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# Results of a survey on wader spring migration in Italy (March–May 1990)

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## INTRODUCTION

At least 36 wader species migrate regularly through Italy in spring. High numbers are often recorded for some of them (e.g. Ruff *Philomachus pugnax*, Wood Sandpiper *Tringa glareola*, Spotted Redshank *Tringa erythropus*, Curlew Sandpiper *Calidris ferruginea*, Black-tailed Godwit *Limosa limosa*), but since no regular counts have been made so far on migrants, it is impossible to get a reliable estimate of the importance of our wetlands as resting areas for waders and for the species which may depend upon them in their migration strategy.

Apart from episodic counts previously, some quantitative data was collected mainly concerning the Ruff and attempts were made to describe the phenology of some wader species on the basis of ringing totals or recoveries of ringed birds (Baccetti *et al.* 1985; Baccetti *et al.* 1987; Spagnesi *et al.* 1988).

The WIWO Eastern Mediterranean Wader Project (Schekkerman 1989) provided us a standardized background to carry out a series of weekly counts at four wetlands of differing importance (Figure 1), from March–May 1990. Sites were selected according to their location (presumed independence from other wetlands, etc.) and ease of regular visitation by observers.

## METHODS AND STUDY AREAS

Counts were made every week (on Sunday or Monday: exact dates are indicated both on tables and histograms); at one site (rice-fields of Vercelli province), observations started two

