ABSTRACTS OF OF TALKS GIVEN AT THE WADER STUDY GROUP ANNUAL MEETING, LA ROCHELLE, FRANCE, 5-6 OCTOBER 1985

Spring Migration Studies on the Banc d'Arguin, Mauritania

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Between early March and early May 1985 we captured 1433 waders of 14 species. All birds were weighed and measured, and the majority were marked with temporary leg-flags and colour-dye. During the 2 months after marking about 20 individuals of 8 species had been resighted in Europe, thereby increasing enormously the available evidence about how different species wintering on the Banc d'Arguin use various staging-posts in the spring. Regular counts indicated the main departure periods of the wintering species such as Dunlin *Calidris alpina*, Knot *C. canutus*, Bar-tailed Godwit *Limosa lapponica* and Curlew *Numenius arquata*. Counting and marking data, in conjunction with observations of departing/passing flocks, suggest that Little Stints *Calidris minuta*, Curlew Sandpipers *C. ferruginea*, Greenshanks *Tringa nebularia* and Turnstones *Arenaria interpres* passed through the area in large numbers. A summary report will be submitted to *WSG Bulletin* shortly.

Migration studies of Ruffs wintering in Senegal

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In February and March 1985 a catching and ringing expedition to the delta of river Senegal - formerly one of the most important wintering sites for Ruffs (*Philomachus pugnax*) - aimed to provide information on the numbers of Ruffs occurring in that region and the migration routes of these birds. However, we found that the recent drought and the drainage of the delta had resulted in a drop of the population from about one million birds in the early seventies to some 80 000 birds in winter 1985.

About 700 Ruffs were caught and marked with colour-dye and colour-rings. Visits to some important nesting sites in Europe - the delta of the river Po in Italy, the Hortobagy national park in Hungary and the province of Friesland in the Netherlands, and some additional sightings provided by a network of observers in Europe, showed that the Senegalese Ruffs probably use a western migration route, leading through the Netherlands or through Italy, but not through south-eastern Europe. The question of how many resting sites Ruffs need on their trip from Senegal to Europe was discussed.

The spring occurrence of Whimbrel (*Numenius p. phaeopus*) in Vendee

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During their spring migration, Whimbrels *Numenius p. phaeopus* traditionally gather on a few staging places, the most important of which are in Hungary and Western Europe, including the Departement de la Vendee (Western France).

In Vendee there are a total of around 20 000 - 23 000 birds when the migration is at its highest at the end of April (i.e. at the same time as on the other European staging areas). The migration lasts mainly from 10 April to 10 May.

Vendee is one of the three main staging areas, and receives over a quarter of the total number simultaneously present in all the known European resting places.

The main roosts in Vendee are on the mudflats of the Baie de l'Aiguillon, and on shallow brackish ponds of the Marais d'Olonne.

The size of the groups reaching the roosts varies markedly, averaging about 30 birds. In the first part of the migration period, most birds arrive at the roost before sunset; thereafter, arrivals occur later and continue until after dark.

Departures - considered as being migratory ones - are observed daily from the roosting places, by day and by night.

During the day, the birds scatter and feed on a radius of over 15 km around the roosts. Whimbrels roosting in the Baie de l'Aiguillon go to pastures in the Marais Vendeen. Those roosting in the Marais d'Olonne feed on farmland criss-crossed by hedges and trees around the marshes, on pastures and on ploughed fields, in a very closed (high density of hedges) and dry environment, which is remarkable. Even more remarkable is the fact that on these feeding grounds Whimbrels are joined by a few Bar-tailed Godwits *Limosa lapponica* and, possibly, Knots *Calidris canutus*.

For 550 Whimbrels netted in Vendee in spring, the weights, wing-lengths and bill-lengths are respectively 412 $\pm$ 80 g, 254.4 $\pm$ 8.2 mm and 82.5 $\pm$ 5.1 mm.

The measurements, and the ringing recoveries, show that the breeding area of these birds extend from Iceland eastwards to at least the Archangelsk area (U.S.S.R.).

Available data, which are presented and discussed, are not sufficient to show if Whimbrels staging in Vendee make subsequent stops in more northern staging places, nor is it possible to get a precise idea about the turn-over of birds roosting in Vendee.

Spring migration of coastal waders on the French "Centre-ouest" Atlantic coasts

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This study was planned and directed by A. Doumeret and the author; it was carried out with a large team whose help we gratefully acknowledge.

The main sites studied are: Ile de Re, Baie de l'Aiguillon, and Yves-Fouras, North of the estuary of the river Charente, and Moeze-Oleron South.

A weekly count on each site has been carried out as well as catching of birds by mist-netting and cannon-netting. Birds of the target species (Ringed Plover, Knot, Dunlin, Sanderling, Grey Plover, Bar-tailed Godwit, Redshank and Turnstone) have been ringed, measured, leg-flagged and their wings have been dyed in blue.

The present results are just following preliminary analysis and will be more detailed in the future.

After a departure of the last wintering birds by the end of March, the migration reached largest numbers in mid-May, with more than 50 000 birds (including more than 30 000 knots). The most numerous are Knots, and then Dunlins (more than 10 000 birds), the Grey Plovers (a few thousand) and the other species (from one thousand to a few hundred).

