



line with the WSG and the IWRB Constitutions.

7. That the WSG-IWRB Liaison Officer shall be a voting member of the IWRB Executive Board and an elected officer of the WSG and hence a member of the WSG Executive Committee.
8. That the WSG-IWRB Liaison Officer should as far as possible be working professionally in the field of the WSG and have the moral/logistical support of his/her institution. Where possible time should be allocated by the host institute for the execution of WSG-IWRB liaison. Such activities should bring benefits to the host institute, the IWRB and the WSG.
9. That the former IWRB Wader Research Group will cease to exist, and its role will be continued by the WSG through the WSG-IWRB Liaison Officer.
10. In line with the roles in other IWRB Research Groups, that the work of maintaining the IWRB Wader Database will be undertaken by an IWRB Wader Database Co-ordinator, a role separate from that of the WSG-IWRB Liaison Officer. The IWRB Wader Database Co-ordinator will provide at least annually reports on the database for publication in the *Wader Study Group Bulletin*.
11. That WSG will provide IWRB Headquarters, and Research Group Co-ordinators and Standing Committee members via IWRB Headquarters with complimentary copies of *WSG Bulletin*. IWRB Headquarters will provide the WSG-IWRB Liaison Officer with complimentary copies of *IWRB News* and technical publications.
12. That the WSG-IWRB Liaison Officer will co-ordinate links with Wetlands for the Americas, the Asian Wetland Bureau and the Australasian Wader Studies Group for the purposes of IWRB Research Group liaison, and will identify and agree with IWRB a research group co-ordination structure to maintain these links.

13. That this Memorandum shall become effective from the date(s) of signature of both parties and shall be valid in the first instance for a period of three (3) years from the date(s) of signature.
14. That this Memorandum may be terminated by either party subject to written notice of a period of at least six (6) months.
15. That nothing in this Memorandum shall affect in any way the independent status and role of the WSG.

ANNEX: GUIDELINES FOR THE ACTIVITIES OF THE WSG-IWRB LIAISON OFFICER

The activities of the WSG in relation to its discharge of the role of an IWRB research group shall be discharged by the WSG-IWRB Liaison Officer. The activities are as follows:

- To prepare a triennial programme of activities for incorporation in the IWRB Forward Plan.
- To submit a triennium report on the activities of the WSG to each ordinary meeting of the IWRB Executive Board through the IWRB Research Group Report.
- To liaise on a regular basis with the IWRB Wader Database Co-ordinator and the IWRB Headquarters; to keep the WSG Executive Committee informed about IWRB activities, and to keep IWRB informed about WSG activities.
- To inform IWRB on WSG projects, workshops/symposia, conferences and publications, to co-operate in joint projects and to summarise information in joint publications.
- To maintain a list of correspondents, and annually to provide IWRB Headquarters with an updated address list of these correspondents.
- To arrange circulation of *WSG Bulletin* to IWRB Headquarters, to the other IWRB Research Group Co-ordinators and to members of

the IWRB Standing Committee.

- To participate in meetings of the IWRB Executive Board, and in regional and scientific meetings whenever possible.
- To provide specialist advice to IWRB Headquarters staff and other members of the IWRB network.
- To assist IWRB headquarters in raising funds for joint IWRB-WSG projects and activities.
- To provide articles on WSG activities for *IWRB News*, and to liaise with IWRB to provide articles on IWRB activities and the IWRB Wader Database for the *WSG Bulletin*.
- To stand for nomination on the IWRB Standing Committee.

***Wader Study Group
Annual Meeting 1993:
Ipswich, Suffolk***

The highly successful 1993 WSG meeting was held at St. Joseph's College, Ipswich, England. The Suffolk Wildlife Trust once again played host to the meeting., having also organised the 1988 meeting at the same location. The great success of the meeting, which had the largest and most geographical diverse attendance of any WSG meeting yet, was in large part due to the great care and attention to detail on the part of the SWT organisation team.

A full report was on the meeting and excursions (including the first ever WSG official excursion to a brewery!), and the abstracts of papers and posters presented at the meeting will be published in *Bulletin 72* in April.

On Monday 1 November, following the weekend meeting, a one day workshop on Dunlin migration patterns was attended by a large number of participants. The abstracts of this workshop are presented in this *Bulletin*.



Understanding patterns in Dunlin migration

Abstracts of talks given at a WSG workshop on 1 November 1993, Ipswich

Wintering Dunlins in Northern Adriatic

Nicola Baccetti¹, G. Cherubini¹, A. Magnani² & Lorenzo Serra¹, ¹INFS. via Ca' Fornacetta 9, I-40064 Ozzano Emilia Bo, Italy. ²via Repubblica 101, I-47046 Misano Adriatico Fo, Italy.