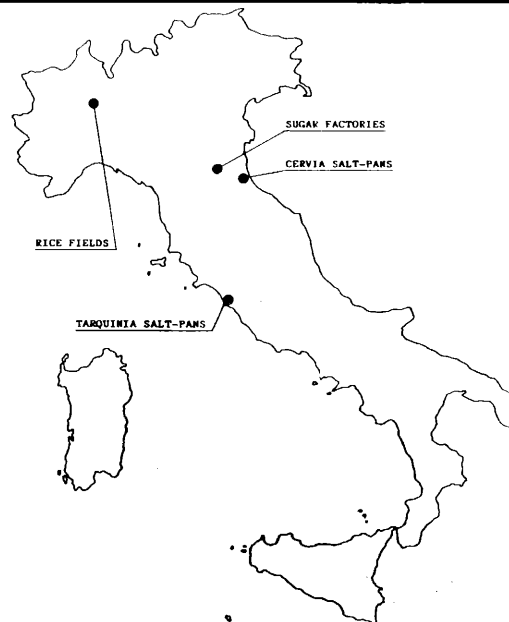
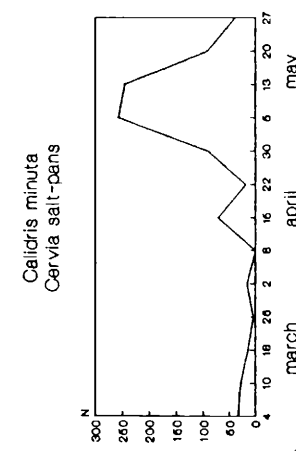
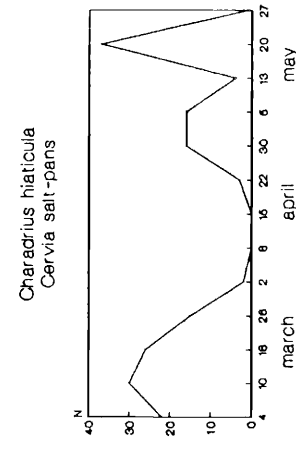
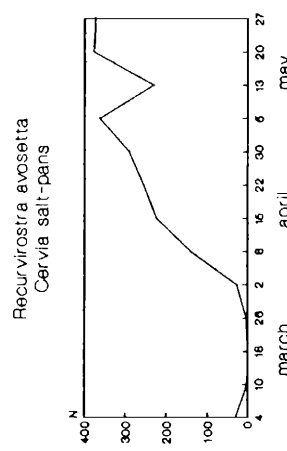
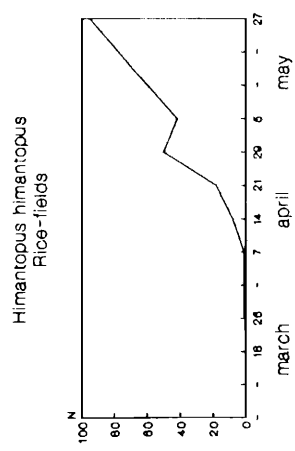
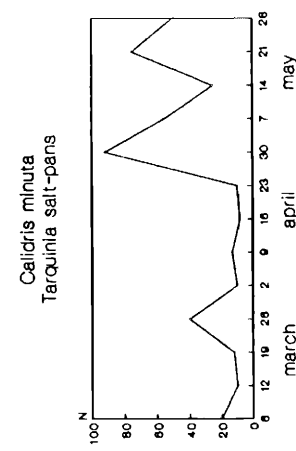
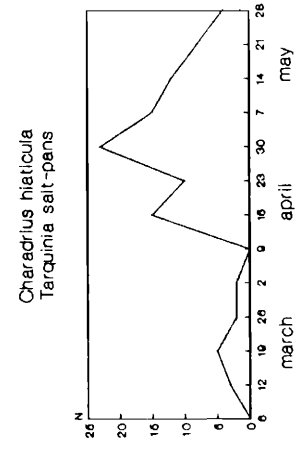
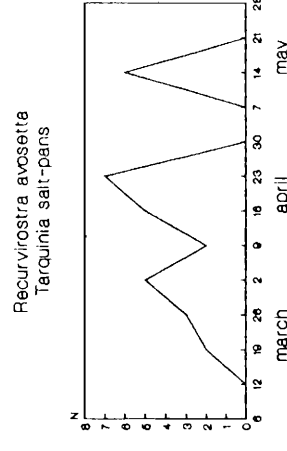
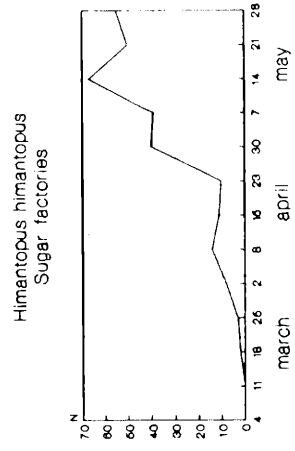
