

Preliminary data on the migratory movements by waders in the Circeo National Park.

Data are reported about periodic observation of waders in the Circeo National Park during 30 months (since september 1995 to february 1998). The amount of observed species is 35 which represent the 72.3% of the ones detected in Latium. These several observation of species considered accidental or migratory irregular for the region, mean the absence of historical news for some kind of species and the absence of specific work, and also represent the fundamental importance which this area has for migration and wintering of many species of waders.

Trotta M., 1997. Dati preliminari sui movimenti migratori dei limicoli nel Parco Nazionale del Circeo. Alula IV (1-2): 79-83.

Habitat selection by waders in the Circeo National Park (Latium): analysis of some species (Charadriiformes).

During one year of observation have been analyzed wader's ambiental preference in Circeo National Park (Latium). About 68% of observation have been shared in two habitats: ponde wich are placed behind sand-dunes and wet grassland. Choosing habitat is tightly connected to weather condition season by season and about coast sand-dunes is depending on external reasons like human disturbing. The Curlew *Numenius arquata*, show a remarkable selectivity in choosing their own habitat mostly preferring wet grassland and some less for ponde behind sand-dunes. The Dunlin *Calidris alpina* and the Spotted redshank *Tringa erythropus* are instead able to get used in a larger way. Apart ponde behind sand-dunes they particularely appreciate marshes and floodland. Those last, wich groove themselves after autumnal rainings, are mostly used by both species especially during spring migration.

Trotta M. 1999. Selezione dell'habitat dei limicoli nel Parco Nazionale del Circeo (Lazio): considerazioni su alcune specie di Charadriiformes. Gli Uccelli d'Italia, Vol. XXIV (1-2): 67-74.

Diet and activity rhythm of nestling pair of Starling *Sturnus vulgaris* in the city of Rome.

It has been presented a study of diet and activity rhythm of nestling pair of Starling *Sturnus vulgaris* in the city of Rome. Pair activity has been recorded during its breeding season in 1998. Three complete days of observation have been entirely spende with the cadence of a week. The results, in contrast with precedents study, have evidenced a decreasing of the visit of parents at nest as soon as the nestling's age increases. The cause of decreasing could be the loss of two nestling and the different role of male in parental care efforting. The male, during the third breeding week, is infact more busy courting the female that at searching food for nestling. The diet of the species is composed of animal food mainly insects and their larvae, and is strictly connected to any opportunity that species cleverly use.

*Trotta M., 1999 - Alimentazione e ritmo di attività al nido di una coppia di Storno *Sturnus vulgaris* nidificante nella città di Roma - Alula VI: 155-159*

The Waders of Circeo National Park : annual cycle of the community and analysis of period 1997-1998.

It has been analysed wader community's cycle during two years of observing, since january '97 to december '98, in Circeo National Park (Central Italy). Mentioned data show as presence are tightly connected to migratory periods, the highest values of richness are in fact recorded in april, may, july and september otherwise the lowest during wintering periods and breeding activity. The abundance of individuals is greater in period between march and may and in winter also but decreasingly, the

lowest are instead observed in June. The values of diversity and equitability are quite well balanced, with the highest amount during post-breeding dispersal and the lowest during wintering periods. *Calidris minuta* e *Calidris alpina* are among the dominant species for longer time during the year.

Trotta M. 2000. *I limicoli nel Parco Nazionale del Circeo (Italia centrale): ciclo annuale della comunità e analisi del biennio 1997-1998*. Riv. ital. Orn., 70: 65-72.

Analysis of the wader's migration in the Circeo National Park (Central Italy) (1994-1999).

Data are reported about periodic observation of waders in Circeo National Park during 6 years (since January 1994 to December 1999). The amount of observed species is 37 which represent the 78,7% of the ones detected in Latium. Nesting birds in the area are the Black-winged stilt, Little ringed plover and the Kentish plover. The spring migration is richer than autumnal one, numerous migrant are the Ruff, Little stint and the Curlew sandpiper. Protection of coastal lakes and of pastures that lay around them did remarkable increased area's importance as wintering place for several kind of waders, allowing formation of great groups during the winter. The Circeo National Park is a site of national importance for the wintering of Golden plover, Lapwing and Curlew (Serra et al., 1997). This study shows that coastal wetlands have great significance for the migration and wintering of waders.

Trotta M. 2000. *Analisi dei movimenti migratori dei Limicoli nel Parco Nazionale del Circeo (Italia Centrale) (1994-1999)*. Alula VII (1-2): 32-46.

Starling's kleptoparasitism during the breeding season.

