

Capturing Jack Snipe *Lymnocyptes minimus* with mobile horizontally held nets

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The biology of the Jack Snipe *Lymnocyptes minimus* is poorly known and recent estimates of its population size are contradictory. To encourage ringing and marking studies of this cryptic species, we tested and improved a trapping technique in the Camargue during winter and migration periods. This capture method consists of walking with a horizontally-held net across sites where Jack Snipe regularly occur to catch birds that are flushed from beneath the net. We compared the catching rates of a 5 m x 10 m net and a 10 m x 10 m net. A total of 40 Jack Snipes was caught during 48 hours of trials with the two nets. Of the total number of individuals flushed, the average capture rate was 23% with the small net and 49% with the larger one, this difference being statistically significant. This method, therefore, appears to be appropriate for catching good numbers of Jack Snipe.

The population status of cryptic species such as snipe is often poorly known (BirdLife International 2000). Snipe live in densely vegetated areas and are difficult to study. Our knowledge of the Jack Snipe *Lymnocyptes minimus* is limited (Cramp & Simmons 1983, Rouxel 2000, Smiddy 2002), particularly compared to other Scolopacidae (IWRB 1979, Kalchreuter 1983, Havet & Hirons 1988, Kalchreuter 1994, 2000). The Jack Snipe population in Western Europe is thought to be declining, especially because of wetland loss (Pedersen 1994, 1997, del Hoyo *et al* 1996, Morozov 2002). However, Jack Snipe population estimates are a perfect example of how poorly this species is known. Pedersen (1994) estimated the number of breeding pairs in Europe at around 130,000, but a few years later Kalchreuter (2003) estimated the number of breeding pairs to be four times larger. During the 20th century, only 13,500 Jack Snipe were ringed in Europe (Kalchreuter 2003) and the catching methods used were seldom or only briefly described (Preuss 1977, Fog 1980, Mačikūnas *et al* 2000, Švažas *et al* 2001, Mongin 2002). To encourage future ringing and marking schemes, and improve our knowledge of population sizes and trends of this species (Smiddy 2002), the aim of this study was to test and improve an existing catching method for Jack Snipe, using a horizontally held net (Kliebe 1973, Bub 1991).

MATERIAL AND METHODS

Study area

This study was carried out in the Camargue, Southern France, during February and March 2001/2002 and November and December 2002. These months comprise the migratory and wintering periods for this species. Birds were caught in a 7 ha field of Bullrushes *Typhaceae*, grazed by cattle and free from hunting. Water levels fluctuated in depth within approximately 10-100 mm.

Nets

Two black, knitted polyethylene nets of 4 x 0.30 mm cord diameter and 35 mm mesh size (weight 45g/m²) were bought. The first net, 10 m wide and 5 m long was used in 2001. During each operation in the field the net was held taut and carried horizontally approximately 80 cm above the ground by four people. Since Jack Snipe are often flushed from less than 1 m in front of an observer (Kliebe 2001), two other people were evenly distributed along the back of the net to flush birds underneath it. After having observed that many Jack Snipe were flushed from in front of this net, we made a larger, heavier net 10 m x 10 m which required two additional people to carry it (Fig 1).

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Figure 1. Photograph showing the large 10m x 10m net in action.

Field procedure

The 7 ha field was covered completely during each catching session by walking along tracks marked out previously. The route taken across the field and the speed of walking (ie 2 to 3 km/h) remained constant during all capture sessions. The method was considered to be 'blind' because the locations of Jack Snipe were unknown before they were flushed. There was no backtracking for birds that landed in a part of the field already visited. Each session lasted for three hours and only one net was used per session. The interval between sessions was at least one week. Eight sessions were performed with each net. Catching sessions did not take place during days of extreme weather (ie heavy rain, strong wind).

During each catching session, two different counts were made: 1) the number of different individuals flushed was obtained by counting those that were flushed from under and outside of the net. If these same birds were flushed later, they were not counted again; 2) the number of occasions when birds were flushed under the net was obtained by counting individuals as many times as they were flushed, since individuals that escaped were likely to be caught later if they landed on part of the field yet to be visited. To assess the efficiency of the method, we counted the number of failures observed with the larger net, for birds flushed both from underneath and outside it, and made a note of any likely causes.