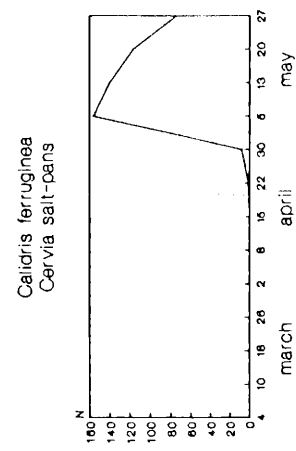
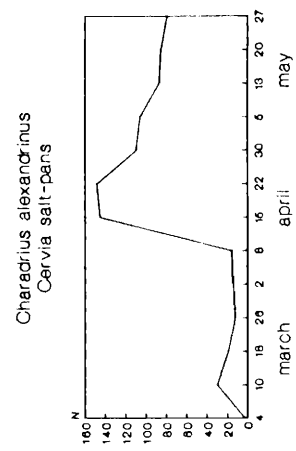
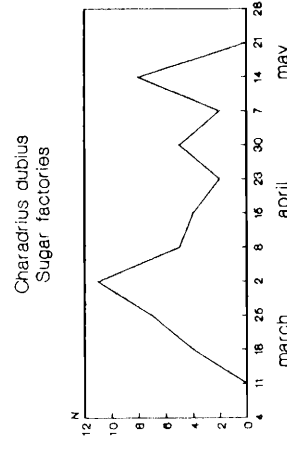
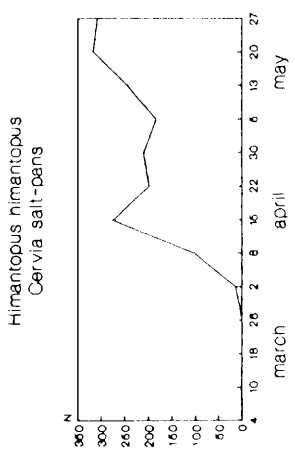
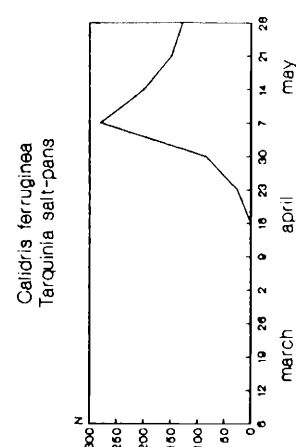
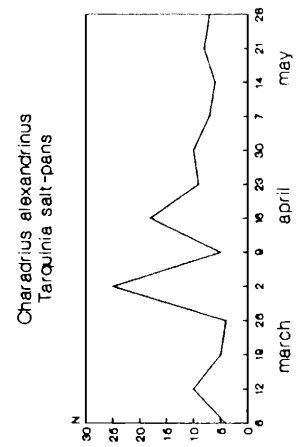
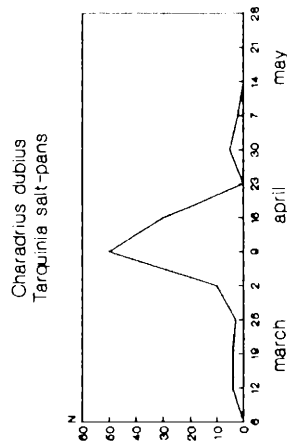
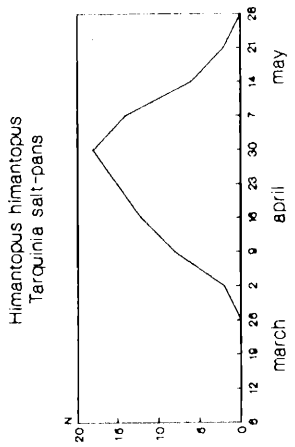