During a study on the diet of Starling *Sturnus vulgaris*, several cases of kleptoparasitism, both intraspecific and interspecific, were observed. Information was collected on the techniques and frequency of success, as well as on the taxa of the stolen prey. In the case of intraspecific kleptoparasitism a technique of "threat" was applied which had low energy cost but produced a rather low percentage of success (10,9%). The fact that the prey was given up without any further aggression could be due to the possible existence of a hierarchy within the colony, containing dominant members who have priority over the young and lower ranks. In interspecific kleptoparasitism, which occurred only against Blackbird *Turdus merula*, the percentage of success was 84%. This was much higher than that recorded by Kallander (1988) on Lapwing *Vanellus vanellus* which unlike Blackbird, used a variety of strategies to escape the attack of the Starling, sometimes crowned with success. In interspecific kleptoparasitism, techniques of "attack" and "chase" were used. The high energy cost incurred by the Starling was compensated by the high percentage of success gained using these two techniques (91,3%) and by the protein value of the stolen prey: 76,2% being earthworms. During the rearing of the young, catching of earthworms was carried out exclusively by kleptoparasitising Blackbirds.

Trotta M. 2000. *Note sul cleptoparassitismo dello Storno Sturnus vulgaris in periodo riproduttivo*. Avocetta, 24: 129-131.

The Bird Fauna in the Decima-Malafede Natural Reserve.

Relying on the observations carried out during the years 1992-1999, the Bird Fauna in the Natural Reserve of Decima-Malafede (Latium) is described. 131 species were found, the species certainly breeding are 48; the likely breeding ones 22.

Trotta M. 2000. *Avifauna della Riserva Naturale di Decima-Malafede*. Picus, 27: 91-94.

Quantitative analysis of breeding bird communities in the Decima-Malafede Natural Reserve.

During breeding season in 1999 a census work has been carried out using the I.P.A. method in a area with a high environmental heterogeneity near to Rome. 53 species have been censused. Of particular interest, from the conservational point of view, is the presence of species from the Red List of birds threatened by extinction in Latium (Black Kite, Quail, Hawfinch, Lesser spotted woodpecker). The cultivated areas with trees, deciduous forest and the bush and scrub, showed higher values of faunistic richness and environmental complexity. The poorer habitat are resulted instead the intensive cultivations and the grazing-land, probably as consequence of the environmental changes caused by human activity.

Trotta M. 2000. Analisi quantitativa dell'avifauna nidificante nella Riserva Naturale di Decima-Malafede (Lazio). Uccelli d'Italia, 25: 43-48.

Feeding and parental care of the Starling *Sturnus vulgaris*, in a suburban environment.

The feeding of Starling *Sturnus vulgaris* was studied in a suburban environment of Rome during the breeding season. Data about parental care were gathered. In the present study the diet was exclusively animal, consisting mainly of insects and their larvae. Diet composition was quite similar for both adult and young, but the relative proportions of the different taxa varied. Earthworms and Myriapoda were preferred as food for nestlings. After fledging the diet was more varied. This happened not as a consequence of increasing age but because of the unavailability of certain preferred prey items at the time of fledging. The male's role in parental care changes according to the age of the chicks. The male bird contributes 41% of prey brought to nestlings but after they have fledged this percentage decreases to 11,3%. The young become independent after about a couple of weeks but in the first ten days of life after fledging they are completely dependent on their parents. Kleptoparasitism, both intraspecific and interspecific was noted, the latter exclusively on Blackbird *Turdus merula*. Kleptoparasitism on Blackbirds was the main method used by Starling to obtain earthworms for their young.

*Trotta M. 2001. Alimentazione e comportamento di cura parentale dello Storno, *Sturnus vulgaris*, in ambiente suburbano. Riv. Ital. Orn., 71: 55-61*

Phenology of migration and wintering of the Curlew, *Numenius arquata*, in Pontini Lakes (Latium, Central Italy).

Wintering Curlews were studied around the Pontini Lakes on the west coast of central Italy from 1995-2001. Information on habitat choice and roost behaviour was collected in the winters 1997-98 and 1998-99. Weekly counts during the period 1997-98 allowed analysis of the phenology of migration in the area. The first Curlews returned from their breeding grounds in early July. Maximal numbers occurred in January. Departures occurred between late February and early March, the last Curlews were observed in mid-May. A steady increase in numbers over the study period confirms results from the national census. The species demonstrated a marked selectivity for pasture with brackish coastal pools as second choice. Curlews arrived at roost alone or in small groups usually of 2-5 individuals. There was little intraspecific competition, some behaviour observed might indicate the presence of dominant individuals with access to preferred positions in the roost. The spacing between individuals was less than that observed in some Dutch roosts. The Pontini Lakes lie within the protection of the Circeo National Park. Hunting pressure on the edge of the park forced those birds that fed outside to return by longer routes than would otherwise have been necessary incurring higher energy cost.

