

## **Observations on the Autumnal Territorial Behaviour of the Great Spotted Woodpecker, *Dendrocopos major* (L.).**

ERKKI PULLIAINEN

(Department of Agricultural and Forest Zoology, University of Helsinki)

In the latter part of the summer of 1962, huge flocks of great spotted woodpeckers (*Dendrocopos major*) were observed in the different parts of Finland and on 26. VIII at the Signilskär bird station, south of Åland, a great migration of this species (130 000 specimens during one day, see HILDÉN 1963). My purpose in this paper is to present some observations on the autumnal territorial behaviour of the great spotted woodpecker, made when following the distributions of this species in Joroinen and Rantasalmi, East Finland, at the request of the Zoological Museum, University of Helsinki.

Previous studies on the territorial behaviour of the great spotted woodpecker during the non-breeding parts of the year have been made by STEINFATT (1937), PYNNÖNEN (1939), LANGELOTT (1957), BLUME (1961), and SKOCZYLAS (1961) (see also KALELA 1958, 1959), among others.

### **Observations**

An opportunity arose to make observations on woodpeckers in Joroinen (PS) and Rantasalmi (ES), East Finland. In August 1962, I observed large numbers of great spotted woodpeckers at Tahkoranta, Joroinen, and in the vicinity of the church village of Rantasalmi, but I did not make any exact counts. From the beginning of September, especially at Tahkoranta, Joroinen, great spotted woodpeckers were very numerous as at Rantasalmi. The number of birds decreased during September in Rantasalmi. On September 30, a census of the number of great spotted woodpeckers was carried out on three islands in the lake Haukivesi, Kaitasaari, Mustasaari and Jänissaari, which are situated about 1 km from Tahkoranta, Joroinen. The trees on these islands are mainly pines. The islands have a total area of about 10 ha

and they were selected at random from a number of islands in the lake. The census was carried out on these long and rather narrow islands by walking from one end to the other so that every specimen in front of the line of observers could be counted. The results were as follows: Kaitasaari 5 specimens, Mustasaari 9 specimens and Jänissaari 2 specimens (total 16 specimens/10 ha). The census was carried out quickly and attention was also paid to specimens flying from one island to the other. The data obtained are scanty but are a proof of the abundance of great spotted woodpeckers, a fact which was obvious even without a census. Similarly on the islands in the neighbourhood and on the mainland more than the usual number of great spotted woodpeckers was observed. On the islands, Kaitasaari (5 specimens) and Jänissaari (2 specimens), the woodpeckers moved as one flock. They flew quickly from place to places and at times pursued each other, both in flight and when climbing trees. The encounters between the woodpeckers did not disperse the flock. No clear, uniform direction in the flight of the woodpeckers could be discerned. Nor was this observable when the woodpeckers flew from one island to another. P. KUVAJA observed in Rantasalmi great spotted woodpeckers flying to east and southeast (greatest amount a day 100 specimens). The birds also moved on stones on the ground, scattering the mosses on their surfaces presumably in a search for food and the pupae of insects such as the pine sawfly (*Diprion spp.*, *Hym.*, *Diprionidae*). Both on the stones and when drumming and pecking trunks of trees, the woodpeckers moved very quickly.

In Rantasalmi the greatest flock of the species consisted of 5 specimens (P. KUVAJA).

P. KUVAJA and A. KUVAJA made continuous observations on the occurrence of great spotted woodpeckers in the church village of Rantasalmi in the autumn of 1962. The author had an opportunity to make observations on great spotted woodpeckers on 3. XI 1962 in Joroinen and on 4. XI 1962 in Rantasalmi.

At Sydänmaa, Joroinen, a census (3. XI) carried out over an area of about 300 ha showed that there the density of the great spotted woodpecker was normal (1–3 specimens/100 ha). It was remarkable that the birds had selected as their feeding habitats withered and dead deciduous trees of a forest in process of paludification [they were probably searching for bark beetles (*Col.*, *Scolytidae*)].

