WINTERING BIRD ASSEMBLAGE OF THE NATURAL RESERVE "SAGITTARIO GORGES", CENTRAL APENNINES

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The importance of protected areas for wintering birds has rarely been assessed in Central-Southern Italy. This study focuses on the birds wintering in the Natural Reserve and WWF Oasis of the Sagittario Gorges (Abruzzo region, Italy). This Reserve was established in 1997 and it is a Site of Community Importance (SCI). It protects 450 hectares and various habitat typologies between 500 and 1500 m. a.s.l. The points counts (n=62) and linear transect units (n=42) were positioned in different habitats of the reserve along paths and tracks. Each session at the point counts lasted 10 min. and the points were spaced every 400 m. All birds listened and observed in a radius of 100m were noticed. Each transect unit was 200 m long and it was laid between two successive points monitoring the area which was outside the radii of the two points. Censuses took place between 7:30 and 11:00 a.m. Each point and transect were repeated twice, once in January and once in February. During the field study, 45 species have been contacted (Tab. 1). Frequencies of the different species registered by the two methods were highly correlated (Spearman Rank Correlation Coefficient =0.75, n=45, $p<0.001$). The main parameters of the two methods were very similar (tab.2 and tab.3). The mean numbers of species contacted were very similar between points and transects (T-test, t=0.39, df=102, p=0.69). Also the number of species contacted in January and February during transects was similar (Paired T-test, t=0.10, df=41, p=0.92) while a slightly significant difference was registered for point counts (Paired T-test, t=2.33, df=61, p=0.02).

We also calculated the Shannon index (not using the total sum of individuals but considering the sum of contacts for each species) and the Equitability Index. Both were very similar between the two methods and between the two different months.

Our data showed that the Natural Reserve "Sagittario Gorges" sheltered a high number of wintering birds, some of them being of conservation and bio-geographical importance such as the White-backed Woodpecker, the Red-billed Chough, the Rock Partridge, the Eurasian Treecreeper and the Dipper. The two methods seemed to be equivalent in efficiency to describe winter birds' assemblage and somewhat complementary to define the check-list of the species present in the area. Therefore, we suggest that in winter time, when most bird species show a secretive behaviour, using both methods could be a good conservative approach in those cases where it

Species	Point counts	Transects	Species	Point counts	Transects
Aegithalos caudatus	22,58	35,71	*Loxia curvirostra*	1,61	4,76
Alauda arvensis	8,06	7,14	*Motacilla alba*	1,61	0,00
Alectoris graeca	0,00	2,38	*Motacilla cinerea*	4,84	0,00
Anthus spinoletta	1,61	0,00	*Periparus ater*	3,23	4,76
Carduelis carduelis	14,52	7,14	*Cyanistes caerulus*	66,13	80,95
Carduelis chloris	11,29	11,90	*Parus major*	66,13	54,76
Certhia brachydactyla	3,23	2,38	*Poecile palustris*	54,84	73,81
Certhia familiaris	1,61	0,00	*Passer italiae*	1,61	4,76
Cinclus cinclus	3,23	0,00	*Petronia petronia*	3,23	0,00
Coccothraustes coccothraustes	1,61	11,90	*Phoenicurus ochruros*	3,23	14,29
Columba livia	3,23	9,52	*Pica pica*	8,06	9,52
Corvus corax	0,00	0,00	*Picus viridis*	14,52	2,38
Corvus corone cornix	25,81	28,57	*Prunella modularis*	0,00	2,38
Corvus monedula	1,61	2,38	*Pyrrhocorax pyrrhocorax*	1,61	7,14
Picoides leucotos	1,61	4,76	*Pyrrhula pyrrhula*	9,68	4,76
Dendrocopos major	3,23	0,00	*Regulus regulus*	3,23	4,76
Dendrocopos minor	1,61	0,00	*Sitta europea*	19,35	28,57
Emberiza cia	4,84	11,90	*Tichodroma muraria*	0,00	2,38
Emberiza cirlus	1,61	0,00	*Troglodytes troglodytes*	24,19	23,81
Emberiza citronella	3,23	4,76	*Turdus merula*	54,84	69,05
Erithacus rubecula	20,97	21,43	*Turdus philomenos*	0,00	2,38
Fringilla coelebs	48,39	54,76	*Turdus viscivorus*	30,65	30,95
Garrulus glandarius	24,19	19,05			

Tab. 1. Frequency of the different species with the two methods

	N. of species	Mean number of species per sample unit in January	Mean number of species per sample unit in February	Mean number of species per sample unit - two months
Transects	39	4.33 ± 3.45	4.38 ± 2.90	7.05 ± 4.08
Points	41	3.82 ± 2.38	4.61 ± 2.36	6.77 ± 2.98

Tab. 2. Main results by the two methods

	Indexes values for the two methods	Shannon Index February	Shannon Index two months	Equitability value January	Equitability value February	Equitability value two months
Transects	1.21	1.25	1.270	0.538	0.518	0.479
Points	1.14	1.25	1.245	0.485	0.496	0.453

Tab. 3. Indexes values for the two methods.

might be very important to determine the list of bird species, especially in those areas that are relevant for their conservation purposes. However our study referred to data gathered from very different landscapes (e.g. cultivated land, forests, pastures, rocky areas) and it could be possible that some differences might arise between methods when focussing on a particular type of habitat.
Our data confirmed the importance of establishing a monitoring program for wintering birds in Central-Southern Italy which is a target area for North European populations of different species wintering in Southern Europe. Our methods are quite simple and reproducible year by year at a low cost. Maybe it could be also interesting to envisage the effects of global warning on the wintering birds' populations in the Central Apennines Mountain Chain.

Riassunto

I passeriformi svernanti nella Riserva naturale regionale ed Oasi WWF Gole del Sagittario, Appennino centrale

Gli uccelli svernanti nella Riserva naturale Gole del Sagittario sono stati monitorati con punti di ascolto di 100 metri di raggio (n. 62) e transetti (n. 42) da 200 metri ripetuti due volte a gennaio e febbraio 2009.
La riserva naturale delle Gole del Sagittario è vasta 450 ettari tra 500 e 1500 metri di quota. I punti d'ascolto distavano l'uno dall'altro 400 metri e sono durati 10 minuti. I transetti erano situati tra i punti d'ascolto. I rilievi sono avvenuti tra le 7:30 e le 11:00. La maggioranza dei punti è localizzata in aree aperte o prevalentemente aperte, in aree agricole oppure in aree con diverse tipologie boschive. Durante i punti d'ascolto sono state contattate 41 specie mentre durante i transetti 39 per un totale di 45 specie registrate. Il numero medio di specie per punto è risultata di 6,7 e per transetto di 7,05. La frequenza delle specie registrata con i due metodi è risultata correlata positivamente. Il numero medio di specie per punto e per transetto è risultata simile. I due metodi appaiono egualmente efficienti nel descrivere la comunità e complementari per definire la check-list delle specie presenti. Il sito oggetto dello studio, pur situandosi in un'area montana dell'Abruzzo ospita un elevato numero di specie molte delle quali di interesse conservazionistico.