The species and numbers are not equally distributed on the different sites. The results show different migration patterns between species : some such as Dunlin showing a continuous turnover, others, such as Knots, having a short stop-over.

Local sightings of dyed birds revealed movement between the sites.

Ringing recoveries show that the "centre-ouest" French Atlantic coast is at the junction of the flyways of the Siberian and Nearctic populations.

Although biometrics do confirm some points, they also raise questions. In particular it is unclear to which breeding population some of the Knots using the Baie de l'Aiguillon in May belong.

The spring passage on the Ribble and Alt estuaries, North-East England

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The Ribble estuary is situated 15 miles north of Liverpool on the North West coast of England : the small Alt Estuary is ten miles south of the Ribble.

The paper gives a brief physiographical account of the nine principal roost sites counted on the 2 estuaries for 3 of the spring passage target species : Ringed Plover *Charadrius hiaticula*, Dunlin *Calidris alpina* and *C. a. schinzii* and Sanderling *Calidris alba*. Turnstones *Arenaria interpres* occur in very small numbers. Also included in the count results are Knot *Calidris canutus* and Grey Plover *Pluvialis squatarola* which occur in large numbers (56 000 Knots were present for a few days between 4 and 6 May 1985, an exceptionally high count); and Bar-tailed Godwit *Limosa lapponica*. Five counts were made at between 6 April and 1 June.

The South-West Lancashire Ringing Group made 3 cannon-net catches of Sanderling: 2 at the Alt during April, whilst the wintering population were still present, when 39 were dye-marked; and 1 on the Ribble on 5 May when 139 were dye-marked. 2 mist-net catches were made on the Ribble during mid-May when 15 Ringed Plovers and 30 Dunlins (*schinzii* race) were marked.

Several observations of dyed birds marked on the Ribble and Alt and from other estuaries indicated a large turnover of these 3 species, and many staying for only a short period to refuel before moving on. Special thanks are recorded for the work of the counters and ringers all of whom are volunteers and without whose help this valuable research would not be possible.

Origins and Destinations of Knots in north Norway in May

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During May 1985, a joint team from Durham and Tromso Universities caught 1700 Knots *Calidris canutus* from a population of 15 000 in Balsfjord in northern Norway. The presence of this population in spring had been discovered only recently, and birds were presumed to breed in Siberia. Knots arrived between 5-12 May and most departed between 25-28 May. Colour-marking showed that there was little turnover of birds. 38 (2.2%) had been previously ringed. The ringing origins of these birds revealed that the population moults in autumn in the Wash and Wadden Sea. Juveniles occur in autumn on the east coast of Britain, in southern Norway and the Wadden Sea. The population overwinters chiefly on the east coast of Britain, especially Teesmouth and the Wash. Circumstantial evidence suggests that some may overwinter as far south as South Africa. In spring, some probably reach Balsfjord directly from the Wash in early May. This distribution is consistent with that of the Nearctic rather than Siberian population. One flock was seen departing on 25 May towards north-east Greenland.

Bill lengths of a sexed sample of 49 males and 47 females were closely similar to those of populations breeding in Greenland and north-east Canada, and were smaller than those breeding in western Siberia.

Knots leave the Wash in early May with an average total mass of 192g. Shortly after arrival in Balsfjord total mass was 151g, an average of 11.7% fat. Rates of accumulation of both fat and muscle potein were faster during the latter part of the Knots' stay in Norway. Total mass shortly before departure average 187g (about 30% fat), sufficient for a flight of at least 3 000km.

The Nearctic breeding population had previously been thought to fly direct from western Britain and the Wadden Sea to east Greenland, with west Greenland and Canadian breeders stopping to refuel in Iceland before flying across the Greenland ice-cap. Our evidence shows that part of the Nearctic population uses northern Norway as final staging-post in spring, before flying to north-east Greenland and/or Canada, perhaps as a means of reaching Canadian breeding grounds without having to cross the Greenland ice-cap. Flight ranges of Knots leaving Balsfjord in late May are sufficient to reach all parts of the Nearctic breeding range.

At least 30 000 Knots use Porsangerfjord (c.250 km NE of Balsfjord) in spring. These birds arrive and depart at about the same time as the Balsfjord population. Observations in late May 1985 found no birds that had been dye-marked in Balsfjord (or elsewhere). The Porsangerfjord population may be discrete from that in Balsfjord, and its breeding grounds remain unknown.

Food and Feeding of Knots in north Norway in spring

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15 000 Knots *Calidris canutus* used Balsfjord, north Norway, for 2-3 weeks in May 1985, as a final stop-over at which to store fat and protein before flying to Nearctic breeding grounds. In contrast to previous years, few Knots fed on the main mudflats, Sorkjosen, at the base of the fjord. This paper gives a preliminary report on the food supply and feeding behaviour of Knots, and seeks reasons for this distributional shift. Knots fed chiefly on Baltic Tellins *Macoma balthica*. Feeding rates were lower at Sorkjosen than at sites where most Knots fed. Large *Macoma* (on which Knots prefer to feed) were relatively scarcer at Sorkjosen than elsewhere in Balsfjord. This difference in size distribution appears to result from late winter mortality, from oxygen starvation under ice, of large *Macoma*. The very late spring in 1985 resulted in more prolonged ice-cover on the mudflats at Sorkjosen than elsewhere in Balsfjord. However, despite this mortality, total *Macoma* densities at Sorkjosen remained very high, and densities of large *Macoma* too high to alone explain the differences in feeding rate.