On a fresh heath, 300–400 m away from Sallila manor in Rantasalmi

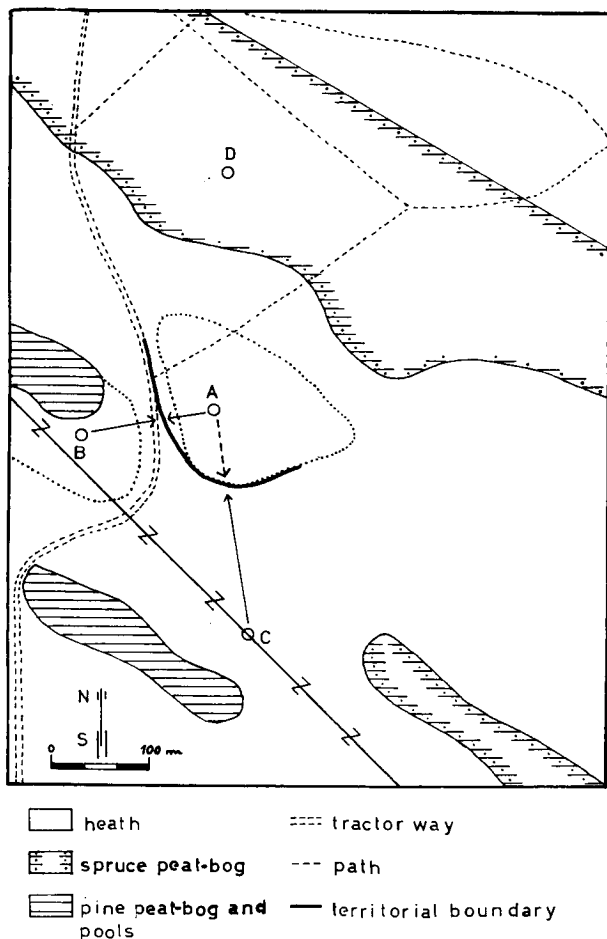


Fig. 1. The habitats of three great spotted woodpeckers and a black woodpecker in the vicinity of Sallila manor, Rantasalmi, on 4. XI. 1962 (see text).

(see Map, Fig. 1), observations were made on the autumnal territorial behaviour of the great spotted woodpecker in October–November 1962. In general the number of great spotted woodpeckers decreased uniformly during the autumn (P. KUVAJA).

In the map (Fig. 1) the habitats of three great spotted woodpeckers (males) are marked with the letters A, B and C. The habitat of a black woodpecker (*Dryocopus martius*) is indicated with the letter D. Wood-

pecker A pecked fresh pine cones on a withered branch which hung from a pine 5 metres above the ground. This tree stands in a pinewood (50—70 years old) on a hill which differs clearly from its surroundings (dotted line). Some alders and spruces grew on this hill, too. Woodpecker B moved in a similar pinewood on another hill on the far side of the tractor way. It was seen to peck pine cones on a dried-up birch, too.

Woodpecker C drummed on an electric pole which stood in a young pinewood (20—30 years old) where a lot of alders and some spruces were growing, too (regarding the significance of pinewoods as a habitat of great spotted woodpeckers, see e.g. PYNNÖNEN 1939, BLUME 1961, SKOCZYLAŚ 1961). The electric pole is 7 years old and creosoted. It is possible that it was a favourite drumming tree of woodpecker C (see also DURANGO 1945). The black woodpecker D moved over a spruce peat-bog in the neighbourhood and called at times (see also EYGENRAAM 1947).

The pine cone crop in the area studied (200 ha) was at its best on the hill where woodpecker A pecked. It spent 3—5 minutes in pecking one cone and 1—2 minutes in bringing a new one. TRACY (1938, p. 47) has observed similar pecking and bringing times (see also STEINFATT 1937, p. 146). Woodpecker A only dropped the pecked cone after it had brought a new one (see also TRACY *op.cit.*). The average cone-pecking frequency of this woodpecker was 12 cones/h. It seemed to try to take cones continuously from the same tree as long as there were any left on it. We calculated that there were about 3000 pecked cones under the tree. From over 99 per cent of these all the seeds (seeds from an example of 412 cones were extracted) had been pecked out while the remainder still contained some seeds. Woodpecker A began its pecking of cones immediately after sunrise and continued until sunset (on 3. XI the sun rose at 7.49 h. and set at 16.18 h.). The flight distance of this bird was less than 5 metres. A clear synchronization was observable in the drumming of woodpecker C and the rhythm of cone pecking by woodpecker A (see also TRACY 1938, DURANGO 1945). The former often ceased its drumming when the latter was bringing a new cone.

