

Field technique suggestions for the study of Collared Pratincoles *Glareola pratincola*

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INTRODUCTION

The Collared Pratincole *Glareola pratincola* is a migratory species which breeds in different countries around the Mediterranean Sea, southern Europe and nations of the former Soviet Union, and spends the winter mainly in Africa. It is a difficult species to study and this is partly the reason for the general lack of knowledge about it in most areas. Only recently have numbers from throughout Europe been collated (Tucker & Heath 1994) showing the importance of Spain as a breeding ground for this species. Within Spain, the biggest breeding population of Collared Pratincoles is in the southwest (around 85%, Calvo *et al.* 1993) as shown by the first and only national count of this species (Calvo 1993a; Martínez 1991).

The Collared Pratincole is considered vulnerable in Spain (Blanco & González 1992) and endangered in Europe (Tucker & Heath 1994). It is included in Annex 1 of the Birds Directive 79/409/EC. The main threat it faces is habitat loss (Sterbetz 1974; Uhlig 1989; Nadler 1990; Tucker & Heath 1994; Calvo & Furness 1995) which is the main cause of the overall decrease in the European breeding population (Tucker & Heath 1994).

The importance of monitoring Collared Pratincole populations and conducting research on this species is clear. From 1989 to 1992 BC carried out research on this species in the province of Seville (SW Spain) (Calvo 1994; Calvo 1995; Calvo & Furness 1995). Many problems were encountered during the study, some of which were overcome. The aim of this paper is to explain which methods gave the best results in terms of efficiency and accuracy of data recorded when studying Collared Pratincoles, for future reference and to help other researchers undertaking work with this and other sensitive species.

RESULTS

Colony location

Colonies were initially located by car. Farmland and other low-lying land near water such as marshes, channels, streams, lagoons and temporary pools were searched

intensively. A study of wetland loss in the province of Seville since 1918 was of great help in locating areas of farmland which had previously been wetlands, as these areas were often occupied by breeding colonies.

Counting breeding birds in colonies

Counting from outside the colony can give a fair estimate when it contains a low number of breeding birds and when there is good visibility (mainly when the characteristics of vegetation and ground do not impair visibility). However, this is not the case for most colonies. For larger colonies and those with poorer visibility this method underestimates the number of birds (Calvo & Alberto 1990). The reasons for this include poor visibility, the fact that, in bigger colonies, only the nearest the intruder take off, and that, at certain times of the day, some birds forage away from the colony. Therefore it is advisable to have two observers, one carefully walking through the colony to flush the birds and one outside it to count them.

Feeding activity of birds in our study area followed a general pattern of increasing activity from the morning to the afternoon as temperature rose, followed by a decline in the late afternoon and evening (Calvo *unpubl.*). Therefore, counts were carried out at dawn, before birds started leaving the colonies for the foraging grounds and before the high temperatures could be a risk to eggs when birds were flushed from them.

The best period to conduct censuses in our study area was during May, once the birds were settled, and, in some areas, at the beginning of June. After this period, counting was not advisable as there were already juveniles that could be mistaken for adults when in flight.

Nest location and marking

Nests were located by systematic, early morning searches in the colonies. Searches were carried out by three people at a time and were conducted in mid-May, when the laying peak had passed. When temperatures rose, searches were stopped to avoid subjecting nests to excessive insolation. Nests were marked with a wooden stake placed four metres away from the nest, always in the same direction.

Many authors have reported problems associated with searching for and marking nests, warning of the negative effects that these procedures can have, such as observer induced predation (Salathé 1987; Strauss & Dane 1989; Major 1990; Piatt *et al.* 1990). Most authors attribute this to the ability of predators to follow the person by scent or sight, but also cite nest abandonment (Livezey 1980), chicks dying of exposure, starvation or aggression or possible cannibalism from conspecific neighbours (Gochfeld 1981), and a change in adult behaviour (Fetterof 1983). Nevertheless, in a study of a related bird with similar nesting habits to the Pratincole, Galbraith (1987) did not find any difference in the probability of nest predation between marked and unmarked Lapwing *Vanellus vanellus* nests and amongst nests checked from a car, nests approached and the eggs not handled, and nests approached and the eggs handled.

We believe that the methods described here for counting birds, locating nests and marking them, if undertaken carefully, have no negative effects on Pratincole breeding success. No nest losses occurred in the three days immediately after nests had been located, and breeding success was high (Calvo 1994).

Chick capture

Pratincole chicks abandon the nest a few hours after hatching. Locating chicks afterwards is difficult due to their cryptic nature and the high mobility of broods. Chicks were captured by two people, one spotting a chick from outside the colony and keeping it under observation, the other following the directions to it. This procedure has also been used by Dolz *et al.* (1989), but it is time consuming and has a low capture rate. Nevertheless, it was sometimes found to be the most appropriate method in terrain with bushes where chicks can hide. Bushes are also very useful as reference points to locate chicks.