Bird-density within feeding flocks was very high throughout Balsfjord, and especially so at Sorkjosen. One consequence of this tight packing was high rates of aggression over space within flocks, although no aggression over food was noted, in contrast to such aggression in winter at lower within-flock densities. Similarly, vigilance has been found elsewhere to be suppressed by Turnstones in spring (when they need to accumulate energy reserves rapidly), and to be highest at low flock densities. Although high vigilance rates did depress feeding rates, vigilance by Knots in Balsfjord was highest in the tightest flocks (i.e. the opposite to Turnstones' behaviour). Tight flocking with its consequent depression of feeding rates, may arise in response to frequent attacks by raptors. High predation pressure at Sorkjosen, in conjunction with reduced densities of large *Macoma*, resulted in relatively better feeding conditions elsewhere in the fjord. Such periodic deterioration in feeding conditions may have important consequences for the success with which waders can use such far northern stop-overs in spring.

First results of the WSG Spring 1985 East Atlantic Flyway Project

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At some 15 sites along the East Atlantic Flyway, more than 10 000 individuals of the target species (Ringed Plover *Charadrius hiaticula*, Grey Plover *Pluvialis squatarola*, Knot *Calidris canutus*, Sanderling *C. alba*, Dunlin *C alpina*, Bar-tailed Godwit *Limosa lapponica* and Turnstone *Arenaria interpres*) were captured, and at least 7 000 of them were marked with temporary colour-dyes and leg-flags. Regular counts were made at more than 80 sites, and on most of these sites regular checks for marked waders were carried out. More than 200 000 waders were checked in this way. During the 1985 spring, more than 60 sightings of waders moving between countries have been reported. A detailed summary report is being prepared for *WSG Bulletin* 46.

Utilisation of habitat by Ringed Plover (*Chardrius hiaticula*) breeding on South Uist, Outer Hebrides

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A) Introduction, and first detailed observations of brood movements (D.B. Jackson). Work by Wilson (1978), and the general survey of breeding waders made in 1983, led to the current studies of the use of various types and stages of cultivated land by Ringed Plovers breeding on South Uist.

Two main habitat types were studied:
'Club machair grassland': uniformly cultivated areas in its second or third year fallow, typically covering 30 hectares.
'Strip cultivated land': A similar area of land divided into strips about 30 metres wide. Adjacent strips or groups of strips are at different stages of crop rotation.

On a flat area of strip cultivated land studied in 1983, broods which hatched on ploughed land remained on or near it. Many broods hatched on fallow strips in the vicinity were moved to the ploughed land. Such movements occured in some cases over considerable distances (Jackson and Percival, unpublished data). These findings complement the observation (Wilson 1978), of the species' preference for nesting on ploughed land in strip cultivated areas.

B) Predation and Breeding Success (M.J. Wells)

In 1985, an area of club-machair, adjacent to several sites of strip cultivation, entered its second year fallow. Thus the survival of broods raised on ploughed strips, could be compared with those raised on fallow grassland with no plough nearby, but in the same general area. Predation pressure, chiefly by Common Gulls *Larus canus* and Black-headed Gulls *L. ridibundus*, was thus roughly constant for all broods compared. Brood success was monitored with a minimum of disturbance to the study sites. With the help of an empirical formula for determining date of hatching from egg weights which was derived in 1984, monitoring of nests and ringing of chicks were made by two or three visits to a nest. All examination of eggs and chicks were made under the cover of a mobile hide. Brooding adults generally returned to the nest less than a minute after the nest had been visited in this way. After the return of the adult, the nest was watched for ten minutes from a distance of 100 m to ensure no predator followed the disturbance. No catching of adults was attempted in 1985. Monitoring the chicks at hatching, weeks 1, 2 and 3 after hatching, and at other incidental occasions, especially in week 1, was also from the mobile hide, moved very slowly through the nesting area. Survival of broods on ploughed strips was significantly higher than on the fallow both through week 1 ($p<0.001$) and from week 1 onwards ($p<0.01$). The results were significant, both on the basis of directly monitored broods and by Mayfield analyses of survival (Mayfield 1975).

To investigate the reason for the high survival on ploughed strips, indices of brood suvival were devised and values calculated for all broods. There was no correlation between brood survival and hatch date. Mean and median hatch dates on plough and fallow were within two days of each other. Nesting Lapwings *Vanellus vanellus* concentrated on the ploughed strips in strip-cultivated areas. Both Lapwings (cf.

Drycz *et al.*, 1981) nesting at densities up to 15 pairs per ha., and Ringed Plovers, were active in mobbing and attacking aerial predators. Lapwings seemed more effective at this. Brood survival indices were highly significantly correlated ($p<0.0005$) with indices based on Lapwing density around and the proximity to, centre of activity of each Ringed Plover brood averaged over hatching and week 1. These correlations were significant both for all habitats together and for broods raised on fallow land. Ringed Plover proximity-density indices were also correlated with brood success ($p<0.05$) on fallow land.

