Catching Jack Snipe with dip-nets in the non-breeding season

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Keywords: Jack Snipe, Lymnocryptes minimus, catching techniques, dip-net

Jack Snipe Lymnocryptes minimus is one of the least known Palearctic waders. Most methods that have been used to catch the species have proved rather ineffective and relatively few have been ringed. Many authors have emphasized the difficulty of studying such a secretive species (Cramp & Simmons 1983, Pedersen 1997, Rehfisch & Holloway 1998). Recommended catching methods include mist-netting at dusk and at night and throwing a net over birds sitting on the ground during the day (Bub 1991, Lepley et al. 2005). These methods have been fairly ineffective because Jack Snipes tend to be widely dispersed and their anti-predator behaviour makes them difficult to locate (Holyer 1984, Pedersen 1988, Fearnside 1990, Pedersen 1995). Some 14,000 Jack Snipes were ringed in Europe during the 20th century (Deplanque 2003).

The use of dip-nets to capture waders has a long tradition (Bub 1991). First reports of their use come from 15th century England, where they were used to capture Eurasian Woodcock Scolopax rusticola and other ground-dwelling birds. Currently they are employed to capture various species at night using artificial light. However, there is no mention in the literature of the use of dip-nets to capture Jack Snipe (Bub 1991). The purposes of this paper are to describe a method of using dip-nets by day to capture migrating and wintering Jack Snipe and provide guidelines on detecting the species.

INTRODUCTION

Jack Snipe Lymnocryptes minimus is one of the least known Palearctic waders. Most methods that have been used to catch the species have proved rather ineffective and relatively few have been ringed. Many authors have emphasized the difficulty of studying such a secretive species (Cramp & Simmons 1983, Pedersen 1997, Rehfisch & Holloway 1998). Recommended catching methods include mist-netting at dusk and at night and throwing a net over birds sitting on the ground during the day (Bub 1991, Lepley et al. 2005). These methods have been fairly ineffective because Jack Snipes tend to be widely dispersed and their anti-predator behaviour makes them difficult to locate (Holyer 1984, Pedersen 1988, Fearnside 1990, Pedersen 1995). Some 14,000 Jack Snipes were ringed in Europe during the 20th century (Deplanque 2003).

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METHODS AND RESULTS

A study of migrating and wintering Jack Snipe was carried out in N Poland with up to 50 localities surveyed annually. The number of sites sampled varied seasonally according to the availability of suitable foraging areas, which was closely related to water levels. The habitats surveyed were mainly drained fish ponds and the shorelines of other water reservoirs in autumn (3 Sep to 21 Dec), field irrigation ditches and fish ponds in winter (22 Dec to 21 Mar), and seasonally flooded meadows, drained fish ponds and irrigation ditches in spring (22 Mar to 20 May). The relative proportion of each of the different habitat types surveyed in each season corresponded to seasonal changes in habitat use by Jack Snipe. In 1996–1998, surveys were focused on sites where migrating and wintering Jack Snipe were concentrated. Dip-net trapping was conducted from Feb 1999 to Mar 2005. During this period, 2,195 were captured, of which 1,593 were new captures and 602 retraps. In the successive seasons 1998/1999–2004/2005 the following numbers of Jack Snipes were captured: 15, 61, 227, 35, 678, 588 and 391. The description of the seasonal occurrence of Jack Snipes and habitats used is based on data from Aug 1996 to Mar 2005 (Cenian & Sikora 1997, Sikora & Maniakowski 2000, A. Sikora unpubl.). The method of dip-net trapping described is based on the author’s personal experience from Feb 1999 to Mar 2005.