Several times woodpecker B tried to approach the hill of woodpecker A, but above the tractor way the latter drove it away. Attack-fighting included a clash, a short fight, driving away and «kraek» calls (see also BLUME 1958, 1961). Woodpecker C was twice seen flying towards the hill of woodpecker A, but it returned from the edge of the hill without a fight. It is possible that woodpecker A had previously

driven woodpecker C away. In the map (Fig. 1) the territorial boundary is shown according to the observations available. Between woodpeckers B and C no territorial fights were observed but they were not seen to cross the tractor way (see also SKOCZYLAS 1961).

### Discussion

A full discussion of the factors influencing the 1962 invasion of the great spotted woodpecker is beyond the scope of this paper. However, we can mention as some possible factors the cold rainy summer, which had injurious effects on the insect populations (on their significance as the summer food of the great spotted woodpecker see e.g. PYNNÖNEN 1943, GÖSSWALD 1958), and the total failure of spruce cones and partial failure of pine cones which obviously occurred over large areas of the Soviet Union, too (see HELENIUS 1963; about their significance as food of the species see e.g. STEINFATT 1937, PYNNÖNEN 1943, DURANGO 1945; see also HILDÉN 1963). We must also remember possible influences of overdense populations on migrations.

We can suppose that the abundance of great spotted woodpeckers observed especially in Joroinen was the consequence of a considerable flocking of great spotted woodpeckers and a migration possibly associated with it. The behaviour of the woodpeckers included on the one hand display behaviour features, such as pursuing each other both in flight and along tree trunks (see e.g. DURANGO 1945) and on the other hand feeble aggressiveness (short and unsustained attacks between males in the air with weak cries; see e.g. BLUME 1958). The occurrence of the great spotted woodpecker as a relatively large flock and the above-mentioned, almost complete absence of aggressiveness indicate that these birds were migrating (see KALELA 1958, p. 22).

Several investigators have studied the territorial behaviour of the great spotted woodpecker outside the breeding season (e.g. STEINFATT 1937, PYNNÖNEN 1939, LANGELOTT 1957, KALELA 1958, 1959, BLUME 1961, SKOCZYLAS 1961; cf. also DURANGO 1945). My observations made at Rantasalmi (Fig. 1) clearly support the prevailing opinion on this phenomenon (see lit., *op.cit.*). PYNNÖNEN (1939, p. 6) has written that great spotted woodpeckers, especially when occurring in abundance, take up such clear territories that the boundaries can be drawn to the accuracy of trees. During the attack-fights observed at Rantasalmi

such a boundary was clearly seen. It seemed to accord with vegetation limits, which were perhaps due to the terrain. In Rantasalmi a territory (perhaps after migration) had probably been adopted, woodpecker A (Fig. 1) having first taken the hill with the best cone crop (see also KALELA 1954, 1958, 1959). The other specimens had then settled down in the surroundings in inferior places. This opinion is supported by observations on both the birds and the number of cones pecked by woodpecker A. The areas of these autumnal territories could not be determined exactly. The great spotted woodpecker often has a very restricted breeding territory — a radius of 200 m from the nesting hollow (STEINFATT 1937), about 20 ha (PYNNÖNEN 1939), a radius of at most 250 m from the nesting hollow (DURANGO 1945), a radius of 100–600 m from the nesting hollow (BLUME 1961), 18–25 ha (SKOCZYLAS 1961). According to BLUME (op.cit.), outside the breeding period the density was 1.3–3.4 birds/400 acres (= 160 ha). According to SKOCZYLAS (op.cit.) the areas of territories are from 3.5 to 6 ha (on an average 4.3 ha). In general, the territories in Rantasalmi are of the same size class as those mentioned above.

During cone failure years the great spotted woodpeckers may benefit by adopting autumnal territories, because then some specimens may survive the winter in severe conditions, if they have taken up territories with a sufficient food supply. If they all range over the same area, without formation of territories, the number of woodpeckers might become too great in relation to the food supply. Then it would be possible for all the specimens to perish from starvation, and if they migrated, the likelihood of perishing would increase (cf. the same thing in spring e.g. KALELA 1954). At the end of the year 1962 the number of the great spotted woodpecker in Finland decreased very rapidly (HILDÉN 1963). The reason for this phenomenon is not known yet.

KALELA (1958, 1959) has suggested that the autumnal display phenomena can be grouped in regard to the birds' activities into three categories: becoming sedentary, pronounced aggressiveness and pair formation. The two first-mentioned categories could be observed very clearly in Rantasalmi.

