Programme and Abstracts

Third Conference of the European Ornithologists' Union

The avian calendar: exploring biological hurdles in the annual cycle

21-25 August 2001

Haren/Groningen, The Netherlands

Third meeting of the European Ornithologists' Union

The avian calendar: Exploring biological hurdles in the annual cycle

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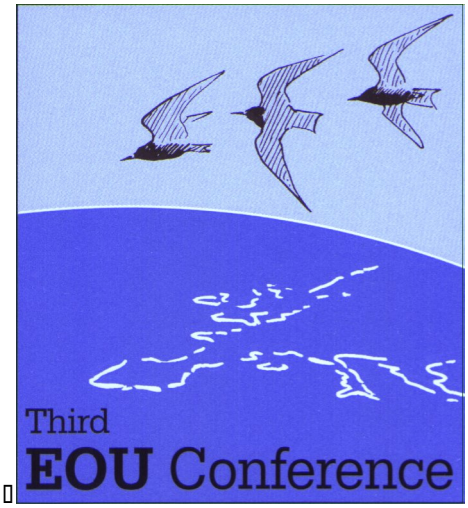

21-25 August 2001
Organisers
Nederlandse Ornithologische Unie (NOU)
Centre for Ecological and Evolutionary Studies (CEES), University of Groningen
Location
"Biologisch Centrum" (Biological Centre) Kerklaan 14, Haren, the Netherlands

Financially supported by:

Vogelbescherming Nederland (Bird Life partner)
The Huib Kluyver Foundation
Municipality of Groningen
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Jacob de Boer
Bob Loos

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Contents

Welcome to the 3rd Conference of the European Ornithologists' Union (EOU)

The 3rd meeting of the European Ornithologists' Union will be held in Haren/Groningen, The Netherlands, from 21 to 25 August 2001. It will be the first meeting following the formalisation of the European Ornithologists' Union in August 2000 in Zürich. The EOU has already held two successful conferences: 1997 in Bologna, Italy; 1999 in Gdansk, Poland. On Saterday 25 August there will be a general meeting of the EOU.
The local Organising Committee hopes to welcome a lot of participants from abroad and from The Netherlands. We expect many interesting talks and poster presentations. We hope that everyone will join the discussions and we think that the enthusiasm of the participants will make this conference a memorable one. We hope to see all of you during the next meetings of the EOU.

General Information:

EOU
The European Ornithologists' Union (EOU) has been formally founded in August 2000 in Zürich. Its objectives are the advancement of ornithology and the promotion of the scientific study of birds amoung ornithologists in Europe. The buisness of the EOU is conducted by the Council: Jacques Blondel (President), Liz Pasztor (Vice-president), Andreas Helbig (Secretary), Peter Jones (Editor) and Lukas Jenni (treasurer).
The EOU has been founded as an equal partnership among avian biologists throughout Europe. The EOU will organise biennial conferences and provide a platform for smaller thematic ornithological groups.
The EOU will publish the scientific journal Avian Science, The European Journal of Ornithology. Avian Science publishes significant original papers and occasional review articles of international interest on all aspects of ornithology, theoretical and applied, but will primarily focus on European species. The journal is published in English. The editor of Avian Science is Peter Jones. For more information and membership consult the home page at www.eou.at or contact the Secretariat of the EOU, Stephan Trösch, Hinterstasse 22, CH-8268 Salenstein, Switzerland, Fax ++41-71-644 35 36, e-mail: stephan.troesch@bluewin.ch.

NOU
The NOU is the Netherlands Ornithologists' Union. The aim of the NOU is the advancement of ornithology and the promotion of the scientific study of birds among both professional and non-professional ornithologists within the Netherlands. The NOU published the international ornithological journal Ardea and has taken a large share in organising this conference. For more information see www.nou.nu.

CEES
CEES is the Center of Ecological and Evolutionary Studies from the University of Groningen co-ordinating work of different ecological groups. The Animal Ecology Group participated in the local organising committee.

Location

The conference will be held in the "Biologisch Centrum" (Biological Centre) Kerklaan 14, Haren. The Biological Centre can easily be reached by bus or train in about 20 minutes from the centre of Groningen. During the days of the meeting, participants will be responsible for arranging their own transportation to and from the Biological Centre. Bus tickets can be bought at the registration desk or in the bus itself. Train tickets can be bought at the train station. All accommodation will be in the City of Groningen. Information about transport will be available during the reception on 21 August 2001.

Notice to all attendees

- To facilitate collegiality and communication, we request all participants to wear their name badges to all sessions and events.
- Please turn off all cellular phones and pagers while attending the meetings.

Refund Policy

Cancellations after 31 July 2001 are subject to a 100 % administrative fee. There will be no refund of the registration fee or parts of it for participants leaving the conference early or not attending the excursion and dinner.

Reception Tuesday 21 August

The welcome reception will take place on the 21th August in the Academic Building (Academie) of the University of Groningen (Academieplein, Groningen) from 6.00 p.m. to 7.30 p.m. where Prof Dr R.H. Drent (local organising committee) will welcome you.

Registration information

During the conference the registration desk will be at the Biologisch Centrum, Kerklaan 30 in Haren.
Wednesday 22 August: 8:00-10:00 registration in the central hall of the Biologisch centrum (follow the signs)

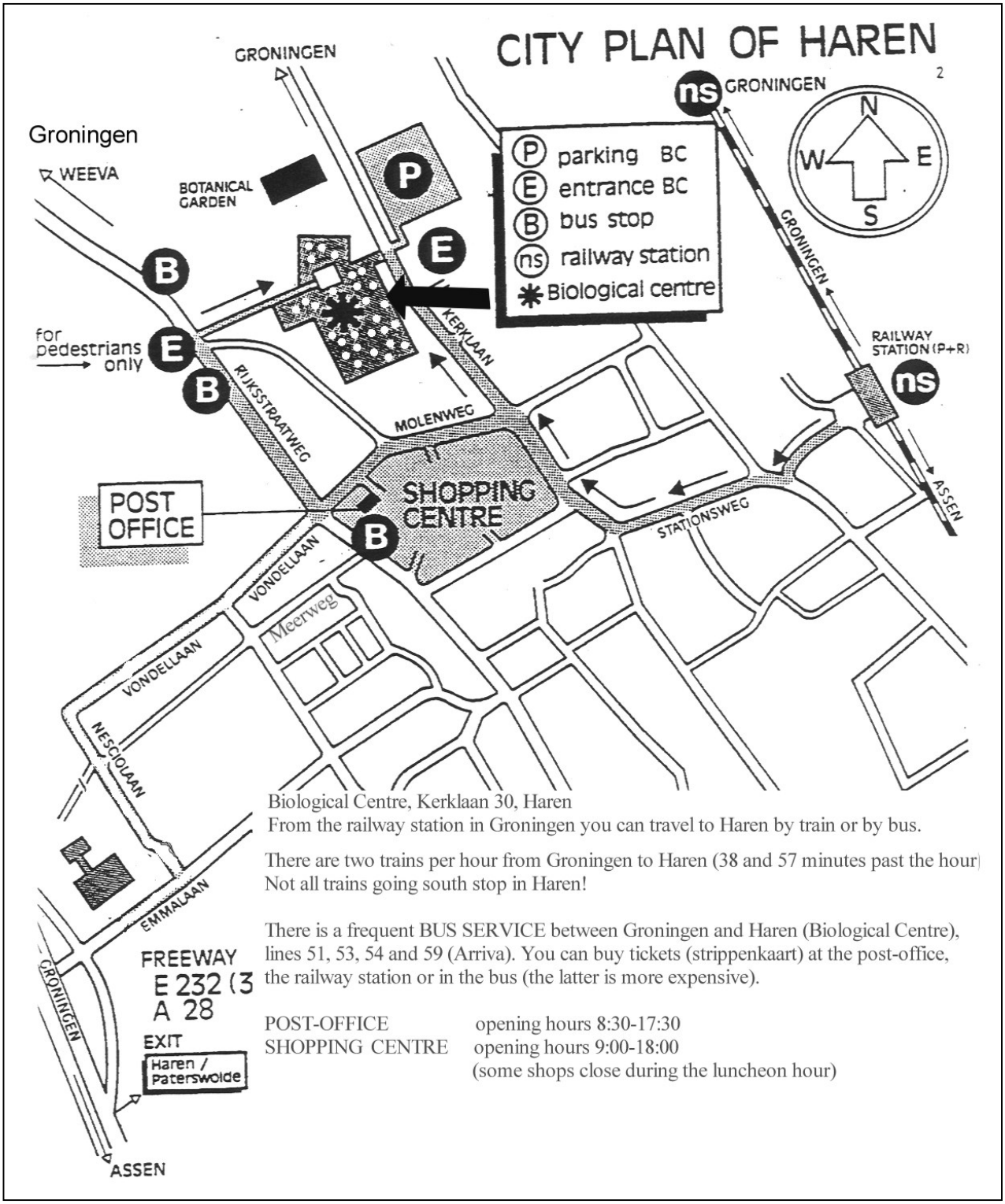
Language

All communication will be in English.