Trapping tool

Birds were captured using dip-nets which consisted of a metal hoop and nylon net attached to a handle and weighed 1.1–1.3 kg. The hoop was made of 4 mm thick stainless steel wire and the hoop diameter was 25 or 40 or 60 cm. Nylon net with 30 × 30 mm mesh was attached to the hoop loosely, sagging 10–15 cm below the hoop when held horizontally. The aluminium handle was 5 m long and constructed of 0.5 m sections. In some extreme situations the handle was lengthened (up to 6.5 m), but this made manoeuvring the net more difficult. The size of the hoop was changed according to the type of habitat. In dense, tall vegetation the most effective size was 40 cm, but, exceptionally, e.g. in dense cattails Typha spp., and reeds Phragmites, the hoop diameter was reduced to 30 × 30 mm.
Patterns of occurrence of Jack Snipe in N Poland

The first Jack Snipes appear in N Poland in early September, but their numbers increase noticeably in late September and early October. Peak migration occurs in October or, rarely, in early November (Fig. 1). Numbers then decline and migration ends around mid-December having lasted for about 100–110 days. Numbers are low during winter and lowest from February to mid-March. Spring migration begins with a marked increase around the end of March and early April; rarely there is another peak in the second half of April. In May, only singles are encountered. Spring migration lasts about 50 days, only half the length of autumn migration.

Important for detecting and trapping Jack Snipes is knowledge of their daily activity patterns. In the non-breeding season, they are mainly either actively foraging, which is mostly at night, or passively sitting in the cover of vegetation, which is mostly by day.

Depending on weather conditions and/or possibility of hiding, the birds can be spatially distributed in three ways:

1. During migration, when climatic conditions do not limit the number of favourable foraging sites (i.e. no frost, no snow cover), Jack Snipe are widely distributed in wet grassland and other marshy habitats. However, at the peak of migration, up to several dozen may concentrate at high quality foraging sites.

Habitat

Typically Jack Snipe moved about during autumn and winter apparently in response to the availability of accessible and profitable feeding areas, which in turn depended on the weather and changes in water levels. Limited access to food as a result of the freezing of foraging areas, the disappearance of feeding areas under snow, the over-drying, or the excessive flooding of feeding areas were the principal factors forcing the birds to search for alternative foraging sites. In N Poland, noticeable differences in habitat preferences were apparent during migration and winter. The broadest spectrum of habitat-use was recorded during autumn and spring migration (Fig. 2). Following late autumn frosts, the area of suitable habitat gradually reduced and Jack Snipes disappeared from areas of freezing stagnant water, such as open reservoirs and flooded fields. At this time, they were found mainly by small water channels in open landscapes and in drained fish ponds.

Field channels

Jack Snipe most frequently selected shallow channels up to 1 m wide, e.g. irrigation, drainage or sewage channels, flowing through open landscapes. Birds were found along the banks, often under the cover of overhanging vegetation. Tracks and signs left by the birds (footprints, signs of foraging, and droppings) indicated that Jack Snipe prefer stretches...
of shallow water (<2 cm), especially close to the edge of the water, where the muddy bottom remained unfrozen even during periods of frost. This habitat was preferred especially during winter (Fig. 3).

Fish ponds

Considerable numbers of Jack Snipes visited fish ponds during autumn migration, especially immediately after they were drained in October, when the birds preferred muddy foraging areas adjacent to reedbeds. During winter, they favoured small bodies of flowing water under the cover of reeds or cattails (Fig. 4). In such places, the birds were often well hidden and stayed there throughout the day, even when the plants were covered with snow. Most fish ponds were flooded during spring which made them of marginal importance to Jack Snipe.

Other water-bodies

Jack Snipe also occurred by other natural and man-made water-bodies within open landscapes, which varied in size from <1 ha to several hundred ha. These had shallow muddy edges, which became exposed when water levels were low, and were adjacent to beds of emergent vegetation, typically knotweeds *Polygonum*, rushes *Juncus*, sedges *Carex*, beggar-ticks *Bidens*, cattails, reeds, and in rare cases also sparse thickets of low willows *Salix*.

Ephemeral marshes

This category includes river floodplains, ephemeral water-bodies fed by rain and snow-melt, tidal marshes, and flooded agricultural land. Jack Snipes were detected in these habitats during migration, but because favourable conditions were short-lived the birds were not found as regularly in these habitats compared with others.