The effect of Lapwing and Ringed Plover density on chick survival did not explain completely the increased survival on ploughed strips. There were several reasons for supposing that Ringed Plover chicks gained a direct advantage on ploughed strips:

1. At low Lapwing indices, on ploughed strips, brood survival was still high.
2. The highest brood suvival values at low Lapwing indices on fallow land occured when the brood spent at least a week on the barer, one-year, fallow, and on the occasion when the parents confined their chick to a rabbit burrow.
3. Chicks had more hiding places under corn or in furrows and were better camouflaged up to week 2 after hatching on the sandy soil of the plough than on the grass. Broods were frequently recalled to ploughed strips by their parents as soon as they strayed from them onto the grass.
4. In damper areas of cultivated machair, winter rain pools leave sand pits in summer. Successful parents led their chicks to such pits in one damp machair area studied in 1984. The chicks, feeding on the grass, hid on the sand when alarmed. This implies that broken ground is important to chicks, indeed survival on such damp areas of machair may be almost as high as in strip cultivated areas.

In 1984 growth rates of chicks on strip cultivation and on damp club-machair grassland were similar. Any foraging advantage (see Wilson 1978) to chicks on ploughed strips probably arises from their needing to feed for a smaller proportion of the day to achieve the same growth rate as on grassland.

Drycz,A., Witkowski,J. & Okulewicz,J. 1981. Nesting of 'timid' waders in the vicinity of 'bold' ones as an anti-predator adaptation. *Ibis* 123: 542-545.

Mayfield, H.F. 1975. Suggestions for calculating nest success. *Wilson Bull.* 87: 456-466.

Wilson,J.R. 1978. Agricultural influences on waders nesting on the South Uist machair. *Bird Study* 25: 198-206.

The breeding chronology of the Avocet

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The Avocet population of the Marais d'Olonne in Vendee (c. 300 pairs in recent years) is the next most important in France after that in the Camargue. The improvements carried out on the reserve of Chanteloup and the high density of birds (c. 10 pairs/ha) have allowed a very precise study of the breeding events each spring from 1977 to 1981, and in 1983.

Each year, the first clutches are laid between 29 March and 17 April (x = 10 April $\pm$ 6 days), and the last ones between 13 June and 3 July (x = 24 June $\pm$ 8 days). The seasonal distribution of egg laying dates varies markedly from one year to another. There is no precise relation between the mean laying date or the length of the laying period and the number of breeding pairs. Some Avocets can breed when one-year-old, but this has no major impact on the length of the laying period. The mean number of eggs in a clutch does not vary significantly throughout the season.

A rather large number of clutches are destroyed or deserted. Loss is mainly due to predation and destruction by Avocets themselves. Because of the reserve's salient features, destruction by flooding and desertions caused by human disturbance are uncommon. Late clutches (laid in June) are more subject to destruction than clutches laid in April and May. The risk of destruction of any clutch is not dependent on the stage of incubation.

The mean number of chicks hatched for each successful clutch is very significantly greater for early clutches than for those laid later in the season. Nevertheless, there are some variations from one year to another, which are perhaps linked to a more or less marked synchrony in laying. Generally speaking, clutch success (mean number of young hatched per clutch laid) decreases very steadily along the season.

Biological, ecological and ethological implications of the observed timing are not detailed here : these points will be developed in a paper to be published in the Office National de la Chasse's scientific journal *Gibier-Faune sauvage.*

Our observations have major implications in the census methodology applied to Avocet colonies. There is no precise relation between the number of breeding pairs and the number of adult birds sharing the area, nor between the number of breeding pairs and the number of birds sitting on their eggs at any date. There is an important risk for any estimate obtained by one census, or even by several censuses, to be very imprecise. A reliable estimate can be obtained only from daily observations of the breeding events.

Spatial organisation of an Avocet colony

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The breeding of the Avocet *Recurvirostra avosetta* has been studied for about ten years in the Marais d'Olonne, where the first colony of this species on the French Atlantic seaboard settled in 1952. Most of these birds breed in the reserve of Chanteloup, mainly on remains (small dikes) of salt-pans and, first of all, on artificial islets created in 1976 on two large ponds.

Each year, the colony spreads from 4 to 5 "epicentres", c. 500 m to 1 km apart. Following the improvements carried out on the reserve, the epicentres gradually moved from the old breeding places on dikes to the new islets which ensure a better breeding success. Only half of the favourable islets (islets where successful breeding has occurred at least once) are used each year. Since 1982, the spatial spread of the colony is almost the same each year. The Avocets breeding on the marshes form more than one group, each of which is related to an epicentre, but as a whole they form a single colony.

The spacing of nests has been studied on a sample of islets. On the small islets (less than c. 100 m^2), the colonisation appears to

progress always the same way. The distance between a new nest and the nearest old nest on the same islet is related to:

1. the density of former nests: when this density is low, the new nests are sited rather apart, but seldom as far apart as they could be. The new nests are sited between older ones, the distance between them decreasing as the density increases, and

2. the stage of incubation of older nests: the more the neighbour is at an advanced stage of incubation, the further away the new nest is sited. This may reflect the increasing aggression of breeding pairs during the incubation period.

3. On the small islets, the mean distance between nests is c. 1.5 m. Under this distance, 40% of the nests do not succeed, compared with only 10% of unsuccessful nests beyond this distance. Such failures are mainly due to the aggression between neighbouring pairs.