A more efficient method was dazzling chicks with a torch in the colonies at night and capturing them with a sweep net. This was successful even with fledged chicks. Capture was always carried out in June and July, when most clutches had hatched. Since some chicks were being brooded at night by adults (Calvo 1993b), we tried to minimise time inside the colonies to avoid chicks being exposed to cool temperatures. Although there is no study on the effects of the marks and marking procedure on the birds, chicks and adults seemed to behave normally on the days following our visits, and some marked birds have been seen in the colonies several days after being marked, outside the colony when fledged and elsewhere the following year.

Adult capture

Very few Collared Pratincoles are ringed each year and those ringed are usually chicks. This is due to the difficulty of capturing adults which are very seldom caught using any of the more conventional trapping methods such as mist-nets. It has to be kept in mind that due to the high temperatures reached in the area, any trapping method undertaken during the day has to be fast. Even if

the time of day with the highest temperatures is avoided, traps should not be left long in colonies. The following methods were tried on nests:

1. **Drop-cage trap** over the nest. It can take more than 45 minutes for the birds to accept the trap. This can endanger the survival of the eggs when temperatures are high. It is not an efficient technique when the terrain is not uniform, as the birds can escape through small gaps.
2. **Loops** around the nest. A rectangular mesh densely covered with catgut loops covering all the mesh surface, was placed around the nest. Loops covered all the mesh surface. Birds accepted it readily but walked in and out without entangling.
3. **Heart-shaped walk-in trap** placed over the nest. Birds did not walk into the trap.
4. **Clap-nets** over the nest (80 cm diameter). Four incubating adults were captured this way. Three of them abandoned their clutches and the partner did not resume incubation either. The fourth managed to escape from the net and incubation was resumed immediately after we had left the colony. The eggs hatched successfully. There was no relationship between abandoning and the stage of incubation. The bird that escaped was only in the end of the first week of incubation. In some species, time of capturing and handling has been shown to be an important factor influencing birds deserting their nests or broods (Brubeck *et al.* 1981; Nisbet 1981; Ueda 1984; Wanless *et al.* 1985).
5. **Sponges soaked in dye**. Dying adult breast feathers by placing sponges soaked in a picric and water solution on the nest cup was also tried. The birds accepted the yellow dyed cotton wool straight away but the method proved inefficient as feathers did not absorb the dye. Presumably the dye had dried out too quickly under the hot conditions.

Other methods tried included:

1. **Dazzling** birds with a torch at night. This was tried on dark, calm nights during the chick-rearing period. Most adults flew when approached to within 5-10 m. The ratio of adults/chicks captured was very low: 1 adult per 70 chicks.
2. **Mist nets** did not prove successful in breeding and feeding areas, but in other areas and circumstances it may prove a good method (Pratincoles have been captured with this method in Africa during the migration).
3. **Baited clap-nets (for one bird)** scattered throughout the colony. Collared Pratincoles did not approach them.
4. **Clap-nets** (of a bigger size, for a group of birds) set outside the colonies. This is a useful method when

there are high concentrations of birds in a small area. It has been used to trap pratincoles roosting for example on small islets (N. Baccetti *pers. comm.*).

CONCLUSION

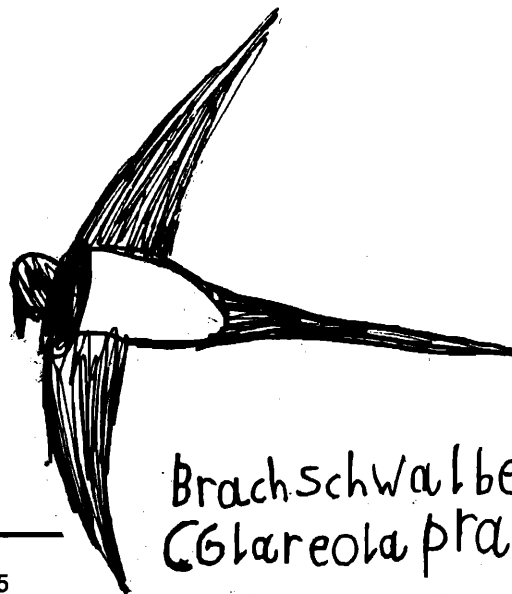
Bulky nest traps such as heart-shaped walk in traps and drop-cage traps were not readily accepted by the birds and it is not advisable to use them. Sponges on the nest and non bulky nest traps such as the loops or clap-nets, were quickly accepted. Since handling birds captured on the nest caused them to desert, we gave up these methods. Instead we concentrated our efforts on developing trapping methods such as dazzling for use outside the incubation period. Mist-nets with decoys and/or tape lure have yet to be tried.

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