Northern Adriatic coastal wetlands hold in winter 30,000-40,000 Dunlins, which represents around 15% of the Mediterranean wintering population. Two main habitats support our population: tidal areas of coastal lagoons or river mouths, and salinas.

Mist-netting activities have been carried out since October 1988 in Cervia salinas and since January 1990 at a tidal roost in the Lagoon of Venice (Sant'Erasmo). In the latter site trapping has been regular, at least once a month, at spring tides. The general total of birds ringed at both sites is 2,318, up to June 1993. Dunlins were censused year-round in Cervia (every week), while complete figures in the Lagoon of Venice were obtained only at midwinter, with partial counts just covering Sant'Erasmo roost being collected before most trapping nights.

Basing on the field results achieved so far, our first aim is featuring our wintering population as far as origin and movements are concerned. Recoveries, biometrics and frequency of "adult buff" birds are described to this end. Wing moult details are considered, as a further key element to explain presence soon after the breeding season.

Counts, local retraps and resighting of colour marked (dyed) individuals indicate that the birds leave the wintering grounds in April and May. Autumn movements are less clear, as the bulk of arrivals seem to fall as late as October, also in years when the number of juveniles is low. One of our main gaps in knowledge is actually where most adults belonging to our wintering population spend the moulting season.

The fall and rise of Dunlin populations wintering in the United Kingdom

Nigel Clark, BTO, The Nunnery, Nunnery Place, Thetford, Norfolk, IP24 2PU, UK.

During the mid 1980s there was considerable concern about the decline of

Dunlin populations wintering in the United Kingdom. During the mid 1970s the national index had been around 115, this had declined to just 55 by 1987. This led to an analysis of the declines on British estuaries which implicated the spread of *Spartina* in reducing the wintering population in the United Kingdom (Goss-Custard & Moser 1988). Since that time, the population has increased and by the 1991/92 winter the index stood at 90. The reasons for the decline and subsequent increase are unclear. However, it gives the opportunity to test whether the encroachment of *Spartina* has reduced the capacity of sites for wintering Dunlin. In addition, it gives the opportunity to see whether there are any regional or habitat factors which affect the numbers of Dunlin wintering in different parts of the UK.

Fluctuations in numbers of juveniles in Dunlin and other waders resting on Helgoland, German Bight

Volker Dierschke, Institut für Vogelforschung, Vogelwarte Helgoland, D-27494 Helgoland, Germany. Present address: Vogelwarte Hiddensee, D-18565 Kloster, Germany.

During autumn wader migration the shoreline of Helgoland (German Bight) is used as resting site only by juveniles. Therefore, the number of resting waders should indicate roughly the breeding success of these species. For each year and species an index was calculated by summing up the maximum counts of all five-day-periods during juvenile migration (late August to early October). In Dunlin these indices show an irregular pattern which might be due to its wide breeding area. Some Helgoland migrants which are originated in northern Siberia only (Curlew Sandpiper, Knot) show a three-year-cycle of breeding success similar to that of Dark-bellied Brent Geese.

Financial support was given by the "Freunde und Förderer der Inselstation der Vogelwarte Helgoland".

Breeding plumage in Dunlin: a worldwide overview

Slides from birds of all breeding populations are shown.

Meinte Engelmoer, Bentismaheerd 39, 9736 EC, The Netherlands.

Morphometrics of breeding populations of Dunlin

Meinte Engelmoer, C.S. Roselaar & Ebel Nieboer.

The complex nature of the systematics in the Dunlin is well known. We measured birds from nearly all breeding populations.

Analysis was done with several regularly used multivariate techniques as well as with the recently developed POSCON-methods. We concentrate on the discussion of some recent findings and some problematic situations, as there are:

1. the taxonomy of the E Siberian and Alaskan breeding populations;
2. the taxonomic position of *C. a. centralis*;
3. the measurements to be taken in order to distinguish between *C. a. arctica*, *C. a. schinzii*, *C. a. alpina*, (and *C. a. centralis*).

Some additional comments concern: 1. measuring the white vane on the 4th innermost primary (P4), and 2. the occurrence of primary moult in different populations during breeding. For trapping studies it is most important to find a cheap and convenient method for sexing Dunlins, while being handled. If such is possible, morphometrics will be much more useful to reveal migration patterns and breeding origins.