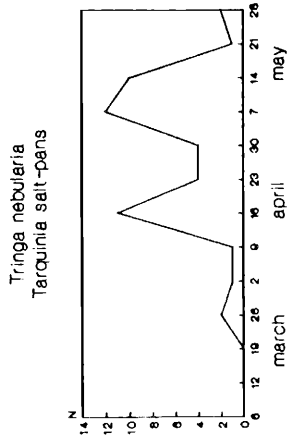
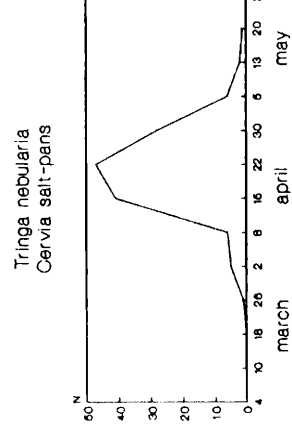
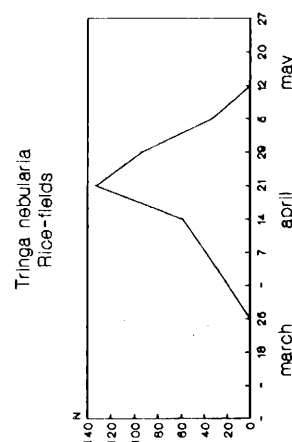
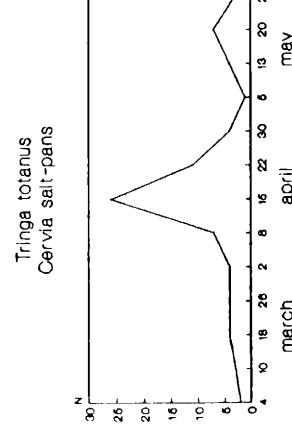
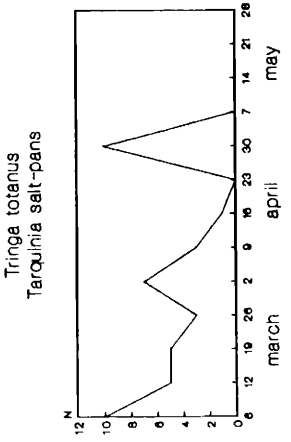
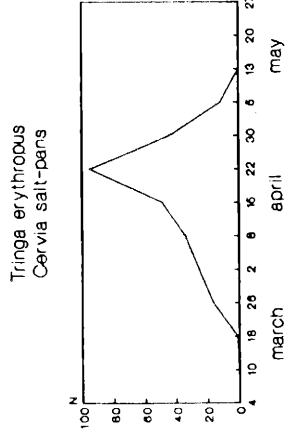
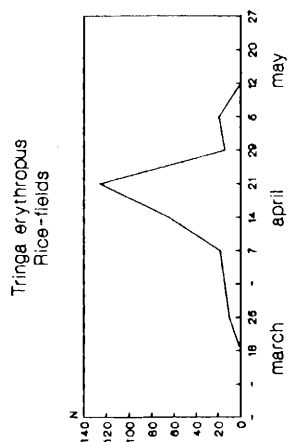
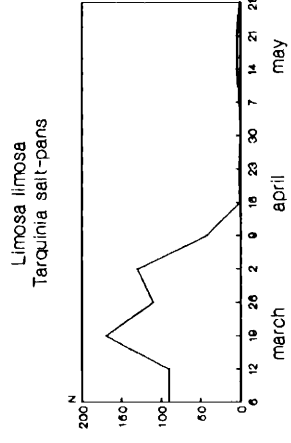
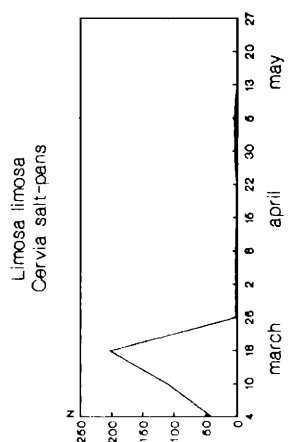
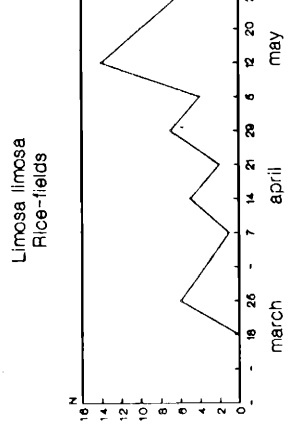
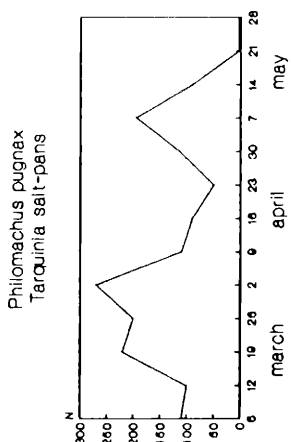
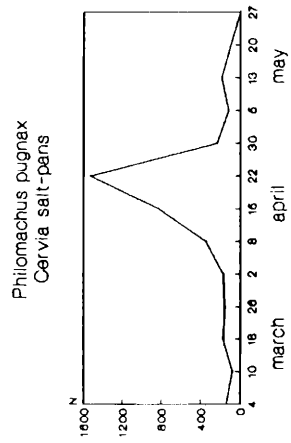
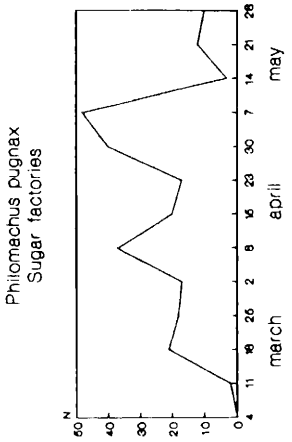
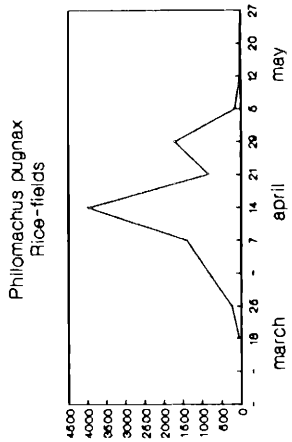
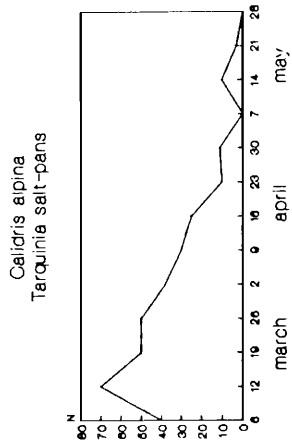
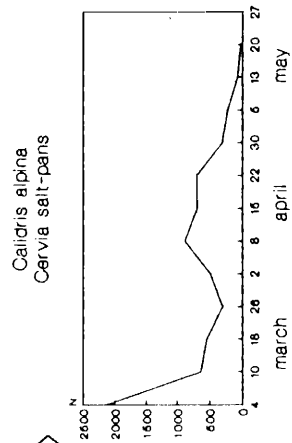
Figure 1. Location of the sites where counts were undertaken.

