

Between-year recapture rates of waders ringed on migration in south-eastern Kazakhstan: constancy in timing and location of flyway routes

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Migrating waders were caught and ringed on spring and autumn passage through Sarbulak sewage works near Alma-Ata, Kazakhstan. Of 26,168 individuals of 12 species caught between 1977 - 1984, a total of 117 of ten species were recaptured between 1978 - 1985, indicating significant between-year constancy in use of the same migratory staging site. Highest recapture rates were shown by Kentish Plover *Charadrius alexandrinus*, Terek Sandpiper *Xenus cinereus*, Broad-billed Sandpiper *Limicola falcinellus*, Ruff *Philomachus pugnax*, Redshank *Tringa totanus* and Little Ringed Plover *Charadrius dubius*. Comparisons of dates of subsequent recapture are made with dates of first capture.

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Гаврилов, Е.И., Ерохов, С.Н. и Гаврилов, А.Е. 1998. Относительное межгодовое количество повторных отловов куликов, окольцованных во время перелетов на юге-востоке Казахстана: постоянство сроков миграций и положения миграционных путей. *International Wader Studies* 10: 414-416.

Пролетные кулики были отловлены и окольцованы во время весеннего и осеннего пролетов через очистные сооружения "Сорбулак" близ г. Алматы, Казахстан. Из 26,168 особей 12 видов куликов, отловленных в течение 1977-1984 гг., в целом 117 особей десяти видов были повторно пойманы с 1978 по 1985 гг., что свидетельствует о значительном межгодовом постоянстве использования одного и того же места останковки. Наибольшее количество повторных отловов было зарегистрировано для морского зуйка *Charadrius alexandrinus*, мордунки *Xenus cinereus*, грязовика *Limicola falcinellus*, турухтана *Philomachus pugnax*, травника *Tringa totanus* и малого зуйка *Charadrius dubius*. Приводится сравнение дат повторного отлова куликов с датами их первой поимки.

Introduction and methods

Between 1977-1985 a total of 26,168 waders were caught with mist-nets at the Sorbulak sewage works near Alma-Ata. In the years following ringing, 117 birds of ten species were recaptured. Little Ringed Plover *Charadrius dubius*, Kentish Plover *C. alexandrinus* and Redshank *Tringa totanus* nest at Sorbulak, but their numbers are very low, therefore the current study refers mainly to migrating individuals.

In order to characterise the recapture frequency, we used two parameters. First, the number of recaptures relative to totals ringed in previous years (calculated separately for adults and first year birds). Secondly, the proportion of the total number of ringed birds recaptured (including dead birds) in the years 1978-1985. The methodology for the second parameter was the number of ringed waders summed for the period 1977-1984 and numbers examined for 1978-1985, because during the first year of ringing there cannot be recaptures and in the

last year the number ringed is of no significance given lack of captures during 1986.

An undoubted consequence of a long-term ringing programme is that both the number of ringed waders and the probability of their recapture increases. However, at present it is impossible to express this dependence mathematically because the annual mortality of adults and first year birds is unknown.

Results

There were 117 recaptures of individuals of ten wader species (Table 1) indicating between year use of the same migratory route. However, there was a significant number of recaptures for only six species (Kentish Plover, Terek Sandpiper *Xenus cinereus*, Broad-billed Sandpiper *Limicola falcinellus*, Ruff *Philomachus pugnax*, Redshank, Little Ringed Plover). In both spring and autumn there was a greater frequency of adult recaptures than for yearlings.

Table 1. Waders ringed and recaptured at Alma-Ata, Kazakhstan, 1977 - 1985.

			n	%	Range	Mean±s.d.
Little Ringed Plover	1	1230	6	0.5	-24 to +6	-6±4.1
<i>Charadrius dubius</i>	2	2009	14	0.7	-25 to +7	-7±2.6
	3	1898	20	1.0		
Kentish Plover	1	711	16	2.2	30 to +47	+19±6.4
<i>Charadrius alexandrinus</i>	2	1201	11	0.9	-25 to +43	+10±5.4
	3	699	27	3.9		
Wood Sandpiper	1	596	0			
<i>Tringa glareola</i>	2	564	0			
	3	649	0			
Redshank	1	364	1	0.3	+12	
<i>Tringa totanus</i>	2	1306	4	0.3	-55 to -11	-32±9.1
	3	411	5	1.2		
Common Sandpiper	1	450	4	0.9	-6 to +14	+2±4.2
<i>Actitis hypoleucos</i>	2	300	0			
	3	481	4	0.8		
Terek Sandpiper	1	1165	23	2.0	-21 to +21	+2±2.3
<i>Xenus cinereus</i>	2	263	1	0.4	-28	
	3	1132	24	2.1		
Red-necked Phalarope	1	90	0			
<i>Phalaropus lobatus</i>	2	2235	0			
	3	109	0			
Ruff <i>Philomachus pugnax</i>	1	230	3	1.3	-40 to +20	-4±18.3
	2	581	0			
	3	212	3	1.4		
Little Stint <i>Calidris minuta</i>	1	4151	9	0.2	-16 to +14	+2±3.3
	2	2813	1	0.0	-28	
	3	3885	10	0.3		
Temmink's Stint	1	3020	16	0.5	-23 to +30	+1±4.1
<i>Calidris temminckii</i>	2	423	1	0.2	-30	
	3	3449	17	0.5		
Purple Sandpiper	1	877	4	0.5	-26 to +5	-6±6.9
<i>Calidris ferruginea</i>	2	1350	1	0.1	-35	
	3	885	5	0.6		
Broad-billed Sandpiper	1	161	2	1.2	-20 to +31	+5.5±25.5
<i>Limicola falcinellus</i>	2	78	0			
	3	132	2	1.5		

* 1 - Adults ringed (1977 - 1984); 2 - first year birds ringed (1977 - 1984); 3 - adults examined for rings (1978 - 1985).

** Plus and minus signs indicate date of recapture relative to date of first capture: minus indicates an earlier migration date; a plus sign indicates a later migration date.

The precise dates of wader migration through south-eastern Kazakhstan vary considerably and depend not only upon the age of the birds, but also upon the weather conditions in different years and the breeding status. It is probable that ecological conditions along the migratory route and food abundance for refueling can, in particular, influence the dates of migration of individuals. For some species (Redshank, Terek Sandpiper, Little Stint *Calidris minuta*, Temminck's Stint *C. temminckii*) first

year birds migrate in subsequent years one month earlier than that recorded for adult birds. This regularity is dissimilar to that recorded for Kentish Plover, where only adults undergo a complete moult (including rectrices and remiges) in or near the breeding grounds. The highest between-year constancy in the date of migration was shown by Temminck's Stint, Little Stint, Common Sandpiper *Actitis hypoleucos* and Terek Sandpiper.