Thus the gregariousness of this colonial species and the tolerance between close breeding pairs act in an antagonistic way and give rise to the spatial organisation of the colony. In the case studied, this organisation seems far from the best, as there is an important loss related to nests sited too closely, whereas favourable islets remain uncolonized.

Evaluation and results of the 1985 breeding season's work on Black-winged Stilts in Greece

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An effort was made by ornithologists working on the greek avifauna to:

a) census the breeding Black-winged Stilt populations at some Greek wetlands; and

b) collect biological data. This was possible only for a population of 50 pairs breeding at a small northern Greek wetland.

At some internationally important wetlands Stilts have almost disappeared (e.g. Evros Delta) or changed their breeding patterns (e.g. Vistonis Lake). However at some other wetlands regarded as of lesser importance (e.g. Epanomi), Stilts were found to be breeding in much larger numbers than known previously.

Survey of breeding waders in France

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The national enquiry was carried out in 1983, mainly 1984, about 20 years after the first enquiry was made. Populations and their distributions were assessed as follows.

Oystercatcher. 790-850 pairs. Brittany holds 3/5 of the French population.

Black-winged Stilt. Very important "between year" variations: 1000-1400 pairs in 1983, 298-340 pairs in 1984, a decreasing of abour 70-75%. Bouches-du-Rhone, Gard and Herault departments have more than 50% of the national population.

Avocet. 1473-1633 pairs. Vendee department holds 30% of the population.

Little Ringed Plover. 2300-3000 pairs, mainly along the Loire, but also along Rhone river.

Ringed Plover. 166-186 pairs since the first breeding case in 1954. Brittany has about 80-90% of French population.

Kentish Plover. 1075-1160 pairs mainly in Manche, Morbihan and Bouches-du-Rhone departments.

Lapwing. 17 000-20 000 pairs. Huge decrease. Centre region remains the first region for this species with 30% of the national population.

Ruff. 5-13 pairs, mainly in Normandy.

Snipe. 100-185 pairs (but census very difficult) and probably up to 250 pairs. Mainly in Normandy and in North-east France.

Black-tailed Godwit. 38-51 pairs. Stable. Breeds mainly in 3 departments: Vendee, Finistere and Seine-Maritime.

Curlew. 1150-1280 pairs, mainly in the East (and in Alsace, 30%) but also in Normandy. Brittany is no longer the main region for this species.

Redshank. 429-496 pairs. Vendee hosts 70% of the French population, which is strongly decreasing.

Common Sandpiper. 250-375 pairs, but the total population is estimated at 500-650 pairs, mainly in mountainous regions.

Population trends (and their causes), and the protection measures that should be taken for some threatened species, are discussed.

Estimates of British breeding wader populations

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Recent work by the Wader Study Group (WSG) and the Nature Conservancy Council (NCC) both in the Uists and elsewhere within Britain has caused British wader workers to re-assess their assumptions about the breeding population sizes of individual wader species. Following prompting at the Worcester Conference of the WSG I have attempted to collate population estimates for all British breeding wader species. Many of the data have come from unpublished survey work carried out by the NCC and the Royal Society for the Protection of Birds (RSPB), as well as from individuals and published sources.

All population data are as contemporary as possible, with estimates for all but Woodcock *Scolopax rusticola* taken from >1980 data sources. Population estimates given in Sharrock (1976) were used for comparison. The last decade has seen the breeding of several new wader species, but no losses to the breeding lists. A summary table of wader numbers is given below. For species such as Snipe *Gallinago gallinago* the declines compared with Sharrock (1976) are real. In other cases, extensive and detailed surveys have indicated that Atlas estimates were too low, and based upon insufficient data. It is thought that current population estimates are the best obtainable and represent close approximations to the actual breeding populations.

Sharrock,J.T.R. 1976. *Atlas of breeding birds in Britain & Ireland.* BTO/IWC. Tring.

Table. Wader population estimates for Britain and Ireland

Species	Population estimate	Atlas estimate	Year of estimate
Oystercatcher *Haematopus ostralegus*	36-46 000	>30 000	1980s
Black-winged Stilt *Himantopus himantopus*	0-1	0	1983
Avocet *Recurvirostra avosetta*	c175	n/a	1984
Stone Curlew *Burhinus oedicnemus*	c300	300-500	1980s
Little Ringed Plover *Charadrius dubius*	c475	c400	1984
Ringed Plover *Charadrius hiaticula*	c8600	<8000	1984
Kentish Plover *Charadrius alexandrinus*	1	0	1980s
Dotterel *Charadrius morinellus*	100-150	60-80	1980s
Golden Plover *Pluvialis apricaria*	c28 000	<30 000	1980s
Lapwing *Vanellus vanellus*	c215 000	>200 000	1981-4
Temminck's Stint *Calidris temminckii*	2-4	1-2	1984
Purple Sandpiper *Calidris maritima*	1-2	0	1984
Dunlin *Calidris alpina*	c9350	4-8000	1979-84
Ruff *Philomachus pugnax*	1-10+	c20	1984
Snipe *Gallinago gallinago*	c40 000	80-100 000	1981-84
Woodcock *Scolopax rusticola*	10-45 000	10-45 000	1970s
Black-tailed Godwit *Limosa limosa*	50-60	60-80	1980s
Whimbrel *Numenius phaeopus*	370-400	<200	1980s
Curlew *Numenius arquata*	45-50 000	40-70 000	1980s
Redshank *Tringa totanus*	33-36 000	38-48 000	1980s
Greenshank *Tringa nebularia*	c1550	400-750	1980s
Wood Sandpiper *Tringa glareola*	6-10	3-5	1984
Common Sandpiper *Actitis hypoleucos*	22-25 000	50 000	1980s
Red-necked Phalarope *Phalaropus lobatus*	28-32	c45	1984