weeks later, i.e. after the area was flooded. Only a selection of migration patterns is shown by the species histograms (Figure 2); the complete data set is however given in Tables 1–4. Correlations between all patterns of the same species at different sites were made using Spearman Rank Correlation Tests. Only significant correlations are specified.

Figure 2. Patterns of migration of some selected species (following two pages)







Site list:

- 1) Rice-fields near Vercelli (45°12'–45°24'N, 8°10'–8°20'E): about 25,000 ha of extensive rice-fields in Piedmont region, which are flooded between late March and August.
- 2) Sugar factories near Bologna (44°40'N, 11°13'E) : group of settling ponds of sugar factories, 80 ha in total (1/3 with suitable habitat for waders, with shallow water and organic mudflats).
- 3) Cervia salt-pans (44°15'N, 12°21'E): the southernmost part of a wide coastal wetland-system which, through Comacchio and the Po Delta reaches northwards Isonzo mouth near Trieste, along 260 km of complex coastline. The surveyed area, 827 ha, is an operational salt-pan surrounded by cultivated land, at a distance of ca. 30 km from the nearest wetland.
- 4) Tarquinia salt-pans (42°11'N, 11°44'E): these are the only operational salt-pans on the Tyrrhenian side of the Italian peninsula and are 170 ha in extent.

species are presented, which interpret data presented in Figure 2 and Table 1–4.

**Black-winged Stilt** *Himantopus himantopus*

- ◆ Evidence of a well-defined spring passage at the only non-breeding site: Tarquinia salt-pans.
- ◆ Gradual increase in numbers at breeding sites (earliest egg-laying was observed on 30 April).
- ◆ Significant correlation in phenology between the three breeding sites ( $p < 0.05$ ).

**Avocet** *Recurvirostra avosetta*

- ◆ Reliable pattern of migration only at Tarquinia salt-pans (great distance from breeding sites).
- ◆ Gradual increase of the breeding population (mixed with migrants??) at Cervia was affected by incidental drying-up of the ponds during late winter.
- ◆ Earliest egg-laying was observed on 30 April at Cervia. The Avocet usually winters in large numbers at Cervia (250–300 birds in 1989–90), but not at the Tarquinia salt-pans.

**Little Ringed Plover** *Charadrius dubius*

- ◆ Low numbers at Cervia although reasons for this are unclear; rice-field habitat is obviously unsuitable.
- ◆ Earliest egg-laying observed at sugar factories on 7 May.

