungsökologie paläarktischer Singvögel in Westafrika unter besonderer Berücksichtigung der Wechselwirkungen zu residenten Arten. Diss. Berlin: W&T Verlag. * Salewski, V., F. Bairlein & B. Leisler (2000): Recurrence of some Palearctic migrant passerine species in West Africa. Ringing & Migration 20: 29–30. * Stünzner-Karbe v., D. (1996): Territorialität, Habitatnutzung und Fouragierverhalten überwinternder Trauerschnäpper (*Ficedula hypoleuca*) in West-Afrika. Dipl.-Arbeit, Universität Bayreuth. * Veiga, J. P. (1986): Settlement and fat accumulation by migrant Pied Flycatchers in Spain. Ringing & Migration 7: 85–98.

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