

Territorial aggression in Wood Sandpipers *Tringa glareola* in northern Poland

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Chojnacki, I & Kalejta-Summers, B. 1999. Territorial aggression in Wood Sandpipers *Tringa glareola* in northern Poland. *Wader Study Group Bull.* 88: 39-42.

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During the non-breeding season, both at migration stopovers and wintering grounds, many shorebirds establish and defend foraging territories. The territories are maintained through aggressive behaviour elicited towards the intruders or trespassers and may range from merely detectable displays to persistent, violent fights. The size of the territory, and duration and consistency of defence varies greatly among and within the species. It also depends upon several environmental factors that, at the particular place and time, may trigger territorial behaviour in some individuals but not others. Generally, larger birds tend to defend larger territories, and smaller territories are established in areas of higher prey abundance (Myers *et al.* 1979a). Exactly what triggers territoriality in birds is not obvious, but it appears that the majority of territories are resource-based and are more likely to be established at the intermediate resource level (Myers *et al.* 1979b). Defence of scarce resources is uneconomical whilst defence of abundant resources is costly because they attract more competitors. An environment where food is patchily distributed is also likely to initiate territorial behaviour because foraging sites are limited (Recher & Recher 1969). Lastly, it appears that predators might have a short- or long-term effect on the occurrence of territorial behaviour. Because birds gain anti-predator benefit by forming tight flocks, territoriality is more likely to occur in the areas of low predation risk, or may cease to exist at the sudden appearance of a predator.

Wood Sandpipers *Tringa glareola* use several sites in central Europe to refuel and rest during their southward migration. A temporary sewage spill near Jastarnia, on Hel Peninsula, in northern Poland, served as a refuelling site for migrating Wood Sandpipers in late October 1984. Irek Chojancki captured some aspects of territorial behaviour amongst Wood Sandpipers using his camera Canon A1 and f5.6/400 mm Vivitar lens.

Shortly after Wood Sandpipers arrived in the area, they began to establish foraging territories. At this initial stage, birds spent most of their time involved in aggressive encounters and tended to spend very little time foraging. Once the territories were established, which in most cases took about few hours, the aggressive disputes slowly died out and birds began to

spend more time foraging. On average, the territories were about 3-4 m long along the water's edge, well-defined and were held for approximately three days.

During territorial disputes, an escalating sequence of aggressive displays took place. A threat posture was the least intense display and occurred in various ways. A typical threat posture involved demonstration of the upper tail pattern. The manner in which the pattern was demonstrated depended on the direction of the intruders approach (pictures 1 and 2). The majority of encounters witnessed were resolved in this way. Those birds which were more persistent in attempting to gain a territory became involved in more aggressive encounters ranging from charges to fights (pictures 3-7).

REFERENCES

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1. A typical threat posture involves demonstration of the tail pattern. The intruder on the left approaches the territory holder from the side. The territory holder responds with a tilted tail exposed by the lowered right wing.

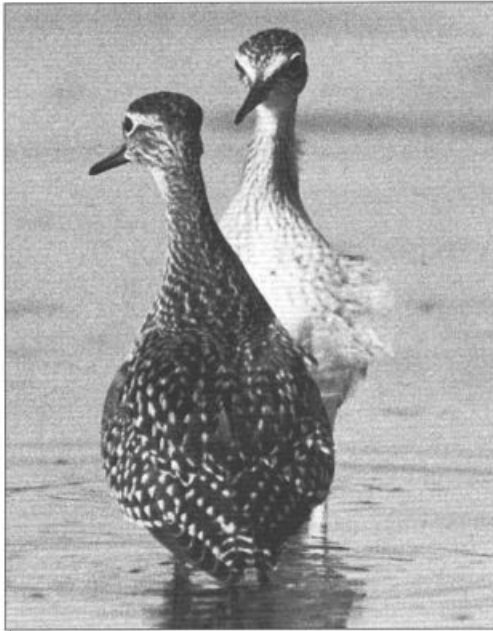


2. The territory holder on the right, approached closely by the intruder from the front, adopts a threat posture by spreading both wings and cocking its tail.

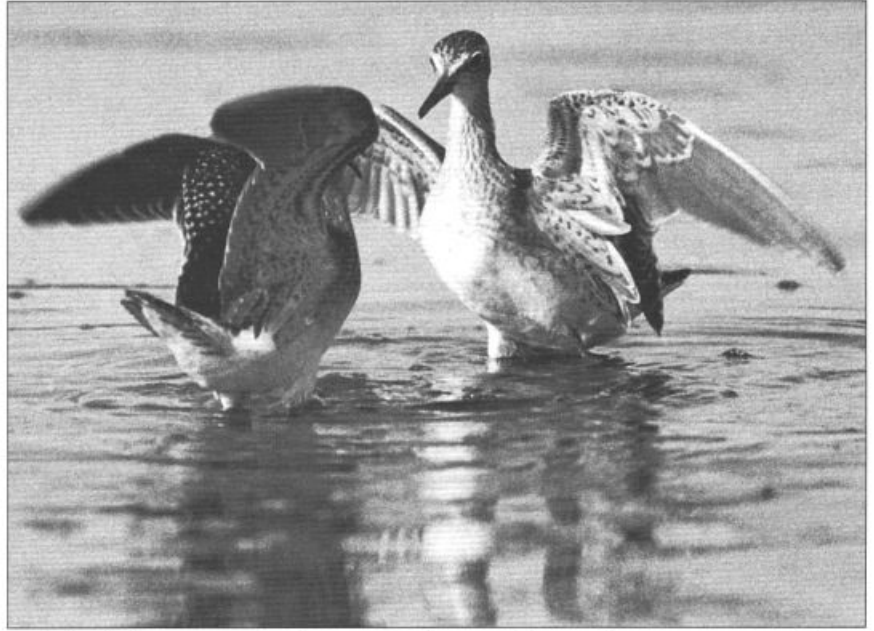


3. Both birds might charge towards each other and call, but no physical contact takes place.





4. At the end of a charge, birds might approach each other very closely. Here, both individuals demonstrate their aggression by depressing their tails, drooping their wings and adopting upright postures.



5. Both birds threaten each other by presenting their cocked tails and lifting their wings, making themselves look larger.



6a, b & c. These three photographs show the sequence of events prior to attack. Demonstration of the cocked tail and lifted wings might not be sufficient to chase the intruder away and may lead to more aggressive behaviour. A short jump towards the intruder and flapping of wings may also be adopted. The bird on the right raises its wings in response to the aggressive display of its opponent.





7. In more severe cases, though rare, a fight might occur when one bird physically attacks the other. Here, the dominant bird attacks the opponent by pecking and striking with its feet while fluttering above him.



8. Territories can also be defended against other species of birds, even if the latter are twice the size. Here, a Wood Sandpiper is pecking the tail of a Ruff *Philomachus pugnax* and is successfully chasing the intruder away