RESULTS

Brief comments on the patterns of migration of some selected

Table 1. Results of the weekly counts during spring migration at Cervia salt-pans.

Species	MARCH				APRIL				MAY				
	4	10	18	26	2	8	15	22	30	5	13	20	27
<i>Himantopus himantopus</i>		1			13	102	275	198	209	183	243	317	308
<i>Recurvirostra avosetta</i>	30	1		3	27	141	223	255	290	363	230	378	373
<i>Charadrius dubius</i>				2	2		2	1					
<i>Charadrius hiaticula</i>	22	30	26	15	2			3	16	16	4	37	1
<i>Charadrius alexandrinus</i>	3	30	19	12	14	16	145	148	110	106	87	85	79
<i>Pluvialis apricaria</i>			6										
<i>Pluvialis squatarola</i>								3					3
<i>Vanellus vanellus</i>	5	2	25		1	1		1					
<i>Calidris alba</i>											3	3	3
<i>Calidris minuta</i>	34	28	14	4	16		72	19	91	257	245	93	39
<i>Calidris ferruginea</i>								1	8	156	140	117	75
<i>Calidris alpina</i>	2140	630	542	297	484	875	690	694	308	223	77	30	
<i>Philomachus pugnax</i>	136	77	172	154	170	345	822	1533	234	116	187		2
<i>Gallinago gallinago</i>		7	41					1					
<i>Limosa limosa</i>	41	110	203	2	2	2			3	4			
<i>Numenius phaeopus</i>			2	2	1	2		1					
<i>Numenius arquata</i>				1		1		2		1			
<i>Tringa erythropus</i>			1	16	25	34	49	95	44	11			
<i>Tringa totanus</i>	2	3	4	4	4	7	26	11	4	1	4	7	3
<i>Tringa stagnatilis</i>				1	3		24	2					
<i>Tringa nebularia</i>					5	6	41	47	28	6	2	1	
<i>Tringa glareola</i>				1	7		4			2		1	
<i>Actitis hypoleucos</i>		1			1		2	1	1	4	5		2
<i>Arenaria interpres</i>												1	
TOTAL	2413	920	1055	514	777	1532	2375	3016	1346	1449	1227	1070	888
Number of species	9	12	12	14	17	12	13	19	13	15	12	12	11



Table 2. Results of the weekly counts during spring migration at the rice-fields.

Species/date	MARCH			APRIL			MAY			
	18	25	7	14	21	29	5	12	20	27
<i>Himantopus himantopus</i>		1	1	8	18	50	42			95
<i>Recurvirostra avosetta</i>					1					
<i>Charadrius dubius</i>						4				
<i>Charadrius hiaticula</i>						8				
<i>Pluvialis squatarola</i>								9		
<i>Vanellus vanellus</i>	64									
<i>Calidris minuta</i>						1				
<i>Calidris ferruginea</i>								1		
<i>Calidris alpina</i>		13	15	46		6				
<i>Philomachus pugnax</i>	59	242	1388	3695	825	1700	150	20	20	
<i>Gallinago gallinago</i>						1				
<i>Limosa limosa</i>		6	1	5	2	7	4	14	10	6
<i>Numenius phaeopus</i>			1	7	5	21	36			
<i>Numenius arquata</i>			1	1		2				
<i>Tringa erythropus</i>		10	18	65	126	14	19			
<i>Tringa totanus</i>					2			4	1	1
<i>Tringa stagnatilis</i>				1						
<i>Tringa nebularia</i>			39	59	133	94	34			
<i>Tringa glareola</i>			11	34	60					
<i>Actitis hypoleucos</i>								1		
TOTAL	123	272	1475	4191	1172	1172	285	49	31	102
Number of species	2	5	9	10	9	12	6	6	3	3

#### Ringed Plover *Charadrius hiaticula*

- ◆ Only migrants were observed.
- ◆ Bimodal distribution of observations (which may suggest two populations?), with a varying importance of the early peak between the sites.