The annual cycle of waders in the Marais d'Olonne, Vendee

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Weekly counts of waders have been conducted since 1976 in the southern part of the Marais d'Olonne (Vendee). The survey area, which includes the Reserve de Chanteloup, covers 625 acres and consists of brackish ponds. From March to October, the water-level is variable but always shallow, becoming higher and fairly constant in winter. The ponds in the reserve are managed for birds; elsewhere ponds are used for extensive fish farming.

The counts have three objectives: 1) to estimate the importance of the Marais d'Olonne for waders; 2) to describe precisely their annual cycle in this locality; and 3) to bring to light the possible long-term evolution in numbers.

Objectives 2 and 3 are important only for species that are sufficiently regular and abundant. Only 11 of the 35 species observed in the Marais d'Olonne are discussed here.

The annual cycle observed for some species is not representative of their regional status, either because they nest in large numbers (Avocet, Black-winged Stilt) or because the local environment is relatively unsuitable in winter for species which overwinter in large numbers on a regional scale (e.g. Dunlin).

The only waders overwintering in good numbers are Lapwings and Common Snipe, which feed outside the marshes and for which the reserve acts only as a day roost; and Avocets which can feed in relatively deep water.

The Marais d'Olonne is therefore interesting primarily because of breeding Avocets and Black-winged Stilts and because it is used as a stopover by migrating waders. It is of particular importance for Whimbrel in spring (see Trolliet elswhere in these abstracts) and noteworthy for Black-tailed Godwit, Ruff, Redshank, Spotted Redshank and Greenshank.

The annual peak in numbers occurs in spring for most species, but the Common Sandpiper shows a summer peak. When possible, annual cycles are compared to those from other French and European sites.

This survey did not reveal any marked changes in numbers of waders, except for the Avocet.

Estimating the percentage of Icelandic Redshanks in mixed populations

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Redshanks from the Icelandic and British breeding populations spend the winter together on the British coasts, but the proportions of these two populations are unknown. However the biometrics of the two populations are different. Therefore samples of breeding birds were caught in Iceland and Britain and measurements of wings, bills and feet were used in two methods to determine the percentage of Icelandic and British birds in a mixed sample.

Age and sex criteria of Common Snipe

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541 tails, 127 wings, 470 measured corpses and moult data from 168 birds were used to study sex and age criteria for the Common Snipe *G. g. gallinago*. These birds were collected in Western France, mainly between October and February.

The only discriminant biometric data for ageing is the outertail feather length. As shown by OAG Munster (1975), unmoulted juvenile rectrices are shorter, with a terminal black tip generally visible even on worn feathers.

This distinction made, the length of extracted tail-feathers was measured for 380 sexed birds. The following values were used to arbitrarily sex the birds: under 57 mm for juvenile (black tipped) females; under 63 mm for other females (adults and juveniles after moult); upper values concerned males. By comparison with birds sexed by autopsy, 80% of the birds were thus correctly sexed.

The colour of the outermost tail-feather (whiter and contrasting with the other rectrices in males) gave correct sexing c. 92% of the 380 birds.

Wing coverts, tertials, underwing coverts and rectrices can be used for ageing. In birds in juvenile plumage, median coverts have a whitish edge and a black terminal line; rectrices have a black tip, underwing coverts are brown-barred; tertials are pointed and worn. Juvenile tertials and coverts are more colourful than adult-type ones.

The post-juvenile moult occurs from July to November and varies in timing and extent according to individuals.

The prenuptial moult begins mainly in early February, so juvenile criteria are no longer of use after January.

The reliability of these age criteria was controlled by noting the presence/absence of *Bursa Fabricius* for 55 juveniles and 20 adults.

This showed the presence of juvenile wing coverts and rectrices to be discriminant whereas adults can show worn tertials or barred underwing coverts. However, 3 juveniles in our sample had all adult-type coverts and rectrices.

According to our sample, median coverts appear to be the most useful criteria to age Common Snipe. This gave the correct age for 51 juveniles and 23 adults (including 3 juveniles misclassified as adults), with only one bird being completely undeterminable, i.e. near 95% correct age identification in our sample.

The data obtained by OAG Munster on German moulting areas show a high proportion of juveniles having completely moulted the feathers used for age determination. In our sample obtained in winter in Western France, few of the juveniles aged by *Bursa Fabricius* had already moulted all these feathers. This difference prompts two possible explanations:

some of the completely moulted juveniles have lost the *Bursa Fabricius*.

the observations at Munster do not concern the birds which, suspending their moult earlier, are already on winter grounds.

These results applied to the 90 ageable birds of our sample give a ratio of 1.8 juv./ad. As juveniles are more easily captured or killed, adults do not appear to be under-represented.

