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ARCTIC BREEDING CONDITIONS

INDICATIONS OF ARCTIC BREEDING SUCCESS OF Little Stint (*Calidris minuta*) REFLECTED IN RINGING RESULTS AT EILAT, ISRAEL, 1990-2001

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Israel is located in the south-east of the Western Palearctic, where migrant birds belong to the flyway which is not so well studied as the East Atlantic flyway. Being located at the junction of three continents, Israel functions as a land bridge for many birds migrating from Eurasia to Africa and back (Safriel 1968). Within this land bridge Eilat, the southernmost part of Israel, is situated in the Syrio-African Rift Valley, at the north-eastern fringe of the 2,000-kilometers Sahel, Sahara and Sinai desert belt, thus being an important place for migratory birds to stage (Shirihai & Christie 1992, Shirihai 1996, Yosef 1997). The ringing station established by the International Birding and Research Centre in Eilat (IBRCE) is the only long-term station of its kind in the Middle East, and active ringing has continued there since 1984. Over 140,000 birds of 131 species in total were trapped and ringed at the station. However, because there are very few, if any, other ringing stations in the Levant and Asia to the north-east this activity has resulted in only very low recovery rates, 2% for raptors, 0.1% for waders, and 0.01% for Passerines (Yosef 1997). Hence, every piece of information from this area becomes very important, but at the same time, caution must be applied to the results based on small samples.

The ringing program was focused on passerines and raptors, while waders were ringed when trapped incidentally. The years 1990-1992 and 1999-2001 are the exception when waders were also targeted. The 1989-1991 project was a result of the encouragement of Dr G Boere and WIWO, and we do not know details about bird processing in that period, e.g. the ageing criteria used. The recent focus was an initiative of the IBRCE. During the latter period waders were trapped with 7 walk-in traps on the salinas. The Little Stint *Calidris minuta*, which breeds beyond the Arctic Circle, is one of the most numerous wader migrant species in Eilat and prevailed in catches of waders there. In total 5,195 Little Stints were ringed in 1984-2001 (60.5% of the wader total ringed in Eilat). This number is considerably larger than the numbers of this species ringed at any other location worldwide (e.g. Ward 2001).

For the analysis of the population age structure of Little Stint staging in Eilat only years with largest sample sizes during the southward migration were taken into consideration (Table). During these eight seasons a total of 3,795 Little Stints were ringed. To date none have been controlled on the breeding or wintering grounds. The only evidence of connection between Siberia and Israel is the observation of a colour-ringed Little Stint by Talya Oron (ranger, Hula Nature Reserve, Nature Reserves and Parks Authority) in the Hula Valley, northern Israel, on 7 July 2000. The bird was ringed as a chick in a nest on 1 or 2 July 2000 at Medusa Bay, NW Taimyr, Siberia; i.e. it was resighted at a distance of 5,138 km after 51 days.

Table. Numbers of Little Stints ringed and proportions of ages on southward migration in Eilat, Israel.

Year	Total ringed	Adults	(%)	Juve-niles	(%)	Breeding success on Taimyr*
1991	598	59	10	539	90	H-M (2.5)
1992	101	35	35	66	65	L (1)
1993	123	4	3	119	97	H (3)
1996	81	21	26	60	74	H-M (2.5)
1998	301	71	24	230	76	L (1)
1999	937	328	35	609	65	H (3)
2000	1077	643	60	434	40	L (1)
2001	577	168	29	409	71	M? (2)

* – L – low, M – moderate, H – high; based on data from Hotker et al. (1998) and ARCTIC BIRDS (2002). Rank used to estimate correlation in parentheses.

Several issues arise from the data presented in the Table. First, juvenile Little Stints (on their first migration to wintering grounds) form an extremely high proportion of trapped birds every year. The reason for this phenomenon is unclear. It may be that juveniles are inexperienced and require more frequent stops than adults, and that adults overfly the region. Another possibility is that migration routes of juveniles and adults are different, and this is reflected in the age composition of trapped birds. Trapping method was not evaluated, and this could be a further source of bias. Second, the data suggest a decline in the percentage of young birds trapped and ringed since 1993 in Eilat (Figure). However, these data should be treated with caution because of the inconsistency in effort between years, which has also resulted in large differences in the total numbers of birds ringed. Another parameter that needs to be validated is the ageing criteria used in the early 1990s by WIWO and recently at the IBRCE ringing station. Further, it is also possible that the building of new salt ponds in Eilat has created a situation wherein increased numbers of adult Little Stints choose the area as a stopover. Third, whatever the reason for the high proportions of young birds, there is also considerable variation in this parameter which ranges between 40% and 90%. Comparison of this parameter with estimates of breeding success at the Taimyr (Table) reveals some comparability between these two (although the correlation is not significant, Spearman Rho = 0.441, P>0.05). At least the lowest values of percentages corresponded well with low breeding success if the early 90s and later years are considered separately. Thus, variation in the proportion of juvenile Little Stints coming to Eilat at least partly reflect breeding success in the Siberian Arctic.

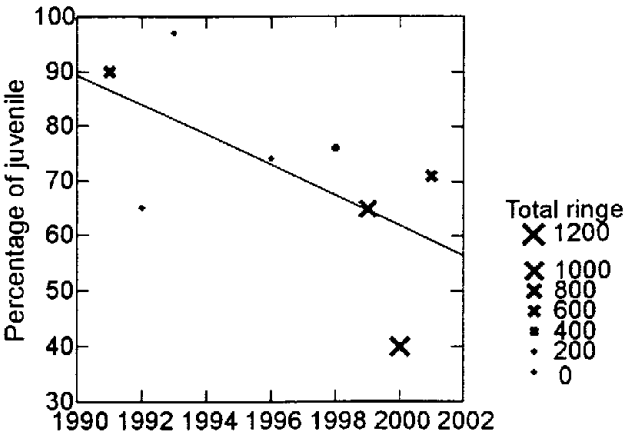

Figure. Percentage of juvenile Little Stints ringed at Eilat during southward migration in the years included in the study (y= 5540.239-2.739*x, Squared multiple R: 0.371).

The large numbers of Little Stint as well as other waders visiting Eilat suggest that this location may be a critical one for some Arctic wader populations. International collaboration to improve local expertise in wader studies as well as increasing manpower would be of great help to increase the understanding of wader migrations and assist in setting up a reliable database. Wader researchers and relevant organizations are welcome to work with us in Eilat.

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