#### Kentish Plover *Charadrius alexandrinus*

- ◆ Significant presence at both salt-pan sites.
- ◆ Numbers present until mid- (late?) April probably determined by the size of wintering population.
- ◆ Evidence of spring passage mainly in May, extending also outside the study period.

#### Curlew Sandpiper *Calidris ferruginea*

- ◆ Species commonly found only at salt-pan sites.
- ◆ Strongly correlated patterns ( $p < 0.0001$ ), with final birds probably passing outside after the study period ended at both sides.

#### Dunlin *Calidris alpina*

- ◆ Gradual decrease of the wintering population.
- ◆ Little evidence of spring migrants.
- ◆ Initial peak at Cervia probably due to local movements inside the whole Po Delta wintering population.
- ◆ Significant correlation between the two patterns ( $p < 0.05$ ).

#### Ruff *Philomachus pugnax*

- ◆ One of the few species found in large numbers at all four sites during almost the whole study period.
- ◆ March numbers relatively low in rice-fields probably due

to farming practices resulting in unsuitable habitat.

- ◆ Cervia: important numbers only following the first spring rains, possibly affecting the availability of feeding areas on cultivated fields near salt-pans.
- ◆ The other two sites are probably less affected by local conditions.
- ◆ Significant correlation in phenology recorded between Cervia and rice-fields ( $p < 0.05$ ) determined by the similar timing of rains at Cervia and flooding of rice-fields.

#### Black-tailed Godwit *Limosa limosa*

- ◆ Rice-fields are the only regular breeding sites for this species in Italy, but present data suggests that the area has no importance for spring migrants (possibly because suitable habitat is unavailable too late with respect to the peak of migration?).
- ◆ Earliest egg-laying observed on 20 April (rice-fields).
- ◆ Significant correlation between the patterns of migration at both salt-pan sites ( $p < 0.05$ ).

#### Spotted Redshank *Tringa erythropus*

- ◆ Well defined migration patterns, with peaks at both northern sites falling almost on the same day.
- ◆ Significant correlation between all three sites shown (Cervia: Tarquinia  $p < 0.01$ , Cervia: rice-fields  $p < 0.01$ , Tarquinia: rice-fields  $p < 0.05$ ).
- ◆ The Spotted Redshank usually winters at Cervia in small numbers (less than 50 individuals).



Table 3. Results of the weekly counts during spring migration at Tarquinia salt-pans.

Species	MARCH				APRIL					MAY			
	6	12	19	26	2	9	16	23	30	7	14	21	28
<i>Himantopus himantopus</i>					2	8	12	15	18	14	6	2	
<i>Recurvirostra avosetta</i>			2	3	5	2	5	7			6		
<i>Charadrius dubius</i>		4	4	3	10	50	30		5	2			
<i>Charadrius hiaticula</i>		3	5	2	2		15	10	23	15	12	8	4
<i>Charadrius alexandrinus</i>	4	10	5	4	25	5	18	9	18	10	7	6	8
<i>Pluvialis squatarola</i>									2	12	1		
<i>Calidris canutus</i>							1						
<i>Calidris minuta</i>	20	10	12	40	10	13	8	10	92	55	25	75	50
<i>Calidris ferruginea</i>								25	85	280	200	150	130
<i>Calidris alpina</i>	40	70	50	50	38	30	25	10	11		10	3	
<i>Philomachus pugnax</i>	110	100	220	200	270	110	90	50	115	195	90	3	3
<i>Gallinago gallinago</i>		1	1										
<i>Limosa limosa</i>	90	90	170	110	130	42	1	2		1	4	4	1
<i>Limosa lapponica</i>										1			
<i>Numenius phaeopus</i>		1				3							
<i>Numenius arquata</i>			1										
<i>Tringa erythropus</i>			4	2	11	2	10	5	5	11			
<i>Tringa totanus</i>	10	5	5	3	7	3	1		10				
<i>Tringa stagnatilis</i>					3	2		2	1				
<i>Tringa nebularia</i>				2	1	1	11	4	4	12	10	1	2
<i>Tringa ochropus</i>						1							
<i>Tringa glareola</i>									6				
<i>Xenus cinereus</i>									1				
<i>Actitis hypoleucos</i>									2	1			
<i>Arenaria interpres</i>									1	1			
TOTAL	274	294	479	419	514	272	227	149	399	610	371	252	198
Number of species	6	10	12	11	13	14	13	12	17	14	11	9	7