Breeding conditions in the northern tundras as related to number of juvenile Dunlins ringed at the Vistula Mouth (Southern Baltic, Poland)

Jadwiga Gromadzka, Ornithological Station, Gorki Wschodnie, 80-680 Gdansk 40, Poland.

The breeding conditions for waders in territories from where Dunlins are migrating to Southern Baltic, expressed by two kinds of estimation for six years, are compared with the number changes of juvenile Dunlins ringed in the same years in one of southern Baltic staging posts during autumn migration - at the Vistula mouth. Number changes of ringed juveniles at the Vistula mouth from year to year seem to reflect the natural fluctuations of age structure of flocks migrating through the ringing area.

Wing plumage patterns as connected with the age and time of the year

Jadwiga Gromadzka

The colour patterns of the Dunlin wing are described indicating age peculiarities and those not associated with the age. The plumage pattern of the wings of the Dunlin 2 years old (i.e. being in 3rd calendar year) is discussed. Is it possible to recognize 3rd year Dunlins?

Differences in habitat use of juvenile and adult Dunlins in the Schleswig-Holstein Wadden Sea

Klaus Günther & Hans-Ulrich Rösner, WWF-Wattenmeerstelle, Norderstr. 3, D - 25813 Husum, Germany.



In 1991 we started to count proportions of juvenile Dunlins in the field. It was aimed to measure breeding success as it was done since many years in Brent Geese in the Wadden Sea. By counting these proportions we found distinct differences in age distribution among different tidal habitats.

There is a high separation between juvenile and adult Dunlins especially during low tide. Habitats with high proportions of juveniles are usually "marginal" tidal flats (which are in most cases close to the dike), land reclamation fields at the edge of the salt marsh and water storage basins in the hinterland. In contrast to this adult Dunlins use larger homogeneous tidal areas and feed there in large flocks. These flocks include a low number of juveniles. "Juvenile flocks" and "adult flocks" might mix for some time during rising or falling tide. However, the segregation again is visible at the high tide roost: juveniles tend to continue with feeding while adults roost.

This pattern was observed from beginning of August until at least middle of October. There are some hypotheses which could explain these differences. Among them are differences in experience, feeding necessities or competitive behaviour between juveniles and adults. Also differences in quality of the habitat being used such as food availability or the sensitivity against predators and disturbances might be important.

By individually colour banding juvenile Dunlins we found that these show a high site fidelity and a long staging time.

Low breeding success and high population size of Dunlin in the early seventies: a case of density-dependence?

Tom M. van der Have¹, Gerard C. Boere, Meinte Engelmoer & Ebel Nieboer,
¹Furkabaan 674, NL 3524 ZL Utrecht, The Netherlands.

Population indices for wintering Dunlin in Britain and staging in autumn in the Wadden Sea showed a clear peak in the early 1970s. The decline ever since has been linked to the increase in *Spartina* cover of Dunlin foraging habitat at wintering sites in Britain limiting the carrying capacity of estuaries during winter (Goss-Custard & Moser 1988). The population peak in the early 1970s coincided with two years of low spring weights and low breeding success. However, the relation between spring weight and breeding success failed to appear in consecutive years. Interpretation of weights in spring and proportion of juveniles in autumn is complicated by differential migration of different populations and age-classes in both seasons. Despite this, it is argued that low weights and low breeding success during the early 1970s could be caused by density-dependent effects on foraging success and consequent weight

increase during spring migration. The absence of this correlation since then, might be the result of limits to population size in winter, independent of food constraints during spring migration.

Moult in migrating Dunlins - its occurrence in different years and at different sites in the Baltic

Noél Holmgren, Dept. of Ecology, Lund University, Ecology Building, S - 22362 Lund, Sweden.

Studies of autumn migrating Dunlins in the Baltic has revealed a mixture of moult strategies. Some of the birds have initiated moult and are actively growing wing feathers, while others delay their start of moult until they have reached tidal areas outside the Baltic. The moult may reflect bottlenecks in the population dynamics whereas the variation in moult strategies may be due to population differences or individual differences within populations. The picture of the ultimate and proximate causes for the variation is far from complete. The present knowledge is briefly reviewed and future analyses are suggested to make the picture more complete.

Dunlin migration in the Southern Baltic in 1991 and some general conclusions

Jan Kube¹, Hans-Ulrich Rösner, Henning Behmann, Ulrich Brenning, Jadwiga Gromadzka, ¹Thomas-Müntzer Platz 64, D - 18057 Rostock, Germany.