Statistical analysis

χ^2 tests were performed on the cumulative results of all catching sessions with each net to test for differences in catching efficiency between the two nets, with respect to: 1) the number of occasions when birds were flushed under the net and were caught or not caught; 2) the

number of different individuals flushed which were caught or not caught; and 3) the difference in catching probability between the two nets from the proportion of individuals flushed from beneath or outside the net.

RESULTS

During 16 trapping sessions with the two nets, 127 Jack Snipe were flushed (Table 1). Of these, 67 were flushed from outside the net, 20 were flushed from under the net but escaped and 40 birds were caught.

With respect to the total number of occasions when birds were flushed under the net, the catching rates per session were $60.6\% \pm 27.1\%$ (mean \pm standard deviation, SD) and $74.1\% \pm 13.5\%$, for the small and large nets, respectively; the difference between nets in the proportion of successes overall was not statistically significant ($\chi^2_1 = 0.68$, $P = 0.41$). The mean catching rates per session for the total number of individuals flushed both under and outside of the net were $23.3\% \pm 12.7\%$ with the small net and $48.8\% \pm 40.2\%$ with the large net; the difference between nets in the overall proportion of such successes was statistically significant ($\chi^2_1 = 7.24$, $P = 0.007$). In comparison with the small net, a greater proportion of individuals were flushed from under the large net than from outside. The difference in the proportion of individuals flushed from under both nets was also significant ($\chi^2_1 = 7.35$, $P = 0.007$).

With the larger net, there were 45 failures: 32 of these were due to one or more people at the front of the net flushing birds prematurely because the birds were in their direct path, six failures were due to birds being flushed well away from the net; three birds were flushed only after the net had passed over them and four escaped from under the net via the front (two birds) or the side (two birds).

DISCUSSION

When considering only the occasions when birds were flushed under the nets, the capture efficiency was apparently not affected by the size of the nets used, since we could not detect any significant differences between the two nets. However, the proportion of individuals that was flushed from under rather than outside the net was statistically higher with the larger net and an average of about 50% of all individuals flushed were caught, which seems very satisfactory for such a 'blind' method. Nevertheless, capture efficiency may be even higher if the location of birds is known

Table 1. Numbers of Jack Snipe flushed and caught during trapping sessions.

		Number of different individuals flushed	Number of occasions when birds were flushed under the net	Number of birds caught
5 m x 10 m net	9 February 2001	6	2	2
	15 February 2001	10	6	5
	23 February 2001	17	5	3
	3 March 2001	16	7	3
	9 March 2001	7	4	2
	16 March 2001	13	4	1
	23 March 2001	10	2	2
	30 March 2001	7	3	2
Cumulative total		86	33	20
10 m x 10 m net	5 February 2002	2	0	0
	18 February 2002	1	0	0
	27 February 2002	1	1	1
	7 March 2002	7	6	5
	13 March 2002	1	0	0
	7 November 2002	3	0	0
	29 November 2002	17	16	11
	6 December 2002	9	4	3
Cumulative total		41	27	20

beforehand. However, this would entail flushing them before trying to catch them, therefore taking the risk that some would leave the area or not be caught. Since some of the Jack Snipe were flushed only after the net had passed over them, it is possible that some birds were not flushed despite the two people at the back of the net. If so, increasing the number of people at the back of the net may improve catching efficiency.

Other methods that have been used to catch Jack Snipe are landing nets with a pointer dog during the day or a spotlight at night (Leray, Zverev, unpublished data), zig-zag traps or mist nets (Mačikūnas *et al* 2000, Švažas *et al* 2001), and walk-in traps (Fog 1980, Mongin 2002). However, the catching rates for these methods have not been published.

In summary, the method presented here was successful and a total of 68 Jack Snipe was caught during four years (this includes birds caught outside the study area in the Camargue). The use of this method is likely to increase the numbers caught elsewhere. In Ireland, for example, only 15 Jack Snipe were caught between 1975 and 1997 despite the fact that the estimated wintering population is 20,000 to 30,000 individuals (Smiddy 2002). Similarly, in Great Britain, on average only 76 Jack Snipe were caught each year during the

1990's, yet the wintering population is estimated to be between 70,000 and 80,000 individuals (Smiddy 2002). This method has a high catching rate, and its use will increase the prospects of catching enough Jack Snipe each year to establish effective monitoring of this species.

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