Lecture rooms

The lecture rooms are located in the central hall of the Biological Center. The halls are called 'Grote zaal' and 'Rode zaal' and are indicated on the programme.

MAP (location 'Biologisch centrum' in Haren)



Biological Centre, Kerklaan 30, Haren
From the railway station in Groningen you can travel to Haren by train or by bus.

There are two trains per hour from Groningen to Haren (38 and 57 minutes past the hour)
Not all trains going south stop in Haren!

There is a frequent BUS SERVICE between Groningen and Haren (Biological Centre), lines 51, 53, 54 and 59 (Arriva). You can buy tickets (strippenkaart) at the post-office, the railway station or in the bus (the latter is more expensive).

POST-OFFICE	opening hours 8:30-17:30
SHOPPING CENTRE	opening hours 9:00-18:00
	(some shops close during the luncheon hour)

Speakers

Speakers should check the programme to confirm the time and location of their talk. Slide projectors, beamers (using Power point) and overheadprojectors are available. Check the details below for the medium you use.

Slides:
Speakers should ensure their slides are arranged and delivered, clearly marked with the speaker's name, to the appropriate projectionist *at least 15 minutes* before the session in which they are due to speak. Speakers should ensure they collect their slides immediately following their session. Room for previewing slides will be available in the Conference Centre throughout the Congress in the projectionists room of the big lecture hall.

Powerpoint presentations:
Speakers should check the program to confirm the time and location of their talk and should ensure that their presentations work on the *available PC system* at least half a day in advance of their talk (100 MB zip and CD-rom). Speakers are advised to copy their presentation on the hard disc of the computer in the lecture room they will speak. For those that prefer to use their own lap-top (PC) a separate cable is available to connect it. *Please check well in advance*, technical help will be available. PC's with cd-rom reader will be available to preview Power-point presentations.

Overheads
Overhead projectors are available in both lecture halls

Posters

Posters should be erected as soon as possible on the posterboard marked with the identification number of the poster. Mounting material will be available at the help-desk.

Internet

A number of PC's that connect to internet will be available for general use.

PROGRAMME

Tuesday 21 August

Time slot	Code	Location	Title
18.00-19.30		University Building	ARRIVAL AND RECEPTION
Wednesday 22 August (morning)			
8.00-10.00		Corridors	REGISTRATION
10.00-10.15		Grote Zaal	**OFFICIAL OPENING** ***Jacques Blondel***
10.15-11.00	Plenary	Grote Zaal	***Surviving the roaring forties: tracking foraging and migrating albatrosses and allies*** ***John P. Croxall***
11.00-11.30		Corridors	COFFEE BREAK
			PARALLEL SESSIONS
	Par 1	Grote Zaal	***Annual cycles and global change***
11:30-11:50	30		Breeding and migration schedules in light of global change *Timothy Coppack*
11:50-12:10	23		Adjustment to climate change is constrained by arrival date in a long-distance migrant *Christiaan Both & Marcel E. Visser*
12:10-12:30	145		Impact of temperature on the annual cycle of passerines at temperate latitudes *Leonid V. Sokolov*
12:30-12:50	172		The avian annual cycle in the environment of global climate warming *Mecislovas Zalakevicius*
	Par 2	Rode Zaal	***Ecotoparasites and avian biology***
11:30-11:50	115		Old nest material and breeding biology in Starlings *T.D. Mazgajski, A.H. Kodra & K. Kowalczyk*
11:50-12:10	168		Host-parasite interactions in natural holes: Marsh Tits and blow flies *Tomasz Wesolowski*
12:10-12:30	144		Short term physiological and fitness consequences of bot flies on nestling blue tits *Aurélie Simon, Donald Thomas & Jacques Blondel*
12:30-12:50	92		Seasonal variation in ectoparasite load in the open nesting Australian reed warbler *Romke K.H. Kats, Mathew Berg, Justin Welbergen, Rebecca McIntosh & Jan Komdeur*
12.50-14.15			LUNCH BREAK

Wednesday 22 August (afternoon)

14.15-15.00	Plenary	Grote Zaal	***In search of the clock: mechanisms, functions and dependence on environmental contrasts*** ***Eberhard Gwinner***
15.00-15.30		Corridors	TEA BREAK
			PARALLEL SESSIONS
	Par 3	Grote Zaal	***Issues in bird conservation***
15:30-15:50	33		Why did granivorous passerines wintering in the Wadden Sea decline? *Jochen Dierschke & Franz Bairlein*
15:50-16:10	49		Mechanised shellfisheries and shellfish-eating birds in the Wadden Sea and Oosterschelde *Bruno J. Ens*
16:10-16:30	69		Effects of pollution on birds in river ecosystems: a case study on Dutch Little Owls *Niko Groen, Theo Boudewijn & Jolande de Jonge*
16:30-16:50	82		Declining number of breeding ducks: the effect of succession at the Rakovye Lakes *Natalia P. Iovchenko, Pavel S. Ktitorov, Tatiana A. Popova & V.P. Chuyko*
16:50-17:10	2		Nesting success of Common Rosefinch: is breeding in fragmented habitats disadvantageous? *Tomas Albrecht*
	Par 4	Rode Zaal	***Annual cycles and photoperiod***
15:30-15:50	31		Photoperiodic control of the annual cycle in birds and comparison with mammals *Alistair Dawson*
15:50-16:10	1		Annual cycle events in first year White Wagtails in northwest Russia *Galina Afanasieva & Tatiana Rymkevich*
16:10-16:30	53		Geographical variability of annual cycles in Whitethroats *Katherine Fertikova*
16:30-16:50	129		Annual cycles of forest-living and urban European Blackbirds: phenotypic flexibility or genetic differences? *Jesko Partecke, Thomas Van't Hof & Eberhard Gwinner*
16:50-17:10	14		Development of the testis during spring migration in the long-distance migrating Garden Warbler *Ulf Bauchinger, Tom Van' t Hof & Herbert Biebach*
17:10-17:30	191		Skipping: differential use of migratory stopover sites by Bewick's Swans in spring and autumn *Jan Beekman, Bart A. Nolet & Marcel Klaassen*

Thursday 23 August (morning)

9.00-9.45	Plenary	Grote Zaal	***Are Black Terns* Chlidonias niger *flexible enough to cope with hurdles in the annual life cycle?*** ***Jan van der Winden***
9.45-10.10			COFFEA BREAK
			PARALLEL SESSIONS
	Par 5	Grote Zaal	***Large-scale movements***
10:10-10:30	63		Wintering areas of giant petrels tracked by light level geolocation *Jacob González-Solís, Vsevelod Afanasyev, Dirk Briggs, John P. Croxall & Dufydd R. Roberts*
10:30-10:50	175		Adapting primary moult to migration: flight costs and feather quality in the Black Tern *Marco Zenatello, Lorenzo Serra & Nicola Baccetti*
10:50-11:10	22		Spatial distribution of passerine nocturnal migrants over deserts and mountains of western Asia *Casimir V. Bolshakov*
11:10-11:30	180		Changed species composition of Lake Victoria's lakefly swarms launches migrant warblers *Jan Wanink & Kees Goudswaard*
11:30-11:50	122		One million migratory waterbirds on isolated wetlands in Niger: resource use and availability and waterbird-livestock interactions. *Wim Mullié, Joost Brouwer, François Codjo, Abdou Malam Issa, Rob Decae & Julia Ambagis*
11:50-12:10	32		Monitoring changes in numbers and distribution of waterbirds wintering in the Western Palearctic *Simon Delany, Niels Gilissen & Joost Brouwer*
12:10-12:30	150		Recent shifts of wintering areas of waterfowl populations in Europe and their reasons *Saulius Svavas*
	Par 6	Rode Zaal	***Individual schedules and tactics***
10:10-10:30	76		Arrival of Avocets at breeding sites: effects of wintering area and consequences for reproductive success *Hermann Hötker*
10:30-10:50	39		How age, experience and condition affect the date of return in prospecting Common Terns *Tobias Dittmann & Peter H. Becker*
10:50-11:10	110		Recruitment in the Common Tern: do earliest birds win? *Jan-Dieter Ludwigs & Peter H. Becker*
11:10-11:30	46		Nomadism or site-fidelity: two different breeding strategies in Dark-bellied Brent Geese. *B.S. Ebbinge, B. Spaans, G.J.D.M. Müskens & P.W. Goedhart*
11:30-11:50	121		Mechanism of juvenile dispersal in the Reed Warbler: effects of internal state and environmental conditions *Andrey Mukhin & Victor Bulyuk*
11:50-12:10	21		Summer and autumn schedules of first year Great Tits with different hatching dates in northern Europe *Julia Bojarinova &Tatiana Rymkevich*
12:10-12:30	25		Impact of external and endogenous factors on the timing of migratory departure in juvenile Robins in autumn *Victor Bulyuk & Arseny Tsvey*
12.30-14.00		Corridors	LUNCH BREAK