Dunlin migration studies in the Southern Baltic have a long tradition. Counting data and thousands of ringed birds related to a well accepted scheme of the phenology and a hypothesis about differences in the migration of adults and juveniles. Whereas adults try to reach the Wadden Sea by a non-stop flight from the breeding area, for juveniles it is suggested that they start their first autumn migration by taking only a rough general direction without aiming to reach particular resting sites. They probably find these by trial and error, visiting only the suitable sites again in the following years (Rösner 1990). For 1991 all available counting data from the Schleswig-Holstein Wadden Sea, the German Baltic coast and the Vistula mouth, juvenile-counts from various sites and ringing results from Langenwerder Island (Germany) and Vistula mouth (Poland) were combined for a more detailed interpretation of the pattern of migration in that part of their flyway.

Within the Baltic the phenology and intensity of migration were similar at almost all sites. No connection with the phenology of the Schleswig-Holstein Wadden Sea was found. Also the enormous number of juveniles was missing in the Wadden Sea. Estimates for turnover rates in the Southern Baltic support the hypothesis of Rösner (1990).

Recent trends in Dunlin numbers in the Schleswig-Holstein Wadden Sea

Hans-Ulrich Rösner, WWF-Wattenmeerstelle, Norderstr. 3, D - 25813 Husum, Germany.

Dunlin numbers have been declining in the United Kingdom for many years (see talk of N. Clark). At the end of this declining period in 1987 a project aiming at monitoring migratory bird numbers has also been started in the Schleswig-Holstein part of the Wadden Sea. Since then Dunlin numbers in this part of the Wadden Sea has dramatically increased. This parallels the development in the UK, where at the same time numbers also have started to increase. The talk describe the numbers, the method of calculation and compares the figures with figures from other parts of the flyway.

Juvenile proportions of Dunlin along the East-Atlantic Flyway in relation to breeding success of other arctic birds and lemming cycles

Hans-Ulrich Rösner.

Dunlins of subspecies *C. a. alpina* have a very large breeding area. It is not clear whether birds observed at different parts of the Flyway have also different breeding origin. Proportions of juveniles and counts measured with different methods along the flyway were transformed to a juvenile indices for each site, thus probably expressing the breeding success. Site indices were compared in order to detect similarities between sites. Site indices as well as the mean juvenile index were compared with changes in the population index at different migratory and wintering sites (Schleswig-Holstein Wadden Sea, United Kingdom, France, Portugal). Juvenile indices were further compared with breeding success of other species (geese and waders) as well as with highs and lows of lemming population.

Population size of Dunlin on the East Atlantic Flyway

Cor Smit, IBN/DLO, PO Box 167, NL -1790 AD Den Burg, Texel, The Netherlands.

Migrating Dunlins in North Norway with special reference to the autumn passage in the county of Troms

Karl-Birger Strann, NINA, c/o Tromsø Museum, N-9006 Tromsø, Norway.

Dunlins *Calidris alpina* migrate through North Norway on their way to and from the breeding grounds in Finnmark and further east in Russia. During the early 1980s members of the Tromsø Ringing Group made regular counts of both spring and



autumn migration at Tisnes, Tromsø (69°40' N, 18°40' E) with a special focus on wildfowl and waders. The most numerous wader during spring was the Knot *Calidris canutus* with between 15,000 and 25,000 birds followed by the Dunlin estimated to some 5,000 individuals. Dunlins dominated the autumn passage but the number of birds differed between years. In the peak year of 1985 we counted more than 4,000 Dunlins migrating through the study area during September alone. On 15 September a flock of some 3,000-4,000 Dunlins was observed at a mudflat in Balsfjord indicating that a substantial number of birds passed through the area this autumn.

The spring passage in Troms is very short and intensive. The first small flocks turn up just after 10 May increasing rapidly in numbers reaching the peak in the very last days of the month. By 10 June most of the passage is over, but smaller groups of birds can still be seen on some of the larger mudflats.

The autumn passage starts in late July and lasts normally until late October. If the autumn is mild Dunlins will normally stay until mid November before moving further south. The number of birds in autumn differs strongly between years. Weather conditions and the production of young are probably the most important factors causing this variation. In all years we found three obvious peaks during autumn passage; the first was in mid August, the second in September and the last in early October. The flocks in July and August held some 10-15% adults, later all flocks held only young birds.

There was an increase in bill length between August and September/October. The mass increased with 7% from August to September and with 30% from August to October.