Methods of detection

During the day Jack Snipe rely on a passive anti-predator strategy of ‘freezing’ and remaining still when a predator is approaching. This behaviour is apparently more effective than escape by flying, since a bird on the ground is hard to see because of its cryptic plumage and use of vegetative cover. A Jack Snipe can position its body in such a way that the dorsal striping matches the lines created by stems of surrounding vegetation (Fig. 4). If the bird is not surprised by the approaching predator, it may try to sneak away from an open area into one with better cover. Typically, a Jack Snipe will fly when a predator or human approaches to within 3–5 m. Occasionally one may allow even closer approach, in which case it is sometimes possible to catch a bird by hand or even step on it by mistake (Cramp & Simmons 1983, Sikora & Maniakowski 2000).

Systematically walking through suitable habitat will flush most of the Jack Snipe hiding there. Spotting a sitting individual, however, is much more challenging. Therefore, one needs to move deliberately and slowly, paying attention to all signs: tracks, signs of foraging, faeces, and feathers lost through moult. Once a bird is located, the net is moved very slowly until the bird is covered; any sudden movement may cause it to flush.

Tracks

Jack Snipe often walk on muddy surfaces where their feet leave distinct footprints which are significantly smaller than those of Common Snipe *Gallinago gallinago*. A Jack Snipe’s middle toe without the claw is 25–30 mm long (n = 1,557; Sikora unpubl. info.), whereas that of Common Snipe is 32–39 mm (n = 73, Cramp & Simmons 1983). The feet of foraging Jack Snipe almost touch each other (Fig. 5).

Signs of foraging

Jack Snipe search for food on soft, muddy substrates by probing with the bill to a depth of about 2 cm or picking food from the surface. Probing in soft, muddy substrates leaves small circular or oval holes about 3 mm in diameter (Fig. 5). Common Snipes foraging under the same conditions leave single deep holes 4–5 mm in diameter. Jack Snipe surface feeding is recorded in mud as two depressions within 1–2 mm of each other. The larger depression is left by the tip of upper mandible and the smaller by the tip of lower mandible. Such traces of foraging are most clearly seen in soft sediment at the bottom of recently drained fish ponds. On sandy surfaces, signs of foraging are difficult to discern.
In areas where Jack Snipe have been present for a long time, droppings are numerous and concentrated within a relatively small area, especially during lengthy winter coldspells and in areas where the birds congregate during migration. The freshness of the droppings is a good indicator of whether the birds are still present. Sometimes droppings are found in the form of white streaks in shallow water. In such cases, it is very likely that a bird is very close, within just a few metres, at the edge of or within a patch of vegetation.

Feathers

In spring, especially in March and April, Jack Snipe go through an extensive body moult. As a result, dozens of dropped contour feathers can be found in places where they roost during the day, usually concentrated within an area of about 0.5 m², occasionally up to 2–3 m².

Trapping efficiency

Most birds were trapped during autumn migration in October and early November. Jack Snipe were also caught fairly regularly in December, when late migrants and wintering birds were encountered. During spring, they were usually dispersed and difficult to catch and appeared to be more wary than during autumn and winter. In one year, in early April, Jack Snipe were concentrated along irrigation ditches during particularly cold weather with snow.

During autumn, the largest catches of Jack Snipe by one ringer in a single day were of 27, 33 and 31, but in winter only 10–13. During the five years 2000/01 to 2004/05, 46–49% of all the Jack Snipes encountered were caught. Trapping success varied according to season (Fig. 6), habitat, group-size, weather, and the physical condition of the researcher. At night, it is almost impossible to catch Jack Snipes using dip-nets because it is extremely difficult to approach close enough to see them sitting on the ground. They mostly forage at night (Cramp & Simmons 1983) when they occur in more open areas than they do by day and are noticeably more wary.

Habitat

Jack Snipe trapping efficiency was highest in linear habitats, such as mid-field irrigation channels and along the border of vegetation and the muddy shorelines of fish ponds (Fig. 7). Trapping success was noticeably lower at larger reservoirs and in wet meadows (Fig. 8).

Group size

Trapping efficiency was highest for small groups of birds: on average, 70% of those seen were caught in the case of isolated individuals and 60% of groups of 2–5 (Fig. 9). Efficiency declined as group-size increased, e.g. only 27% for groups of >30. This tendency was particularly apparent at fish ponds and small mid-field water-bodies, but at irrigation channels trapping success seemed independent of group size.