Thursday 23 August
(afternoon)

14.00-14.45	Plenary	Grote Zaal	***The deep roots of migration: reading DNA as a detective story*** ***Allan J. Baker***
14.45-15.10		Corridors	TEA BREAK
			PARALLEL SESSIONS
	Par 7	Grote Zaal	***Evolutionary considerations***
15:10-15:30	73		Evolution of Falconiformes: multiple convergent adaptations inferred from nuclear and mitochondrial DNA phylogeny reconstructions *Andreas J. Helbig*
15:30-15:50	107		Population-genetic differentiation and historical demography of five "Lesser Black-backed Gull" taxa *Dorit Liebers & Andreas J. Helbig*
15:50-16:10	138		Does the pattern of winter distribution of Robins migrating in autumn through the Baltic basin reflect the history of the species? *Magdalena Remisiewicz*
16:10-16:30	90		Extinction risk and evolutionarily stable optimum clutch size *Gerdien de Jong & Tom M. van der Have*
	Par 8	Rode Zaal	***Metapopulation biology***
15:10-15:30	181		Garden birds: a neglected component of the population? *R. Bland, J. Tully & J.J.D. Greenwood*
15:30-15:50	152		All that glitters is not gold: fragments of rich habitat function like "ecological trap" for Great Tits *Vallo Tilgar, Raivo Mänd, Agu Leivits & Marko Mägi*
15:50-16:10	147		Perspectives of subalpine populations of Whinchat: do they have the same destiny as the birds of the lowlands? *Reto Spaar & Mathis Müller*
16:10-16:30	124		Sources and sinks: are there any in the Swiss population of Great Tits? *Beat Naef-Daenzer & Maria Nuber*
16.30-18.00		Corridors	POSTER SESSION
20.30-22.30		DE BEURS	FILM SESSION

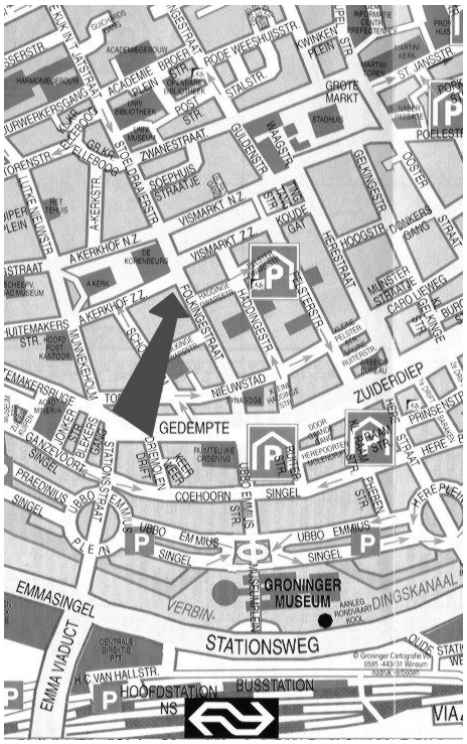
Thursday 23 August
(evening)

20.30-22.30	Café-Restaurant Huis De Beurs	FILM SESSION
20:30-20:35	short introduction by the filmers	
20:35-21:20	Starlings at work	A film of J.Musch and T.Tinbergen
21:20-21:45	COFFEE	
21:45-22:30	Our Brent in Siberia	A film of J.Musch and T.Tinbergen

About the films

Starlings at work is a film made by Musch and Tinbergen about research on foraging behaviour of Starlings. It was taken around the field station of Groningen University on the Dutch Waddensea island Schiermonnikoog. **Our Brent in Siberia**, also made by Musch and Tinbergen, is a research film about the goose work of Dutch researchers in Taymir.
Musch and Tinbergen have built up a tradition to make Nature films that show both field researchers and study animals in their natural environment. This combination of nature film and research documentary builds up a concise picture of field research that takes place in the most beautiful environments of the world. Certainly worth to see!

Café-Restaurant Huis De Beurs, Akerkhof ZZ 4, Groningen is in the town centre, at the south west corner of the Vismarkt, indicated by the arrow.



Friday 24 August

9.00-18.00	EXCURSIONS
	The starting Point of the Excursions is in the St. Jansstraat near the "Grote Markt". The buses can be found near the largest church of Groningen (Martini church). The buses will drop you at 18.00 at the Biologisch Centrum in Haren. You have to organise your own transport to Groningen by bus or train.
	The number and name of your excursion can be found on the front window of the buses.
	During the excursions lunches will be provided.
	The wather can be sunny and warm as well as windy and rainy. It will be wise to take raingear and boots with you – just "in case". You can leave them in the buses during the excursions.
	Take your binocular and telescope with you!!
	Be in time, otherwise we will start without you !!
18.00-20.00	CONFERENCE DINNER in Biologisch Centrum. The dinner will be informal.

The excursions to the Dollard, 3a and 3b, are combined due to a lack of interest to the first excursion. You will find the number 3 on the bus of the Dollard excursion.

Saturday 25 August (morning)

9.00-9.45	Plenary	Grote Zaal	***Insights from contrasts: migration systems in the New and the Old World compared*** ***John H. Rappole***
9.45-10.15		Grote Zaal	ANNUAL MEETING EOU
10.15-10.40		Corridors	COFFEE BREAK
			PARALLEL SESSIONS
	Par 9	Grote Zaal	***Life history***
10:40-11:00	94		Termination of parental investment in the Red-necked Grebe: ambisexual offspring desertion *Janusz Kloskowski*
11:00-11:20	159		Maternal condition, egg testosterone and offspring fitness in Lesser Black-backed Gulls *Nanette Verboven, Ruedi Nager, Pat Monaghan & Hubert Schwabl*
11:20-11:40	153		Dispersal, fitness and optimal clutch size *Joost Tinbergen*
11:40-12:00	155		Prudent Great Tit parents *Zoltán Tóth, Roland Farkas & Liz Pásztor*
12:00-12:20	165		The costs of egg production and incubation in Great Tits *Marcel E. Visser & C.M. Lessells*
12:20-12:40	148		Delayed start of first breeding in Pied Flycatchers: removal experiments in Germany and Russia *Helmut Sternberg, Vladimir G. Grinkov, Elena V. Ivankina, Tatyana A. Ilyina, Anvar B. Kerimov & Antje Schwarz*
	Par 10	Rode Zaal	***Aspects of foraging and fuel storage***
10:40-11:00	58		Time-activity budgets of Grey Plover and Dunlin during spring migration on Yugorsky Peninsula *Vadim Gavrilov*
11:00-11:20	34		Numbers, weights and fat classes of three Palaearctic migrants at a constant effort mistnetting site in Ivory Coast, West Africa. *Volker Salewski, Karl-Herbert Falk, Franz Bairlein & Bernd Leisler*
11:20-11:40	28		Fuel storage in migrating Blackcaps in autumn: which factors are important? *Nikita Chernetsov*
11:40-12:00	17		Function and consequences of the high flexibility in digestive system and breast muscle during long-distance migration in a songbird *Herbert Biebach*
12:20-12:40	61		Gizzard size constrains prey choice and intake rate in Red Knots *Jan van Gils, Ann Brans, Anne Dekinga, Marjolein Dijkstra, Bram ter Keurs, Theunis Piersma, Sem de Rooij, Nanda Scheerder, Mathias Sciborski & Arjan Wilkens*
12.40-14.00		Corridors	LUNCH BREAK

Saturday 25 August (afternoon)