The moult pattern, well studied between July and September at Munster, needs to be measured from larger samples of known-age birds covering the whole wintering season.

Diet of Common and Jack Snipes

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Stomach contents of 348 Common Snipes *G. gallinago* and 76 Jack Snipes *Lymnocryptes*

minimus were analysed. These birds were killed during the hunting season on several types of French wetlands.

The different items found in Snipe stomachs were mineral items (grit, shell fragments and lead shot), vegetable items (vegetative parts and seeds of several species), and animal prey (mainly worms, molluscs, insects and crustaceans).

The frequency (%) of each prey has been calculated, and their role is discussed. Grit is used to triturate the hard parts of food, but some calcium-rich items can be assimilated with the help of stomach acidity. Lead shot are probably ingested by error (mistaken for grit, seeds or small gastropods). They may cause lead poisoning. Plant fibres are a binder in rejected pellets. Until now, seeds were not considered as food for Snipes. But their number and high frequency in stomachs, added to their high energy value, lead to the conclusion that seeds may be deliberately taken as food items.

Animals are an important part of the diet of Snipes. Insects are intensely taken in all the localities studied. Diptera and aquatic Coleoptera are the most frequent. Worms are also often taken, and their frequency may be under-estimated because of methodological biases. Small gastropods can be taken in localities where they are abundant. Other prey are more rarely found: crustaceans, spiders and small fishes.

In the same locality, the Jack Snipe's diet is less varied than that of the Common Snipe. The Jack Snipe seems to be more interested by small gastropods. The Common Snipe's diet changes during the course of the hunting season, according to the availability of local prey.

The amount of food needed by a Common Snipe is not known but can be estimated from energy appraisals. The energy cost of each kind of activity can be calculated according to its importance in the time-budget and in comparison to basal metabolism. A simplified model was used to estimate Snipes' energy need. The need for food being important, Snipes must catch a considerable number of preys to survive (several thousands of seeds or insects a day).

A wader-ringing project in the Dutch Delta area: a study of the consequences of intertidal area loss due to the construction of a storm-surge barrier

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With a midwinter maximum of nearly 200 000 birds the Oosterschelde (part of the Delta area, SW Netherlands) is one of the most important areas for waders in Europe. Currently a 9 km long storm-surge barrier in the mouth of the estuary, and two secondary dams in the eastern and northern branches, are under construction. Although the Oosterschelde will remain tidal, the consequence of these hydraulic engineering projects will be a 40% reduction in intertidal area.

Although information on wader numbers during the 1960s is limited, there is strong evidence that birds expelled by the closing of the Haringvliet-Hollandsch Diep and the Grevelingen (the latter had supported about 50 000 waders in midwinter) were absorbed by the two remaining and most important areas, the Oosterschelde and the Westerschelde.

One of the studies started to evaluate the impact of the Oosterschelde project involves large-scale ringing. In the first season (1984/85) about 8 300 waders have been marked, about 90% being Oystercatchers.

The consequences on Oystercatchers *Haematopus ostralegus* of a special type of feeding area reduction, the freezing of the tidal flats during 2 cold spells in the 1984/85, were assessed. About 1500 Oystercatcher victims were found, of which 1066 could be dissected. Despite their low presence in the population (4-5%), about 60% of Oystercatchers found dead were juveniles. Females were affected more as juveniles and sub-adults, and males as adults. Total losses of adults were relatively small. The survivors were able to maintain high weights during the cold spells.

The importance of the Baie de l'Aiguillon for wintering waders

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The Baie de l'Aiguillon with its 8000 ha of tidal flats is a very important site for wintering waders. It is the most northern part of the Waddens that covers 24 000 ha along the "Centre-Atlantique" coast.

This study analyses the changes in the numbers of coastal waders wintering in the Baie de l'Aiguillon since 1962, and especially since 1977, considering it in its local and national context, before examining the international importance of the site.

The global average population has decreased from 81 320 birds during the years before 1968 to 41 000 between 1977-1985. Since 1977, no significant changes can be seen in the wintering population, in opposition to what happens on the "Charente" coast (x = 27 930). This tendency can also be observed in the total French population (x =334 600, January). Only the Avocet has increased significantly between the two periods from averages of 3120 to 6260. The numbers of the majority of the species have strongly decreased between these two periods. Knot decreased from averages of 22 500 to 4800. Wintering numbers of Black-tailed Godwits *Limosa l. islandica* has been reduced by half (from averages of 12 300 to 6110).

Between 1977 and 1985, the Baie de l'Aiguillon met the national importance criteria for 10 species. In particular it has 79% of the French wintering population of Black-tailed Godwit, 47% of the Avocet population, 26% for the Knot and 21% for Grey Plover.

On the international level between 1977 and 1981 the Baie received 1.2% of the wader populations wintering in Western Europe. It received 33% of the wintering population of Avocet in Western Europe, 21% of the Icelandic population of Black-tailed Godwit and 7% of the population of Grey Plover. The average number of Knots represents 1.5% of the European wintering population.

Importance is given to the changes in the numbers of birds in relation to the measures of protection that have been taken on the Atlantic coast since 1973. There is no relation between the changes in the wintering populations of waders of the Baie and those of the "Charente" and elsewhere around the French coast.