Remarks on geographical distribution and subspeciation in Palearctic Dunlin

Pavel S. Tomkovich, Department of Ornithology, Zoological Museum of Moscow State University, Herzen Street 6, Moscow 103009, Russia.

The distribution of Dunlin is not uniform within its breeding range: densities are higher in some areas, and low arctic, subarctic and coastal temperate populations can also be recognized. Recognition of subspecies is based on a number of morphological signs and can be supported by ecological differences in several cases. But the level of divergence between populations and subspecies is variable. There is lack of study skins from some areas still to solve problems of geographic variability left. Passways of different populations overlap broadly with one exception, when Kolyma River, NE Siberia, separate populations breeding and migrating Dunlins of the Far East and of more western areas. The current distribution of Dunlins

can be explained at least partly by species history, in particular by tundra refuges and more southern waterbodies available for waders during last glaciation epoch.

Survival rates of a wintering Dunlin population at a coastal estuary: a fourteen year perspective

Nils Warnock, Wildlife, Fisheries and Conservation Biology, University of California, Davis, Davis CA 95616 and Biology Department, San Diego State University, San Diego, CA 92182, USA.

Using banding data from Bolinas Lagoon on the north-central coast of California for the period 1979-1992, I found that juvenile Dunlin migrating south from the breeding grounds arrive at Bolinas Lagoon earlier than adult Dunlin. Male Dunlin were more prevalent at this site than female Dunlin, but both sexes arrive in the fall at the same time. Male departed from the site earlier than females. Resighting and survival probabilities were estimated for 176 first year females, 109 after-first year females, 252 first year males and 211 after-first year males. Newly banded birds had a lower survival rate than returning color banded birds caught in previous years. The overall year-to-year survival rate of all returning Dunlin was calculated to be 75%. First year Dunlin had a lower survival rate than after-first year Dunlin. My data suggested that survival of returning male Dunlin is higher than that of female Dunlin.

Wader ringing in souther Italy

During the spring migration period, 15 April to 21 May 1994, the Gruppo Inanellamento Limicoli is again, organising a ringing camp at Castelvolturno, near Naples. In 1993, with the help of ringers from Italy, Britain and Hungary a total of 1283 waders, including 451 Little Stint, 479 Curlew Sandpiper, 108 Ruff, 145 Wood Sandpiper with Singles of Avocet, Collared pratincole, Knot, Spotted Redshank and Terek Sandpiper (and 285 birds of other species) were ringed. There were controls from London, Hiddensee and Helgoland (Curlew Sandpiper), Stavanger and Paris (Little Stint) and Bologna (Red-backed Shrike). These compare very favourably with the results for the two previous years (see WSG Bulletin 66, p11).

The main catching site is a series of muddy lagoons which are used in winter for the shooting of duck, but in spring when the duck have gone the lagoons are allowed to dry out, the waders then being able to feed in the shallow water and muddy margins. The area is surrounded by small scale

agriculture where families grow tomatoes and other vegetables. Water Buffalo are grazed on rough grasses (they contribute milk to make the local cheese *mozzarella di bufala*), and interesting birds can be seen, like Red-legged Falcon, Spoonbill etc. The catching is mainly by mist-net set over the lagoons and is most effective in the evenings. In 1994 there will be more effort put into the observation of the size and direction of the departing flocks of waders as they move northwards.

We expect to be staying in a house near the lagoons where food and lodgings will be free. Thigh waders, windproofs, lamps and mosquito protection will be necessary. It would be helpful to bring a sleeping bag, and anyone willing to bring some fine mist-nets (full height and single panel) and other ringing and measuring equipment for the duration of their stay would be most welcome. Members of the GIL will meet visitors and take them to the camp, though it would help if volunteers could arrive on determined days. For further details please contact: **Dr Sergio Scabba, via Posillipo 276/2, 80123 Napoli, Italy.**

COLOUR MARKED AVOCETS IN HUNGARY

As part of the "Pied Avocet Project Hungary" breeding adult birds will be ringed individually from 1994 with plastic colour rings on the tibia (above knees) on both legs. As well as colour ring combinations, a metal ring will also be used on the tarsus.

Although the aim of the colour marking is to follow the inland movement of unsuccessful breeding pairs, and habitat selection after unsuccessful breeding attempts, we would be very grateful for information about colour-marked birds during the autumn and spring migrations.

Any records should be sent to the Hungarian Wader Working Group, c/o György Szimuly, H-2890 Tata, Vértesszőlősi Út 7., Hungary, or via the WSG Colour Mark Scheme (address on inside front cover of this *Bulletin*).

György Szimuly