14.00-14.45	Plenary	Grote Zaal	***Annual cycles: contrasting avian and mammalian modes*** ***Serge Daan***
14.45-15.00		Grote Zaal	CLOSING' OF THE CONFERENCE
15.00-15.30		Corridors	TEA BREAK
			PARALLEL SESSIONS
	Par 11	Grote Zaal	***Energetics***
15:30-15:50	93		Sex-dependent patterns of basal metabolic rate variation in wintering Great tits *Anvar B. Kerimov & Elena V. Ivankina*
15:50-16:10	151		Food supplementation reveals a balance among water, energy and thermoregulation in Hoopoe Larks from the Arabian Desert *B. Irene Tieleman & Joseph B. Williams*
16:10-16:30	104		Daily energy expenditure in precocial shorebird chicks: smaller species perform at a higher level. *Karen L. Krijgsveld, G. Henk Visser & Robert E. Ricklefs*
16:30-16:50	164		Energy budgets of entire family units during peak demand of the brood: a comparison between sea and land birds. *G. Henk Visser*
16:50-17:10	35		Quality matters: why Eider Ducks could starve while feeding on bivalves *Gregor Scheiffarth & Georg Nehls*
17:10-17:30	72		Energy expenditure in Barn Swallows during flight: is there an effect of body mass? *Carola Haus, Herbert Biebach & G. Henk Visser*
	Par 12	Rode Zaal	***Topical highlights***
15:30-15:50	111		Life-history and the occurrence of second broods in Great Tits *Marko Mägi, Raivo Mänd & Vallo Tilgar*
15:50-16:10	16		Effects of individual and territory quality on settlement patterns and reproduction in the Australian reed warbler *Nienke Beintema, Mathew Berg, Justin Welbergen & Jan Komdeur*
16:10-16:30	83		Social organisation and behaviour of Paddyfield Warbler *Vladimir Ivanitskii, Pavel Kvartalynov & Irina Marova-Kleinbub*
16:30-16:50	98		Zwischenzug of Starlings - summer migration or feeding movements? *Kosarev Vladislav*
16:50-17:10	50		Simulating the migration of young passerines *Birgit Erni, Felix Liechti & Bruno Bruderer*
17:10-17:30	174		Do nocturnally migrating birds flying in reverse directions behave differently from birds flying in expected directions? An analysis of radar data from Israel *Susanna Zehnder, Felix Liechti, Igor Steiner & Bruno Bruderer*

Sunday 26 August DEPARTURE

Abstracts of invited speakers

Most abstracts of invited spekers were not available

Are Black Terns *Chlidonias niger* flexible enough to cope with hurdles in the annual life cycle?

Jan van der Winden
e-mail: j.van.der.winden@buwa.nl

Bureau Waardenburg, P.O. Box 365, 4100 AJ Culemborg, The Netherlands

Black Terns *Chlidoinas niger* breed in freshwater marshlands over a large area in Europe including Mediterranean, steppe and temperate climates. The total European population is unknown but estimated at 57,000 to 110,000 pairs. Especially in Western Europe the breeding population has declined considerably with examples of more than 90% since the fifties in strongholds like the Netherlands (van der Winden *et al*.1996). In parts of Eastern Europe the population remained stable or even increased (Tucker & Heath 1994After breeding the birds concentrate in very few food rich large coastal wetlands in Europe. So far the most important are Lake IJsselmeer (The Netherlands), The Sivash (Ukraine), The Oder estuary (Poland/Germany) and The Bay of Venice (Italy). Each of these holding at least 10,000 birds in July-September, with a maximum at Lake IJsselmeer of 100,000. In these areas Black Terns moult a part of the flight feathers and most body feathers before migrating to Africa. From September until November high numbers are present in West Africa with increasing numbers in the period December-February in parts of Southern Africa. Spring migration in Europe starts in April with broad front migration all over Europe. Black Terns occur in spring in most wetlands including inland freshwater marshes. Black Terns breed in fresh water marshlands and agricultural areas intersected with waters on floating watervegetation or on muddy islets. The choice for this typical breeding habitat made the species vulnerable for changes in water management. In the Netherlands Black Terns declined because reproduction was insufficient in the past 50 years all related to the intensification of use of land by humans. The decline is directly caused by lack of suitable nest sites, insufficient food availability for the chicks and disturbance in the chick period. Natural nest vegetations like Water Soldier *Stratiotes aloides* declined significantly, partly replaced by vegetation types such as Nymphaeids, inferior as nest substrate. The clutch survival on floating roots of Nymphaeids is significantly lower (33-46%) than on Water Soldier (>65%) (Van der Winden *et al*. in press.). Artificial rafts are provided by nature conservationists and they contribute in an important manner in areas were the lack of nest habitat is the main problem. Nowadays more than 80% of all Dutch Black Terns breed on rafts. Clutch survival is comparable to Water Soldier on rafts (> 65%). In areas with high disturbance or insufficient food supplies, rafts are of little use. In many Dutch wetlands Black Terns depend on very few prey types as food for the young. This can result in food shortage in specific periods and chick starvation (Beintema *et al*. in press.). Especially periods with cold rainy weather can strengthen this effect. Although precocious, young Black Terns prefer to stay on the nest until fledging. In situations with high disturbance premature nest departure is usual. Breeding success in such situations is significantly lower (0.36 Young per pair) than in undisturbed situations (1.10 young per pair). After breeding Black Terns migrate to very few large coastal European wetlands. Studies in Lake IJsselmeer (The Netherlands) and the Sivash (Ukraine) showed the preference for large coastal ecosystems. This could be explained by the presence of high densities of medium sized aquatic prey like fish brood. Black Terns moult body feathers completely and flight feathers partly in these areas. Information on body mass increase, supports the theory of Black Terns as long distance migrant with non-stop flights. After arrival in West Africa Black Terns feed mainly in coastal and marine ecosystems. In Ghana, Benin and Namibia Black Terns showed a high interest for pelagic shrimps as prey item. In Africa Black Terns have to deal with large fluctuations in food availability and the terns therefore have to respond in a flexible way. These fluctuations in food availability and corresponding Black Tern behavioural reactions are demonstrated by the relation between the changes in water temperature in coastal Namibia caused by eddies in the upwelling system and Black Tern numbers and their body mass.

Abstracts

Oral presentations and poster presentations

All offered abstracts are included
Some authors will not visit the conference due to lack of money or time,
but if you are interested in their research you are able to contact them

Oral presentation **abstract 1**

Parameters of the annual cycle events in the first year White Wagtails (*Motacilla alba L.*) in NW Russia

Galina Afanasieva & Tatiana Rymkevich
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The investigations were carried out on the Ladoga Ornithology Station situated on the south-eastern shore of Lake Ladoga. The data on breeding, retraps of nestlings, and moulting birds were used to determine the parameters of the seasonal events of the annual cycle (growing, postfledging dispersal, postjuvenile moult and autumn migration) in the first year White Wagtails. The data of the experiments on photoperiodic control of the postjuvenile moult were analysed too.
We found that the late-hatched birds grow significantly more quickly and begin postfledging dispersal in younger age than the early-hatched ones. The postjuvenile moult is photoperiodically controlled. The late-hatched birds renew the juvenile body plumage and wing coverts faster. The analysis of experimental and field data allows to predict the timing of the seasonal events in local birds hatched at different time.
Among trapped birds, there were White Wagtails which differed from local birds by moult parameters. Undoubtedly, these birds were transit migrants from remote areas. They also differed significantly from local birds in body mass, fat reserves and tail length. Timing of autumn migration for local and transit birds and its annual variation will be discussed.

Oral presentation **abstract 2**

Nesting success of Common Rosefinch *Carpodacus erythrinus*: is breeding in fragmented habitat disadvantageous?