*Trotta M. 2002. Fenologia della migrazione e svernamento del Chiurlo maggiore *Numenius arquata* nei Laghi Pontini. Riv. Ital. Orn., 72: 67-75*

Seasonal variations of dietary habits of the Barn Owl *Tyto alba* in the Decima-Malafede Natural Reserve (Rome).

Feeding habits data about Barn Owl were collected from May 1999 to April 2000 in Decima-Malafede Natural Reserve. (Rome). It was found from the analysis of the pellets that the common prey consisted of Rodentia (81,6%), followed by Insectivora (14,6%), Insecta (2,2%) and Aves (1,6%). The most important preys, *Microtus savii* (43,2%) and *Mus domesticus* (24,3%), showed an alternation in the diet, with a maximum abundance of *Microtus savii* in spring. Crocidurinae showed a summer peak in the Barn Owl diet. The highest values of trophic diversity occurred in summer and autumn, owing to an increase of birds. The Thermo-xerophily index value is according with the area's geographic place. The trophic level index showed a middle-low value, this value is probably caused for specific environmental change and for a selection prey towards the *Microtus savii*.

Trotta M. 2003. Variazione stagionale dell'alimentazione del Barbagianni Tyto alba nella Riserva Naturale di Decima-Malafede (Roma). Alula, X (1-2): 56-63.

Foraging strategies of the Curlew *Numenius arquata* and differences in feeding success between sexes at wintering site in the Central of Italy.

The foraging strategies and the difference of feeding success between sexes of the Curlew *Numenius arquata* was studied in a coastal region of Lazio (Pontine Lakes) in the period of 1997-2001 (November to March). This species has been found in different habitats, however the data in this research was collected in meadow-pastureland habitats. The pecking was the action used more often, the technique of digging was more efficient the action of jabbing, particularly for the capturing of earthworms. The Curlew had a feeding success (prey/minute) an average of 1.41. The females obtained a little more feeding success than the males. Since the bill of the female is considerably much longer, this allows the female to penetrate the ground more so than the male, capturing more prey. The Curlew, whether feeding themselves alone or in small flocks foraging success was the same. The larger flocks have been observed in autumn and it appears that when they arrived, they chose an area where high food availability was found and once it is exploited they leave for other foraging areas.

Trotta M. 2008. Strategie di foraggiamento del Chiurlo maggiore Numenius arquata e differenze di successo alimentare tra sessi in un sito di svernamento dell'Italia centrale. Avocetta, 32: 41-46.

Use of habitats by shorebirds in Pontine Lakes (Lazio, Central Italy).

The shores of the lakes were used in all the seasons and registered higher values in the richness and diversity of the species. Sharing of the feeding areas in some muddy shores, contributed to the favourable conditions of feeding. The pastures surrounding the lakes were selected in autumn-winter when the winter population of Lapwing, Golden Plover and Curlew arrived. The availability of the brackish marshes and freshwater pools depends on atmospheric precipitations and in spring showed greater similarity. The Wood Sandpiper and Marsh Sandpiper have used the same habitats, particularly the freshwater pools. The pressure on pasture due to hunting on the borders of the park as well as the impact of summer tourism on the sand dunes, is a threat for several species observed in coastal lakes of the National Park of the Circeo.

Trotta M. 2008. Uso dell'habitat dei limicoli nei Laghi Pontini (Lazio, Italia Centrale). Alula, XV (1-2): 217-227.

The use of habitat by wintering waders in the Circeo National Park (Latium, Central Italy): comparison between two winter seasons.

The use of habitat by wintering waders was analyzed for two consecutive winter seasons (1998-99/1999-00) in the Circeo National Park. Sixteen species were observed, mainly on pastures and lakeshores. As far as habitat choice, Lapwing and Dunlin are generalist species, whereas Kentish plover and Golden plover the most selective ones. The abundant autumn rainfall in the first months of the second winter has caused a greater use of muddy marshes and coastal dune ponds and a lesser use of the natural lakeshores. The relationship between habitat use and monthly rainfall is not significant. The results suggest that shorebirds adapt their behaviour according to the environmental conditions caused by atmospheric precipitation.

Trotta M. 2009. Uso dell'habitat da parte dei limicoli svernanti nel Parco Nazionale del Circeo (Lazio, Italia Centrale): analisi e confronto tra due stagioni invernali. Uccelli d'Italia, 34: 74-83.