Weather

Trapping efficiency varied with cloud cover, temperature, and presence of snow. Jack Snipes hiding in dense vegetation were particularly hard to spot on bright sunny days. Even poorly camouflaged birds were difficult to see against a high contrast background of sunny highlights and shadows. Moreover, the birds appeared to be more wary during sunny days than under overcast sky conditions. Typically, the number of suitable foraging sites was reduced by prolonged frost and snow cover, which forced the birds to concentrate in the few that were still available. In such places, the birds were often less well camouflaged which increased their detectability.

Observer condition

The physical condition of the researcher was an important factor affecting the ability to search for birds over extended periods of time. Bright sunlight, especially when there was snow, meant that eyes tired more quickly than under cloudy conditions. On completely overcast days, it was possible to detect and trap birds for up to 10–12 hours, whereas in sunny conditions with snow, effective catching was only half as long.

Well-being of birds caught in dip-nets

In most cases, birds covered with a dip-net remained motionless (Fig. 7) and only started to struggle or jump around when the researcher approached to within 2–3 m. The time from when the bird started to struggle until it was extracted was usually <30 s. Unlike mist-netting and some other catching methods, there was no opportunity for the bird to be attacked by a predator once it was caught in the net. The trapped bird was removed from under the net as quickly as possible to reduce the chance of the plumage becoming soiled, especially on muddy substrates. Most of the captures, 99.7%, were of single birds.

In winter, especially on very cold days, particular care was taken to prevent the plumage from getting wet. Any wet birds were dried by blowing off drops of water and wiping the tail feathers with a paper towel.

The total time between extraction from the dip-net and release, including ringing and taking measurements was usually about 10 minutes. During 2,196 captures using dip-nets, there was only one instance of a bird struggling under the net and ending up with a broken wing bone. On two occasions the breast skin was superficially lacerated by sharp, sprouting reed stems. A few birds were also slightly injured on the surface of their upper mandibles. Generally, however, the use of dip-nets to catch Jack Snipe has proved safe for the birds.
Fig. 7. A Jack Snipe is caught in a dip-net among reeds at the edge of a drained fish pond. Note that the bird does not move, even when it is covered by the net (photos: Waldemar Półtorak).
ACKNOWLEDGEMENTS

I wish to thank Anna Dubiec, Jadwiga Gromadzka, Wojciech Kania and Dorota Rancew-Sikora for valuable comments about the manuscript, and Piotr Zielinski for a stimulating discussion on the Jack Snipe detection methods. I am especially grateful to Krzysztof Zyskowski for the English translation and Steve Holloway for his precious review.

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DISCUSSION

The Jack Snipe is considered a threatened species in Europe during winter (Tucker & Heath 1994) and wintering populations are reported to have declined Britain and Denmark (Pedersen 1994). However, there is some doubt about the basis for this claim given the lack of systematic surveys (Smiddy 2002, Rehfisch & Holloway 1998). Trapping Jack Snipe with dip-nets has much greater research potential than any other trapping method used for the species to date and has led to a major increase in the numbers ringed in Poland. During 1931–1998, prior to the use of dip-net trapping, only 97 Jack Snipes were ringed, but for 1999–2004 the total was 1,682 of which 92% were trapped with dip-nets (Polish Ringing Scheme, Institute for Ornithology, Polish Academy of Sciences, Gdansk).

The methods of finding and trapping Jack Snipe described here are based on the results of research conducted in N Poland; that is in a temperate climate with continental influence. In other parts of Europe with different climates, some of the suggestions offered may not be appropriate. Climatic conditions influence food availability which, in turn, leads to different habitat preferences, patterns of occurrence, and size of feeding territories.

Trapping success might be expressed as either the total number of birds captured or in terms of trapping efficiency: the proportion of birds captured out of the total number encountered. In the study area in N Poland these parameters do not coincide, either over the seasons or between the various habitats (Figs 6 & 8). Most birds were caught during the peak of autumn migration at fish ponds and on the banks of farmland water-bodies, but trapping efficiency was low (Fig. 6). In winter trapping efficiency was much higher and Jack Snipe were caught most frequently by irrigation channels in farm-land; that is in a temperate climate with continental influence.

It is easier to catch.

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