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Estimates of rates of predation on Rosefinch nests were made in continuous and fragmented habitats surrounded by agriculture landscape over the four-year period (1995-1998). Of 151 nests found, 94 were successful, 57 failed to fledge. The daily survival rate of nests was nearly two times higher in continuous habitat than in fragmented habitats ($p<0.01$). Only 43% of the nests in fragmented habitats, but more than 70% in continuous habitat fledged chicks. The best logistic regression model showed that within the continuous habitat, nests placed near the habitat edge were more vulnerable to predation than nests placed in habitat interior. In comparison with continuous habitat, the breeding seasons in fragmented habitats were more prolonged, because more replacement clutches were regularly laid in the latter. The average number of fledglings produced per female per year was 4,3 in continuous and 2,9 in fragmented habitats, despite equal average clutch size. These results indicate that breeding in fragmented habitats might be disadvantageous for the Rosefinch, since with higher reproductive effort the breeding season results in fewer chicks fledged. Despite higher predatory pressure at fragmented sites, overall nest density was marginally larger in fragmented than in continuous habitat. In this case, fragmented habitats may function as „ecological traps“. Above mentioned habitat-related differences in Rosefinch breeding success were probably caused by lower densities of avian (or mammalian) predators in continuous habitat compared with the fragmented habitats. Further research would be required on behaviour and habitat usage of potential predators at study sites.

abstract 3 **Poster presentation**

Maturation of early defense behavior in altricial nestlings: two stages of development

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Behavior of 13 broods of pied flycatcher (*Ficedula hypoleuca*) nestlings was studied in the natural habitat. We analyzed the duration of begging in response to food call and in response to food call with background presentation of species alarm call (AC) and rhythmically organized tone pips (tonal frequency 0.5, 3.5 and 7.0 kHz, repetition rate – 2 in 1 sec). Efficiency of AC and tone pips was estimated as a relation of begging duration in response to food call and food call with studied signal presented in background. Under laboratory isothermal conditions electrocardiogram (ECG) was recorded to calculate the heart rate (HR) which is a convenient index of animal's functional state and level of vigilance. It was found that before post hatching day 8 defense behavior depends on the level of feeding motivation; defense response does not affect HR and ECG closely resembles one in resting state. During that period defense response is almost equally elicited by high- and medium-frequency tone pips and AC. After day 9 feeding motivation ceases to influence defense behavior; during AC presentation HR decreases significantly, turning into a typical tachicardia in response to AC before fledging. After day 9 the efficiency of AC increases rapidly, attaining 100% by day 12, whereas that of tone pips remains unchanged. Thus, on the basis of behavioral analysis, dynamics of ECG and AC efficiency it is possible to define at least two phases in the developing of defense response, the first one being analogous to the resting state after feeding.
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abstract 4 **Poster presentation**

Comparartive nesting of Hooded Crow (Corvus Corone Cornix L.) in a forest park and adjacent area.

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We studied Hooded Crow (*Corvus corone cornix L.*) nest distribution in a Moscow forest park Uzkoye (Russia) and its adjacent area, in 1999-2000. The influence of nest sites and forage availability on the inhabited nests distribution was analyzed. Crows preferred residential area to the forest park, although there were much more adequate nest trees. The distribution of Crow nests positively correlated with distributions of ravines, trash containers, active conspecific nests, and edges ($p < 0.05$). Together these variables explained 36.4 % of nest occupancy variation. The discriminant model built up on the base of these variables successfully classified 76.6 % of nesting habitats. Average distance between the 'stable' nests was comparable with that between all nests.

abstract 5 **Poster presentation**

Changing quantity or quality? Responses of parents to varying nestling food demand

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When parent altricial birds are feeding nestlings, they may experience changes in relative food demand (food demand by the nestlings relative to food availability in the habitat) along the nestling period. Some studies have detected an increase of feeding visits per unit time (feeding rate) when nestlings become older (and probably need more food), and the feeding rate is higher when brood size is larger. This variation of the quantity of food delivered with food demand has been confirmed experimentally. However, along with changes in the quantity of food brought, or even alternatively to it, changes in food quality could occur. For example, the degree of preparation of the food brought to the nestlings has been shown to be related to the number of nestlings present in the nest. We explored the changes in quantity (feeding rate) and quality (type of prey and their preparation) of prey delivered by parent Great Tits *Parus major* to their nests. Nestlings from 4 to 12 days old where exchanged daily between nests of the same age, so that each experimental pair had alternatively 4, 7 or 10 nestlings to feed (original clutch size of all experimental pairs was 7-8 eggs). Samples of the nestling diet were taken using the collar method, prey collected examined to asses their preparation, and feeding rates studied using automatic counters. We found that (1) Prey type and prey preparation was not affected by the number of nestlings present; (2) Feeding rates were higher in pairs feeding 7 than in pairs feeding 4 nestlings, but did not differ between pairs feeding 7 and those feeding 10 nestlings. We conclude that the quality of the diet is not affected by food demand, while the quantity of food brought could be adjusted downwards if food demand is lower than expected (lower brood than clutch size), but the parents do not respond to an increase of food demand by increasing the quantity of food delivered.

abstract 6 **Poster presentation**

The Winter period of birds communities in floodplains in the Tatarstan republic

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Winter aspect limits nearly coincide with the climate ones (November - the end of March). Birds census has been carried out in 1991- 2000. 39 bird species are noticed in Tatarstan rivers valleys in winter. The bird population total density varied in different regions from 18 to 536 individuals per sq. km. The highest winter population density was noted in the valley forests because of their attractivness to birds (defensive conditions were better, fodder resources were richer). But we must emphasize that the flood - land meadows bird population and the ureme one differences become less expressed compared with the nesting period. At the meadows the birds gather on the whole in the willow shrubbs whereas the snowy meadow areas become lifeless. Birds in the willow shrubbs are the typical forest forms. The main dominants are: *Parus major*, *Aegithalos caudatus*, *Parus caeruleus*, *Carduelis carduelis*, *Pica pica*, *Pyrrhula pyrrhula*, *Parus montanus*. The following factors determine the bird population structure variations in different river parcels: the degree of the forest amount at the river plot, winter severity (low temperatures, snow - storms, snow cover altitude), the habitate fodder resources. The main on our opinion is the large forest presence in the basin of the river studied. The

regression analysis shows that the summary bird abundance directly depends upon the forest abundance at the adjoining placors territory. Bird number in the valley (at the ureme or the willow shrubbes at the meadow) correlates significantly with the woodeness coefficient in the plot studied (the range correlation coeefficient rS= 0.7, p< 0.01). So the more is the basin territory woody the higher is the bird population density at the adjoining valley in winter. Winter severity influences greatly valley birds as well. It is noteworthy that some species are more sensitive to the winter cataclysms in winter. For example: Blue Tit prefers more south regions in Republic for her winter life. This species accumulates at forest - steppes river uremes. Towards the north Blue Tit is noted seldomly and never is noted as the large flocks (especially in January - February).The biotopes fodder resources greatly influence birds as well. *Carduelis carduelis*, *Spinus spinus*, *Bombicylla glandarius*, *Acanthis flammea*, *Pyrrhula pyrrhula* and a lot of others are very sensitive to the fodder resources at the flood - land (especially fruits and seeds).

abstract 7 **Poster presentation**

Seasonal aspects of birds communities in the arable lands in the Tatarstan republic

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The aim of this work, realized in the arable land of VJusokogorskij district in the Tatarstan republic (RUSSIA), was to study seasonal dinamics of birds population. Birds censusus has been carried out from September 1992 to August 1993 every 36 decades. Bird population structure in this habitate varies highly during the different seasons. During the whole year 81 bird species are noted in the arable lands. Species diversity is maximal in the postreproduction season, in winter it reduces in 8 - 10 times. The total bird population density varies more greatly: in the 1 - st decade of February it reduces in 100 times compared with the 3 - rd decade of June. Population density is the highest at the end of the reproduction period during the young birds fly; then it falls down. This seasonal dynamics in the arable land population density would be considered as the immigrant type. The continuoes changes of the species diversity and the total abundance do not reflect purely the transformation in the bird communities seasonal structure. No atention is paid to the emigrations ans immigrations phenomena and in given species number fluctuations as well. In order to estimate bird communities similarity and dissimilarity in the sequent decades we use the similarity index in accordance to abundance. It has been accounted according to Chernovs, formula. Permanent reconstructions of the bird population structure in the arable land from decade to decade are continueal and considerable - the highest similarity is not more than 74 %. In the year cycle the bird population dynamics purely shows 3 periods: 3 – rd decade of August – 2 – nd decade of September; 3-rd decade of February – 2 – nd decade of March; 2 – nd decade of April – 2 – nd decade of July. Within some of them separate decades population posses high similarity and the stable structure. The populations varies greatly in October; from 1 –st decade of December – 1 –st decade of February; 2 –nd decade of March – 1 –st decade of April. At the beginning of spring and at the end of autumn bird population is more dymanical. The fastest and vast reconstructions occure at the moment between winter and spring periods (at the end of March). Together with the species diversity and bird population density the list of the dominants changes. During them absolutely were dominating: Alauda arvensis - in 19 decades from 36 decades. According to the shown above, the following temporal bird populations groups may be underlined due to the ecological peroids: autumn migrations (September - 1 -st decade of October); migrations before winter (2 -nd decade of October - 3 -rd decade of November); winter depressions (December – 1- st decade of February); the relative winter stabilization (February - March); spring fly (April - 2 -nd decade of May); the mass breeding (the end of May - June); the local migrations after nesting (July); late summer migration (August).