The factors responsible for the changes are not known with certainty; this points up the need to begin research on the general changes in the Baie and the ecological needs of wintering waders, especially about the amounts and the

changes in the food supply. This should allow us to understand the future of this important site in France and Europe.

The BTO/WSG Winter Shorebird Count: some first results

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During the period 15 December 1984 - 31 January 1985, a survey of wintering waders was made on the entire non-estuarine coast of Britain and N. Ireland. More than 2000 ornithologists took part in the survey and 80% of the overall 13 300 km of open shores were surveyed.

Almost 300 000 waders were recorded, the highest concentrations being around the Irish Sea, the Uists and NE England/SE Scotland. The lowest densities were in S. England, Shetland and the mainland West coast of Scotland. Oystercatchers and Curlew were by far the most abundant species in all areas, although very large numbers of Turnstone and Ringed Plover were also found.

RÉSUMÉS DES PRESENTATIONS AU CONGRÉS ANNUEL DU WADER STUDY GROUP A LA ROCHELLE, FRANCE, LE 5 ET 6 OCTOBRE 1985

Etudes sur la migration de limicoles au Banc d'Arguin, Mauretanie, en printemps

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L'étude a commencé en debut mars pour se terminer en debut mai 1985. Durant cette periode l'effectif des captures de 14 espèces de limicoles se chiffrait à 1433 individus. L'ensemble des mesurations ont été effetués sur tous les oiseaux dont la majorité ont éte peint en couleur temporaire, munie d'une bague à la patte portant un plastique. Pendant les deux mois après le travail effectués sur le terrain, plus de 20 individus entre 8 espèces de limicoles ont été observé en Europe. Les individus observés nous ont permis de comprendre la methode de migration printannière des espèces qui hivrnant au Banc d'Arguin. Des comptages regulier ont permit de déterminé les périodes de départ des espèces typiquemment hivernant au Banc d'Arguin tels que Bécasseau variable *Calidris alpina*, Bécasseau maubeche *C. canutus*, Barge rousse *Limosa lapponica* et Courlis cendré *Numenius arquata*. Les résultats des comptages et marquages, bien que les observations des groupes en départ ou passage suggèrent que Bécasseau minute *Calidris minuta*, Bécasseau cocorli *C. ferruginea*, Chevalier aboyeur *Tringa nebularia* et Tournpierre *Arenaria interpres* traverse la région en grand nombre. Un rapport détaillons les donnés sere publier dans le *WSG Bulletin*.

Etudes sur la migration des Chevaliers combattants hivernant au Sénégal

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Aux mois de février et mars, un groupe d'ornithologues de la Station Biologique de Munster est allé au Sénégal, plus précisément au delta du fleuve "Sénégal", site autrefois très important pour l'hivernage des Chevaliers combattants afin de faire des recherches sue leurs effectifs et leurs voies de migration. Les comptages et observations montrent que la sècheresse et le drainage one causé diminution de la population d'un million d'individus dans les années 1970 à environ 80 000 oiseaux en hiver 1985.

Pendant le séjour au Sénégal, 700 Chevaliers combattants ont été capturés pour leur mettre des couleurs et les marquer avec des bagues de couleur - en espérant les revoir en Europe. A ce dessein, quelques sites en Europe ont été visités, qui sont probablement très importants pour les oiseaux: le delta du Po en Italie, le parc national "Hortobagy" en Hongrie, la province Friesland aux Pays-Bas et quelques autres sites où les membres du programme "Inland wader counts" ont noté les Chevaliers combattants. Selon nos recherches, les Chevaliers combattants prennent le chemin de l'Ouest. Ils passent par les Pays-Bas et l'Italie mais ne sont pas observés dans les pays de Sud-Est. Mais it faut encore discuter le problème suivant: de combien de sites les Chevaliers combattants ont-ile bsoin pour aller du Sénégal (lieu d'hivernage) à l'Europe (lieu de nidification).

Le stationnement prénuptial du Courlis Corlieu (*Numenius p. phaeopus*) en Vendée

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Durant leur migration prénuptiale, les Courlis corlieux *Numenius p. phaeopus* se rassamblent traditionnellement sur quelques zones d'étape, dont les plus importantes sont en Hongrie et en Europe de l'Ouest, incluant la Vendée (Ouest de la France).

En Vendée, les différentes concentrations totalisent de l'ordre de 20 000 à 23 000 individus au moment du pic d'effectif. Ce pic à la fin d'avril, sòit a la même période que sur les autres zones de stationnements européennes. La période de stationnement s'étend du 10 avril au 10 mai.

La Vendée apparait Jonc comme l'une des trois principales zones de stationnement, rassemblant plus du quart de l'effectif total présent simultanément sur les dortoirs connus.

Les principaux dortois vendéens sont sur les vasières de la baie de l'Aiguillon, et sur des plans saumâtre peu profonds dans le marais d'Olonne.

La taille des vols arrivant aux dortoirs est très variable, autour d'une moyenne de 29 individus. En début de période, la plupart des arrivées ont lieu avant le coucher du soleil; ensuite, elles sont plus tardives et se poursuivent jusqu'à le nuit.

Sur les lieux de dortoir, des départs, considérés comme migratoires, sont observés quotidiennement, de jour et de nuit.

Pendant la journée, les oiseaux se dispersent s'alimenter dans un rayon de plus de 15 km