Table 4. Results of the weekly counts during spring migration at the sugar factories.

Species	MARCH				APRIL					MAY			
	4	11	18	25	2	8	15	23	30	7	14	21	28
<i>Himantopus himantopus</i>			2	3	8	14	11	10	40	39	67	50	55
<i>Recurvirostra avosetta</i>												2	
<i>Charadrius dubius</i>					4	7	11	5	4	2	5	2	8
<i>Charadrius alexandrinus</i>				2	2	2		1	2		4	5	6
<i>Pluvialis squatarola</i>										2			
<i>Vanellus vanellus</i>	21	12											
<i>Calidris minuta</i>							1		4	5	1	1	1
<i>Calidris temminckii</i>									2	3	3	2	1
<i>Calidris ferruginea</i>												2	4
<i>Philomachus pugnax</i>		2	21	18	17	37	20	17	40	48	3	12	10
<i>Gallinago gallinago</i>					3	3							
<i>Tringa nebularia</i>										1		1	
<i>Tringa glareola</i>					6	9	2	5	10	13	1	20	3
<i>Actitis hypoleucos</i>									2	4	2	3	
<i>Arenaria interpres</i>												1	
TOTAL	21	14	23	23	40	69	45	38	104	117	86	101	88
Number of species	1	2	2	3	6	6	5	5	8	9	8	12	8

**Redshank *Tringa totanus***

Surprisingly low numbers at both salt-pan sites.  
No investigations at suitable habitats.

**Greenshank *Tringa nebularia***

- ◆ Similar migration patterns to Spotted Redshank.
- ◆ Significant correlation between Cervia and Tarquinia ( $p < 0.05$ ), and between Cervia and rice-fields ( $p < 0.005$ ).
- ◆ Low numbers at Tarquinia salt-pans and virtual absence at sugar factories.



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## DISCUSSION

- ◆ Very few species were detected in similar, or proportionally similar numbers at more than two sites.
- ◆ The seasonality of migration turned out to be significantly correlated in several cases, though some differences deserving future attention were observed.
- ◆ Some species known to occur regularly during spring migration are not represented in our data as might have been expected (e.g. Wood Sandpiper *Tringa glareola*), most probably due to unsuitable habitats at investigation sites.
- ◆ Both coastal sites (salt-pans) turned out to be particularly suitable for such surveys, showing regularly a high number of species and a consistent presence of reasonable numbers of individuals.

## ACKNOWLEDGEMENTS

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## REFERENCES

Baccetti, N., Farronato, I., Forcellini, C., Locatelli, A., Piacentini, D., Scappi, A., Spina, F. & Tinarelli, R. 1985. Progetto Combattente, primi dati da alcune zone umide italiane. In: Fasola, M. (ed.) *Atti III Conv. Ital. Orn.* pp.88-91.

Baccetti, N., Bendini, L. & Serra, L. 1987. An historical overview of wader ringing in Italy. *Wader Study Group Bull.* 51: 31.

Schekkerman, H. (ed.). 1989. *Eastern Mediterranean Wader Project 1990. Project Description.* Foundation WIWO, Zeist.

Spagnesi, M., Spina, F. & Toso, S. 1988. *Problemi di conservazione degli uccelli migratori con particolare riferimento al prelievo venatorio.* Istituto Nazionale di Biologia della Selvaggina, Documenti Tecnici, 4.