abstract 8 **Poster presentation**

Seasonal aspects of birds communities in the forest floodplain in the Mary Al republic

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The aim of this work, realized in the forest floodplain of Iilet river in the Mary Al republic (RUSSIA), was to study seasonal dinamics of birds population. Birds censusus has been carried out from June 1991 to May 1992 every 36 decades. Densities of birds populations and the levels of Pielow and Shennon indexes of birds communities during the whole season are calculated. Pielow and Shennon indexes are minimal in February, permanently grow till the end of May and are relatively stable in the reproductive period (June - the 1- st half of July). The diversity indexes grow in 1.4 -2 times. When nestlings leave the nests indexes considerably decline.They remain low till the end of August. From the beginning of September (the mass autumn migration) the indexes vulue wavely rise till the 2 -nd decade of October. Due to the mass migrations in November the diversity indexes sometimes increase, sometimes decrease. In winter they noticably vary, rise till the middle of January and then sharply decline till the end of February. From the 3 -rd decade of March (Shennons index) and fron the beginning of April (Pielow index) they smoothly grow. On our opinion the noticable fluctuations in species diversity indexes out of the mass reproduction time are determined by the following: many species are less attached to their nest territory and strive to use the space during autumn, spring and early winter migrations. On our opinion species diversity and smoothing indexes purely show the dates and the value of the seasonal shifts in the bird communities. According to the shown above, the following temporal bird populations groups may be underlined due to the ecological peroids: the mass nesting (the end of May - 2 -nd decade of July); the local migrations after nesting (the 3 -rd decade od July - 2 -nd decade of August); autumn migrations (3 -rd decade of August - 1 -st decade of October); migrations before winter (2 -nd decade of October - 3 -rd decade of November); the relative winter stabilization (December - February); migrations before spring (March); spring fly (April - 2 -nd decade of May).

abstract 9 **Poster presentation**

Dynamics of Sand Martin number in the middle part of Seversky Donets valley

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Counts of Sand Martin *(Riparia riparia)* were carried out in the middle part of Seversky Donets valley (North-Eastern Ukraine) in 1994, 1998 and 1999. The length of counts plots is 200 km. 25,869 burrows in 121 colonies were counted in 1994; 23,272 burrows in 105 colonies — in 1998; 29,410 burrows in 145 colonies — in 1999. Minimum size of colony is 5 burrows, maximum size — 2,500 burrows. Distribution of colonies along riverbed is uneven. Four accumulations of colonies are stand out. Dynamics of total number of colonies in each accumulation, average size of colonies and distance between colonies are presented. The results of dispersion analysis revealed, that the colonies' size reliably enhances downstream. The number of colonies and burrows in them hadn't been related to soil types as had been shown by multifactorial linear regression analysis. The strong correlation between the average size of colony and river meandering was revealed.

Selected as oral presentation **abstract 10** **not presented**

The evolution of the bill tip organ in wildfowl (order Anseriformes)

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The external organization of the wildfowl bill tip tactile organ (BTO), a term introduced by Gottschaldt (1974), was examined using scanning electron microscope in about 50 species of different systematic and ecological groups. BTO occupies the tips of upper and lower bill and consists of keratin caps and/or alveoli. Some general ways of the BTO transformation in the course of wildfowl evolution (Jonsgard, 1978) are discussed. The upper and the lower parts of BTO were transformed in the opposite directions. The number of caps (alveoli) decreased from 450 in the screamer and 100-120 in geese to about 35-40 in ducks in the upper BTO. Horny caps are typical for screamer and the most of geese, and alveoli are usual for swans and the most of ducks. In the contrary, horny caps in the lower BTO are typical for the whole suborder Lamellirostres and alveoli are typical only for Anchimae. Their density increased from 2 per mm^2 in screamer and 5-7 in geese to 10-20 per mm^2 in dabbling ducks. As a whole, BTO morphological asymmetry increases in the course of wildfowl evolution. There are three general ways of the BTO transformation in according to the mode of life. Caps of the upper BTO in grass-eating terrestrial forms are, in comparison with the ancestral forms, shorter and less numerous and caps of the lower BTO longer and more numerous. Animal-eating diving ducks have the BTO receptor units of the lowest number and density and of the largest dimensions. Dabbling ducks have the most asymmetrical BTO and the highest density of caps in its lower half. The ancestors of wildfowl probably inherited the predecessor of BTO together with the skin organs of reptiles. Further these organs were concentrated within the small area under the nail of the bill and formed complicated sensory units, which perfected themselves in assimilation to water habitats.

abstract 11 **Poster presentation**

Distinctive behavioural traits of early stages of reproductive cycle in migratory populations of the Common Stonechat *(Saxicola torquata (L.))* in Kharkiv region, Ukraine

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Migratory populations of the Common Stonechat *(Saxicola torquata (L.))* were studied using colour ringing for 1992-2000 period in the area recently colonised by the species (North-eastern Ukraine). The behaviour of the species have some distinctive traits which are non-usual for small migratory passerins. Some Stonechats can change already established territories at early stages of the reproductive cycle in mid April. One clear documented example is presented by the male which originally occupied the territory it held in previous year but within 15 days period thereafter changed it and took in another territory constantly occupied by other Stonechats in preceding years. Such changes of territory at initial stages of the Common Stonechat's reproductive cycle originally have been found in partially resident Britain subspecies *(Saxicola torquata hibernans Hart.)* by E.D.H. Johnson (1961, 1971). At present the phenomenon is registered for the first time in migratory populations of European race *(S. t. rubicola (L.))* in North-eastern Ukraine. Another distinctive trait is that many Stonechats arrive to breeding sites being already paired (e.g. 56% of all earliest observations in Kharkiv region in 1992-1994). The described phenomena can be considered as an indirect evidence for recent origin of migratory populations of the Common Stonechat in North-eastern Ukraine from resident populations.

Selected as oral presentation **abstract 12** **not presented**

A Pan-European Bird Monitoring Strategy

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Although it is clear that negative human impacts on the environment in Europe have been widespread and intense over recent history, it is also clear that we do not understand adequately the associated causes, problems and solutions. In order to, we need to monitor biodiversity at many levels of organisation and scales and in a long-term and systematic manner. With others, BirdLife International has been working toward a Pan-European Bird Monitoring Strategy that includes three main elements: (i) Sites – to monitor the conservation status and needs of a network of sites critical throughout the avian calendar (known as "Important Bird Areas"); (ii) Threatened species - to monitor the conservation status and needs of threatened and rare species (i.e. those species often requiring individual targeted actions); and (iii) Common species - to monitor the trends in the numbers of these species in priority habitats to provide an indication of the state of these birds and the broader environment. This paper describes recent advances in the development of this strategy, which will improve our ability to provide frequent and accurate indications of the state of the European environment, the pressures acting upon it and the responses being taken to conserve it.

abstract 13 **Poster presentation**

A re-analysis for nest predation edge effect in non-forested versus forested areas.

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Reproductive success of birds is influenced by environmental factors and by population interactions. The most important interaction is probably the nest losses due to predation. The conventional wisdom suggests that the nest predation is higher in the habitat edges than in the interiors. Therefore, the nest success of the songbirds is lower at edge than in interior habitats, at least in forests. However, the results of edge effect studies are still contradictory. In this literature review we were interested, if there is any evidence for nest predation edge effect in non-forested, open habitats? Therefore, our aim was to summarise the existing literature in non-forested habitats that quantified the relationship between nest loss and the distance from the edge. Then re-analyse their data and finally make a general conclusion for edge effect in non-forested habitats. We tested whether nest success was independent of the distance from an edge using a log-likelihood ratio (G) test. To correct the significance levels for table-wide statistical error we performed the sequential Bonferroni correction. The re-analysis of 38 investigations in open habitats (27 cases of artificial nests and 11 of natural nests) revealed only 4 cases, where the homogeneity of nest predation across the edge was rejected. However, only 2 of these showed the "expected edge effect", where the nest predation was higher in the edge than in the interior. We completed a sequential Bonferroni correction for the results of Paton's (1994, Conservation Biology, 8: 17-26) review on the edge effect in forested habitats. From the 41 experiments he listed, only 8 showed the expected edge effect. Based on our results we challenge the widely accepted conventional wisdom of increased nest predation at habitat edges.