When this paper had already gone to the press RAITASUO (1963, p. 391) published in his excellent book similar observations on the behaviour of great spotted woodpeckers in autumn 1962 (see also SCHILD-MACHER 1963).

### Summary

This paper consists of the results of investigations made in Joroinen and Rantasalmi, East Finland, on the abundance and territorial behaviour of the great spotted woodpecker in autumn 1962.

The number of great spotted woodpeckers was estimated to be at its maximum in September. The calculation was made in the lake Haukivesi, on September 30, on three islands selected at random. The result was 16 specimens/10 ha.

In October—November observations were made on the territorial behaviour of this species in Rantasalmi (3 males, Fig. 1). One of the woodpeckers had taken up a territory (obviously the first to be occupied) on a hill with the best pine cone crop within the area of 200 ha. The other specimens had settled down in the surroundings in places inferior in regard to food supply.

The behaviour of the woodpeckers on the islands of the lake Haukivesi was characterized by the display behaviour features and feeble aggressiveness (obviously migrating specimens). On the other hand, two autumnal display phenomena; becoming sedentary and pronounced aggressiveness were observed in Rantasalmi.

**References:** BLUME, D., 1958, Verhaltenstudien an Buntspechten. Die Vogelwelt 79: 65—88. — 1961, Über die Lebensweise einiger Spechtarten. Journ. Ornith. 102: 1—115 (Sonderheft). — DURANGO, S., 1945, Om större hackspettens, *Dryobates major* (L.), häcknings biologi. (Summary: The breeding of the great woodpecker.) Vår Fågelvärld 4: 4—18. — EYGENRAAM, J. A., 1947, Het gedrag van de Zwarte specht, *Dryocopus m. martius* (L.). (With English summary) Ardea 35: 1—44. — GÖSSWALD, K., 1958, Über die Auswirkungen von Spechten auf die Rote Waldameise. Waldhygiene 2: 234—251. — HELENIUS, O., 1963, Kuusen käpysato koko maassa heikko, männyn vaihteleva maan eri osissa. Metsälehti 31: 1—2, 4. — HILDÉN, O., 1963, Käpytikat liikkeellä. (On the invasion of the great spotted woodpecker autumn 1962.) Suomen Luonto 22: 26. — KALELA, O., 1954, Über den Revierbesitz bei Vögeln und Säugetieren als populationsökologischer Faktor. Ann. Zool. Soc. 'Vanamo' 16: 2, 1—48. — 1958, Über ausserbrutzeitliches Territorialverhalten bei Vögeln. Ann. Acad. Scient. Fenn. A IV 42: 1—42. — 1959, Eräitä lintujen vuotuisen elämänrytmin pürteitä. Sitzungsber. Finn. Akad. Wiss. 1958: 193—202. — LANGELOTT, N., 1957, Über das winterliche Trommeln des Buntspechtes (*Dendrocopos major*). Die Vogelwelt 78: 147—153. — PYNNÖNEN, A., 1939, Beiträge zur Kenntnis der Biologie finnischer Spechte. I. Ann. Zool. Soc. 'Vanamo' 7: 2, 1—171. — 1943, Beiträge zur Kenntnis der Biologie finnischer Spechte. II. Die Nahrung. Ibid. 9: 4, 1—60. — RAITASUO, K., 1963, Elämää vaistojen varassa. 439 pp. Porvoo—Helsinki. — SCHILDMACHER, H., 1963, Beobachtungen zu den Invasionen des Jahres 1962 von *Dendrocopos major* (L.) und *Loxia curvirostra* (L.). Ornis Fenn. 40: 66—68. — SKOCZYLAŚ, R., 1961, Dynamika liczebności, rozmieszczenie pionowe i zachowanie terytorialne dzięcioła pstrego dużego (*Dryobates maior* L.) w borze sosnowym. [Referat: Zahlendynamik, Vertikalverteilung und Territorialverhalten des Grossen Buntspechtes (*Dryobates maior* L.) in einer Kiefernheide.] Ekol. Pol. A 9: 229—243. — STEINFATT, O., 1937, Aus dem Leben des Grossbuntspechtes. Beitr. Fortpfl.-Biol. Vögel 13: 45—54, 101—113, 144—147. — TRACY, N., 1938, Der Grosse Buntspecht. Ibid. 14: 41—48.

