

## Brief reports • Tiedonantoja

### Plover's Page or Plover's Parasite?

#### Aggressive behaviour of Golden Plover toward Dunlin

P. E. Yalden & D. W. Yalden

#### Introduction

The well known behaviour of Dunlin *Calidria alpina* flying closely behind and landing beside Golden Plover *Pluvialis apricaria* has been termed "pageing", Plover's Page being a local name for Dunlin. The significance of pageing has recently been investigated by Byrkjedal & Kålås (1983) and Thompson & Thompson (1985). All agree that the Dunlin gain considerable benefit from this behaviour because they exploit the extreme vigilance of the Golden Plover; in particular, they fly away from an intruder at a greater distance when following Golden Plover than when they are by themselves or with other Dunlin. However Byrkjedal & Kålås (1983) consider that the Golden Plover suffer from this behaviour, so that Plover's Parasite might be a more apposite term than Plover's Page. Thompson & Thompson (1985) suggest, on the contrary, that Golden Plovers are also more wary in mixed flocks, and therefore may gain from the association.

During a study of recreational disturbance to breeding Golden Plovers, one of us (P.E.Y.) made a series of detailed observations of Golden Plovers guarding their chicks, and recorded a number of instances of aggressive behaviour by the adult Golden Plovers towards Dunlin. Meanwhile, D.W.Y. undertook a series of weekly censuses and recorded the frequency and distribution through the breeding season of pageing behaviour. These observations allow us to comment further on this behaviour.

#### Methods

Observations concern three broods of Golden Plovers watched from a car, used as a hide, in the Peak District National Park, England. The nests had been monitored with temperature-sensitive radios, therefore the date of hatching and the age of the chicks were known.

Observations of Brood 1 were made on 17 days spread over a 36 day period (16 May–20 June 1987) and of Brood 3 over 34 days (18 May–12 June 1988); Brood 2 was watched on 3 days but then moved off into a gullied area. Observations were made between 09.00 and 17.00 hrs B.S.T., though Golden Plovers were not necessarily present (nor observations maintained) for the whole of that period on every day. Even when present, they could not be kept in view all the time, and it is convenient to score their presence in 5-min observation periods.

Weekly censuses were undertaken throughout the breeding seasons of 1987 and 1988. (We score these censuses in "territories" rather than "birds seen", i.e. a pair of birds seen is counted as one territory.) In total, approximately 16 pairs of Dunlin and 45 pairs of Golden Plover bred in the two study areas in 1987. The study sites were blanket bog communities, dominated by tussocky *Eriophorum vaginatum* (Yalden & Yalden 1988).

#### Results

During 916 five-minute observation periods spread over 17 observation days, the adult Golden Plovers were in view, guarding Brood 1, for 864 periods (94%; Table 1). They made 43 attacks on Dunlin during this period; in each case, the Dunlin was standing near the adult Golden Plover, apparently pageing it. The Golden Plover ran at the Dunlin, with head lowered and back hunched, in the posture described by Cramp & Simmons (1983: p. 208, Fig. C) as typical for aggression between adult male Golden Plovers, and each time the Dunlin flew off. The behaviour was not concentrated into a few isolated incidents; the 43 attacks were spread over 37 observation periods on 9 observation days. However, attacks were concentrated in the first 10 days of the chicks' life, when 40 of the attacks took place, compared with only 3 attacks later on. During those

Table 1. Aggression by Golden Plovers (GP) to Dunlin while guarding chicks.

Dates	Brood/Age (days)	Number of 5-min observation periods		Attacks observed	Attacks/60 mins GP observed
		Total	GP present		
18–25 May	1/3–10	409	392	40	1.22
27 May – 14 June	1/12–30	507	472	3	0.08
2–6 June	2/3–7	146	122	12	1.18
13–19 May	3/5–10	293	289	10	0.42
20 May – 12 June	3/11–34	607	524	3	0.07

Table 2. The number of Golden Plover (GP) and Dunlin (DN) territories recorded in half-monthly periods in 1987 and 1988 with the breeding seasons as indicated by records of territories with incubation, young chicks and flying juveniles. Significantly more Dunlin were pageing in late May–June, when both Dunlin and Golden Plovers had young chicks, than in April–early May ( $\chi^2 = 5.83$ ,  $p = 0.015$ ).