Oral presentation **abstract 14**

Development of the testis during spring migration in the long-distance migrating garden warbler (*Sylvia borin*)

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Long-distance migrating passerines face a dual challenge when returning to the breeding grounds in spring. Not only must they complete the demanding process of migration and precisely time their arrival, they also must be ready to defend a territory and breed shortly after arrival. However, during winter the reproductive axis is quiescent and the gonads are regressed. The limited time available to initiate reproductive activity in the breeding area suggest, that development of the gonads has already been initiated during migration. How migrants precisely time gonadal development is unclear. Therefore, we investigated the hormonal changes and histological development of the testis during spring migration and simulated migration in combined field and laboratory experiments in the long distance migrating Garden Warbler (*Sylvia borin*). The data show that testicular development is already initiated several thousand kilometres before reaching the breeding area. Furthermore, after stopping over at a site about half way through the migration route, seminiferous tubule diameter increased approximately four-fold. In addition, at that stage of migration spermatogenesis has already been initiated and reached the stage of spermatid differentiation. We will also address the hypothesis that testicular development takes place primarily during periods of stopover during migration. We suggest that in addition to the timing of arrival and the body condition at arrival, the stage of development of the testis is also of prime importance in determining reproductive success on the breeding grounds.

abstract 15 **Poster presentation**

Parameters of trophic niches of the two hole-nesting species in the nature reserve in the Central Russia.

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When studying trophic niches it is of interest to know to what extent the parameters obtained can be regarded as stable. Food resource tends to vary in temporal and spatial scale, thus, seriously affecting the birds diet. Therefore, it was of interest to compare food composition of insectivouirs birds in the central part and on the periphery of the oakwood reserve. The diet of *Parus major* and *Ficedula albicollis* nestlings was studied using neck ligatures method in 1994-1997 and 2000. The nests selected for analysis were the ones in which the chicks were reared during the same period of time. It was ascertained that whatever the nest location was the predominant food of *P.major* included Noctuidae, Geometridae and Pieridae larvae and to less extent - spiders. The diet of *F.albicollis* was very diverse, though the percentage of the main orders was similar for the nests from different parts of the oakwood. Analysis of food items at the family level reveals that *F.albicollis* prefers the invertebrate species prevailing in the particular forest area (as it is the case with *Coleoptera*, *Aranei* and *Diptera* orders). This is related to the fact that having high breeding density *F.albicollis* forages in the area close to its nest. Therefore, the nestlings diet reflects specifics of the food resources of the particular habitat very well. Meanwhile, *P.major* flies quite a distance from the nest-box in order to feed its nestlings. Both factors mentioned above, i.e., more selective diet of *P.major* and the tendency

of *F.albicollis* to use abundant and variable resources, can be regarded as relatively stable parameters of trophic niches.

Oral presentation **abstract 16**

Effects of individual and territory quality on settlement patterns and reproduction in the Australian reed warbler

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The Australian reed warbler (*Acrocephalus australis*) is a polygynous passerine that breeds in reed beds in southern Australia following southward migration. As with many migratory birds, males arrive before females and must compete vigorously to establish territories and attract mates. According to the polygyny threshold model, differences in the quality of males or their territories that affect reproductive success should explain the occurrence of polygyny. We used morphometrics to quantify individual quality, and we conducted a supplementary feeding experiment to investigate the role of territory quality (food availability). Here we discuss the roles that territory and individual quality have on individual settlement patterns and reproduction.

Oral presentation **abstract 17**

Function and consequences of the high flexibility in the digestive system and the breast muscle during long distance migration in a songbird.

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During the last years it has become increasingly clear that the size, the composition and the function of organ systems in migratory birds are highly flexible and dependent on the different physiological performances during the migration period. In an extended study we documented the changes in organ systems during the transition from stopover to extended flight phases. From Garden Warblers and Willow Warblers quantitative data about the size of different organs have been collected along the migration route from the wintering grounds in Tanzania to Eastern Europe. The analysis of the digestive system with the dramatic changes in size and function within a few days has now been extended to the locomoter system, namely the breast muscle. From stopover to the end of a flight phase mass is reduced by 20%. In addition, the composition does change, resulting in a relatively lower content of contractile proteins in the mass-reduced muscle. As a consequence the power output per gram might have increased and partially compensated the mass loss of the total breast muscle.

abstract 18 **Poster presentation**

Marsh Harrier *Circus aeruginosus* in central European Russia

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The research of the ecology of Marsh Harrier *Circus aeruginosus* was carried out in spring – summer seasons since 1997 in five regions of central European Russia. 37 nest sites and 19 nests were discovered. Typical nest site of the pair of Marsh Harriers is the part of swamp or the fishpond with the sedge. The total area is about 150 – 200 sq.m. Usually the site is surrounded by fields which are used by birds as hunting areas. Usually, Marsh Harriers breed successfully: average number of eggs is 4, average number of chickens is 3. The long-term researches show that Marsh Harriers adapt to any human activity within nest sites changing some elements of nesting behaviour. Only two species of Harriers (Montagu`s Harrier *Circus pygargus* and Marsh Harrier) change the nest behaviour because of human interference in central Russia. Marsh Harrier like Montagu`s Harrier has adapted to the morden conditions of central Russia. The degradation of agriculture in many regions allowed Harriers to rise their number rapidly and now it is estimated as 5000 - 6000 pairs of birds, at least.

abstract 19 **Poster presentation**

Montagu`s Harrier *Circus pygargus* in central European Russia

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Ecology, behaviour and trends population of Montagu`s Harrier *Circus pygargus* was researched for 7 field seasons (1994 – 2000) in 10 regions of central European Russia. During this time 203 nest sites and 164 nests of Montagu`s Harriers were discovered. Our researches show that Montagu`s Harrier is the most successful species among all the "bright harriers" and birds of prey in general. This is the typical raptor for every type of open landscape within central Russia. It uses different areas as the nest sites but prefer the agricultural ones. Evidently, that Montagu`s Harriers nest close by settlements and different agricultural objects because this areas give the protection for the nests which harriers need. The nest habitat of the pair of Montagu`s Harriers is the area with tall vegetation (usually nettle). In the case of large area harriers can formed the colony (4 – 12 pairs). Like Marsh Harrier (*Circus aeruginosus*) Montagu`s Harrier can adapt to any human interference due to transforming of elements of nesting behaviour.
The decline of agriculture in the most regions of central Russia allowed this species of raptors rise their number rapidly and extend the north limit of range. Today the number of Montagu`s Harriers is about 25000 pairs for all European Russia.

abstract 20 **Poster presentation**

Late hatched Great Tits: how do they contribute to the next year breeding population?

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The recruitment rates of the second broods in the Great Tit are widely believed to be negligible. This conclusion is based on some previous studies performed with the ringing method within limited breeding areas. In fact, this method does not allow to separate the real mortality from disappearance resulted from dispersal.
Here we argue that at least in years following the years with high number of second broods the recruitment rate of late-hatched birds in the breeding population is considerable.
According to our previous experimental and field study of postjuvenile moult, Great Tits with incomplete moult of rectrices can be identified as born late in the breeding season with accuracy about 95% (as birds from second or late replacement broods for latitude 60^0 N, and as birds from second broods for latitude 55^0 N). We used this moult marker to identify late-hatched birds in breeding populations.
The recruitment rates of late-hatched birds were studied in two populations (in the countryside near St.Petersburg and at the Courish Spit of the Baltic Sea) in 2000. The percent of late-hatched Great Tits among first-year breeders was found to be as large as 26% (n=34) in the countryside near St.Petersburg and 23% (n=60) at the Courish Spit. In the first population the percent of such birds among females of all ages was about 30 % (n=27), and among all birds of both sexes from 27 breeding pairs – 18% (n=50).

Oral presentation **abstract 21**

Summer and autumn life-time schedules of first year Great Tits with different hatching dates in northern Europe

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The Great Tit is considered in literature as „partial migrant“, „irregular migrant“ or as „a species with wandering type of movements“. The knowledge of the annual cycle regulation for species with such a type of yearly movement is still far of completeness. Our study is aimed at revealing the relations of breeding, moult and migration in Great Tits. The analysis of the postjuvenile moult is based on the field data (retraps of nestlings and moulting birds) and the photoperiodical experiments. According to our experimental and field data, for latitude 60^0 N Great tits with incomplete moult of rectrices can be identified as born late in the breeding season with accuracy about 95%. While studying autumn migration at the Ladoga Ornithological Station, we used this marker to identify tits from second or late replacement broods.
We found that birds from first and second broods i) commence and finish their moult at different age and time; ii) have different extent and rate of moult**,** iii) start migration at different age and time. The differences were found to be due to the different photoperiodic conditions during the postfledging period in these two groups. Mean dates of migration in late-hatched tits were 8-19 days (depending on the year) later than mean dates of migration in early-hatched tits, whereas the mean hatching dates of first and second broods differed approximately by 40 days. These results are interpreted in terms of adaptive peculiarities of the annual cycle of the Great Tit.