**Selostus: Havaintoja käpytikan (*Dendrocopos major*) syksyisestä reviirikäyttäytymisestä.**

Tämä kirjoitus käsittää tulokset niistä tutkimuksista, jotka suoritettiin Rantasalmella (ES) ja Joroisissa (PS) käpytikan runsaudesta ja syksyisestä reviirikäyttäytymisestä syksyllä 1962.

Käpytikka esiintyi tutkimuspaikkakunnilla runsaimpana syyskuussa. Kolmella umpimähkään valitulla Haukiveden saarella suoritettu laskenta 30. IX. antoi tuloksen 16 käpytikkaa/10 ha, mikä antaa todisteen huomattavasta käpytikkarunsaudesta.

Loka—marraskuussa tehtiin havaintoja käpytikan syksyisestä reviirikäyttäytymisestä Rantasalmella (3 koirasta, Kuva 1). Yksi käpytikoista oli asettunut (ilmeisesti ensimmäisenä) männynkäpyvarastoitaan (200 ha alueella) parhaalle kukkulalle ja muut yksilöt vähemmän edullisille paikoille ympäristöön.

Käpytikkojen käyttäytymistä Haukiveden saarilla luonnehtivat soidinkäyttäytymispiirteet ja heikko aggressiivisuus (ilmeisesti vaeltavia yksilöitä). Toisaalta syyssoidinilmioistä paikkoilleen asettuminen ja korostunut aggressiivisuus olivat havaittavissa Rantasalmella.

## Tiedonantoja — Meddelanden

### 1. Kääpiökerttu (*Sylvia nana*) ensi kerran Suomessa

Lokakuun 26. pnä 1963 havaitsin Turussa Pihlajaniemen entisen kaatopaikan ruderaattikasvustossa suunnilleen uunilinnun kokoisen, minulle oudon hyönteissyöjän. Myöhemmin totesimme T. Nurmen kanssa Europas fåglar'in niukkojen tuntomerkkien perusteella linnun olevan ilmeisesti kääpiökerttu (*Sylvia nana*). Lajinmääritys varmistui vielä samana iltana saatuaamme linnun pyydystetyksi ja verrattuaamme tuntomerkkejä käsillä olleeseen kirjallisuuteen (HARTERT 1910<sup>1</sup>; EDBERG 1962<sup>2</sup>).

Tuntomerkit: Kentällä lintu näytti päältä harmaanruskealta alapuolen ollessa harmaanvalkea. Yläperä sekä pyrstön yläpuoli olivat punaruskeat ja pyrstön reunasulat vaaleat, mikä näkyi selvästi varsinkin lennossa. Lyhyen pakoetäisyyden (2—5 m) vuoksi keltainen silmäteränkehä ja keltaiset jalat olivat myös nähtävissä. Nokka oli sivulta keltainen ja päältä ruskea. Käyttäytymisessä oli silmäänpistävää paitsi lyhyt pakoetäisyys myös linnun energisyys; se ei pysynyt hetkeäkään paikoillaan, vaan nousematta mielellään lentoon puikkelehti matalassa rikkaruohostossa nokkien ehtimiseen kasveista hyönteisiä. Kivitaskumainen tapa heilautella pyrstöään sekä noin sekunnin kestävä sinitiaismainen, laskeva trrrrrr-ääni olivat myös luonteenomaisia.

Kyseinen yksilö oli koiras ja sen tärkeimmät mitat olivat: pituus 114, siipi 56, nilkka 18.5 ja nokka 10 mm sekä paino 9 g.

Kääpiökerttu on tavattu Euroopassa tätä ennen kahdesti: Italiassa (HARTERT 1910) ja Ottenbyn lintuasemalla Ruotsissa 20. X. 1961 (EDBERG 1962). Em. lähteiden mukaan kääpiökerttu on aavikoita reunstavien pensastojen lintu, josta on erotettu kolme rotua: *Sylvia n. nana* (HEMPR. & EHRENB.), *S. n. deserti* (LOCHE) ja *S. n. theresae* (MEINERTZHAGEN). Nimi-

<sup>1</sup> HARTERT, E., 1910, Die Vögel der paläarktischen Fauna.

<sup>2</sup> EDBERG, R., 1962, Vår Fågelvärld 21: 275—278.