Dates	14–30 April	1–15 May	16–31 May	1–15 June	16–30 June	1–15 July	16–31 July
N. visits	10	10	9	8	8	9	6
GP territories	88	71	115	175	202	160	53
GP alarming	10	18	84	142	175	101	39
GP incubating	10	13	2	5	3	0	0
GP chicks	0	0	5	2	2	1	0
GP juveniles	0	0	0	0	12	58	12
DN territories	20	40	28	57	36	13	1
DN incubating	0	2	2	2	2	0	0
DN chicks	0	0	3	2	1	0	0
DN pageing	1	3	5	10	10	2	0

first 10 days, the number of attacks seen per day varied between 1 and 13.

Brood 2 was only under observation for 146 five-minute periods, and the adults were present for 122 (84%); despite this shorter study period, 12 attacks on Dunlin were witnessed. The Golden Plover chicks were 3–7 days old.

A Golden Plover was guarding Brood 3 for 813 five-minute periods out of a total observation time of 900 five-minute periods (90.3%). 13 attacks were recorded, 10 within the first 10 days of the chicks hatching and 3 on day 26.

The distribution of pageing behaviour through the breeding season was very uneven; during April and early May, when both species were laying and then incubating their clutches, Golden Plovers were rather secretive, and only four instances of Dunlin pageing them were recorded. From late May through June to early July when Golden Plovers were vocally guarding their young (cf. Reed & Langslow 1985), 27 instances of pageing behaviour were recorded (Table

2). Later in July, Dunlin had left the moors, though Golden Plover were still present.

## Discussion

In discussing their thesis that Dunlin might be harming Golden Plover by pageing them, Byrkjedal & Kålås (1983) commented on the paucity of aggressive reactions by the Golden Plovers; they observed only 6 attacks in 1462 minutes of detailed observation. However, they were studying primarily the prelaying period for both species. Thompson & Thompson (1985) were studying off-duty birds during incubation, and were unlikely to record aggression because of the way they made their study (i.e. walking at the birds). Our observation that pageing and aggression is concentrated in the post-hatching period explains why the other authors recorded little aggression.

It is clear that Golden Plovers with young chicks do regard pageing Dunlin as intrusive, and spend

some time trying to displace them; possibly the Dunlin are regarded as a distraction, or as competitors with the chicks for food. Byrkjedal & Kålås (1983) argued that Dunlin might make adult Golden Plovers more conspicuous to predators, by accompanying them, but this seems very unlikely to us. Golden Plovers are very conspicuous themselves when guarding chicks, whereas Dunlin (as observed from 200–300 m away) were only noticed when they were attacked by the plovers. Another feature of our results is the concentration of aggression in the first 10 days post-hatching. Perhaps adult Golden Plovers find Dunlin less of a “threat” to older chicks. Alternatively it may be that Dunlin did not try to page the Golden Plovers which we were watching, but this is less likely because most pageing behaviour elsewhere was seen in June (Table 2) when these particular broods were well grown. Furthermore, we did record a few attacks when the chicks were 25–30 days old (Table 1). Additional work, perhaps in Norway where the vegetation is shorter and Dunlin are more visible, might resolve these questions.

*Acknowledgements.* We thank N.C.C. for financial support afforded by contract HF3-03-339, and Dr. D.B.A. Thompson and the referees for helpful comments, also June Underwood for typing this note.

#### Selostus: **Kapustarinnat vihamielisiä suosirrejä kohtaan**

Suosirrien hakeutuminen kapustarintojen seuraan on niin silmiinpistävä, että Englannissa suosirriä mainitaan kapusta-

rinnan hovipojaksi. Tässä tiedonannossa kuitenkin osoitetaan, ettei kapustarinta varauksitta hyväksy suosirrejä lähistölleen. Tutkijat seurasivat kolmea kapustarintapoikuetta (17, 3 ja 34 päivää) ja rekisteröivät tapahtumia 5 minuutin jaksoissa. Kapustarintaemot karkottivat suosirrit läheisyydestään kun poikaset olivat pieniä (Taulukko 1). Suosirrit hakeutuivat kapustarintojen seuraan halukkaimmin toukokuun lopulla — kesäkuussa (Taulukko 2) eli silloin, kun kumpikin laji hoivaa pieniä poikasia.

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*Authors' address:* P. E. Yalden & D. W. Yalden, Department of Environmental Biology, The University, Manchester M19 3PL, U.K.

Received 15 April 1988, accepted 14 October 1988