Oral presentation **abstract 22**

The Palaearctic – African bird migration system: spatial distribution of passerine nocturnal migrants over deserts and mountains of western Asia

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From the viewpoint of further developing ideas of R. Moreau (1972), specific composition and spatial distribution of Palaearctic passerine nocturnal migrants wintering in Africa were studied in deserts and highlands of western Asia (37° - 48° N and 52° - 82° E) by mist-netting stopover migrants at 18 sites in spring and in autumn. The data on direction and traffic rate of nocturnal migration were obtained by large-scale moon-watch observations. In spring, African nocturnal migrants cross the desert belt to the east of the Caspian Sea in a broad frond, but ca. 94% avoid high mountains of western Central Asia. Completely transit species breeding in temperate and high latitudes of Central and Eastern Palaearctic comprise only ca. 18.2% of all African migrants by number of individuals. Species which have breeding populations in western Asian highlands included, ca. 50-60% of birds migrating across the deserts are returning from African winter quarters. In autumn, numbers of transit avian migrants over the desert are 3.4 – 3.7 times lower than in spring. The primary reason for this is that in autumn, the bulk of transit African migrants make a detour and bend the desert belt from the north-west. This route make the migratory journey longer but allows to fly over more ecologically convenient areas.

Oral presentation **abstract 23**

Adjustment to climate change is constrained by arrival date in a long distance migrant bird

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Spring temperatures in temperate regions have increased over the past 20 years and a wide variety of organisms have responded to this increase by advancing their growth and reproduction. We show for the first time that adaptation to climate change in a long-distance migrant is constrained through the timing of its migratory journey. In long-distance migrants, climate change may advance the phenology in their breeding area, but the timing of at least some species' spring migration relies on endogenous rhythms not affected by climate change. Hence their spring migration will not advanced although they need to arrive earlier on their breeding grounds in order to breed at the appropriate time. We show that the migratory Pied Flycatcher *Ficedula hypoleuca* has advanced its laying date over the last 20 years. However, this temporal shift has been insufficient as indicated by increased selection for earlier breeding over the same period. The shift is hampered by its spring arrival date, which has not advanced. At least some of the numerous long-distance migrants will suffer from climate change, because either their migration strategy is unaffected by climate change, or the climate in breeding and wintering areas are changing at different speeds, preventing adequate adaptation.

abstract 24 **Poster presentation**

Distribution of birds in relation to plot cuttings in mature deciduous forest

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Data collected in southwest Lithuania mature deciduous forest. There were made 360 line transect counts from 1-20 year old plot cutting edge 200 meters into forest. Increase in total birds number is observed at 10m-mature forest edge zone. The rest part of forest shows similar abundance. There were four edge zones defined (cluster analysis): 0-10; 10-50; 50-90 and 90-200m from plot cutting edge. First edge zone is called Edge contact zone. Main edge zone detected at 10-50m-from the edge. Intermediate zone detected at 50-90m-from the edge. Deep forest zone begins at 90m-from the edge. Latter two zones have the same birds' species that differ in abundance. The birds' distribution cluster analysis and visual evaluation defined four groups of birds. Edge affiliated birds (*Anthus trivialis, Emberiza citrinella, Hippolais icterina, Muscicapa striata, Phylloscopus collybita, Phylloscopus trochilus, Sturnus vulgaris*) are mostly registered in edges. Edge zone birds (*Columba palumbus, Cuculus canorus, Sylvia atricapilla, Parus major, Parus careuleus, Prunella modularis, Dryocopus martius, Garrulus glandarius, Coccothraustes coccohraustes*) are in greater abundance near edge compare to deeper woods. Deep forest birds (*Troglodytes troglodytes, Phylloscopus sibilatrix, Fringilla coelebs, Certhia familiaris, Ficedula parva, Parus ater*) are abundant in deep forest and aren't detected or rare near the edges. *Ficedula parva* and *Parus ater* are the mostly edge sensitive species (accordingly 90 and 50m width edge belt). *Fringilla coelebs* and *Phylloscopus sibilatrix* shows 20-30m-wide edge avoidance. Not sensitive edge species (*Dendrocopos major, Turdus philomelos, Turdus merula, Ficedula hypoleuca, Erithacus rubecula, Oriolus oriolus, Sitta europaea, Regulus regulus, Parus palustris*) are influenced by other environment factors and distribution isn't high significantly differ (F test) in relation to plot cutting edge.

Oral presentation **abstract 25**

Impact of external and endogenous factors on the timing of nocturnal migratory departure in juvenile Robins *Erithacus rubecula* during autumn migration

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Recently evidence was made available, that in individual Robins the time of nocturnal migratory departures in spring and in autumn is not restricted by a limited period of dusk, but varies broadly. In spring one of key factors governing departure time may be distance to the migratory destination (Bolshakov, Bulyuk 1999, in press). The aim of this study was to test for the importance of such factors as body condition index (body mass related to structural size), fuel stores, number of conspecifics at the study site, presence of a migratory wave, stopover length and efficiency, fuel deposition rate, individual departure date (a total of 12 factors). We used the data on 46 juvenile Robins (nearly all birds had completed moult) that were captured at migratory departure from stopover by retrapping ringed birds in high mist nets (Bolshakov et al. 2000). The study was done during autumn migratory seasons 1997-2000 on the Courish Spit on the Baltic Sea.
Individual departure time varied between 45 and 720 min (median 137 min) after sunset. The dependence between departure time and potential factors was studied by linear multiple regression model. By backward stepwise elimination, a two-factor model was selected with departure time as a dependent variable (R^2=0.26, F=7.66, p=0.0014). The model included fuel deposition rate (B=-0.37,

p=0.009) and condition index at departure (B=-0.29, p=0.04) as independent variables. Early departure (in respect to sunset) was recorded in birds showing high fuel deposition rate and high body condition index at departure. Other parameters were excluded from the model.
These results suggest that during autumn migration, fuel deposition rate and body mass are important factors that govern the time of nocturnal migratory departure in juvenile Robins.
Migratory strategy of Robins during their first southward migration is discussed.

abstract 26 **Poster presentation**

Standardisation, learning and calibration of bird measurements within research team and a network

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Evaluation of biometrics data collected by a research team needs taking under consideration problems of compatibility of data collected by different persons. This is especially important if the team consists researchers working in different countries, which is more and more common practice. Common accepting of standardised description of methods of measurements is a first step toward compatibility of data, but it is not the only one need. Standardised learning procedures in education of new ringers joining the research programme and final checking the compatibility of results (calibration) are needed as the final elements of the system. Conclusion from the calibration test is depending very much on a basic assumption of the calibration process: are we looking for absolute deviations between pairs of measurements or rather for differences in average values obtained by compared persons when measuring a sample of birds. As an addition, the problems of exactness of measurement reading and repeatability of measurements done by the same persons should be discussed.

abstract 27 **Poster presentation**

Prey choice and fish consumption in Great Cormorants [breeding and non-breeding] in the Gulf of Gdansk in 1999.

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During year 1999 Great Cormorants (*Phalacrocorax carbo sinensis*) staying in the Gulf of Gdansk (Southern Baltic) were counted. The number of observed non-breeding or post-breeding birds changed from ca. 500 (February, December) to over 17,000 individuals (September). Also birds from the Katy Rybackie colony (ca. 7000 pairs in 1999 with fledging success over 2 chicks per pair) fed partially in the Gulf of Gdansk (from 2% in March to 70% of all feeding flights in May). To recognise food composition, pellets were collected from three roosts and from the colony. To estimate the total fish consumption of cormorants –350 g of daily food intake were used for non-breeders and 450 g for breeders. Cormorants consumed totally about 900 tons of fish in 1999 (including 320 tons consumed by birds from the colony). 72% of the prey was constituted by the Round Goby, 9% – Eelpout, 6% – Flounder, 4% – Stickleback and 9% – others.

Oral presentation **abstract 28**

Fuel storage in migrating Blackcaps *Sylvia atricapilla* in autumn: which factors are important?

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The process of (re)fuelling, even though of great importance for migrants, is insufficiently studied due to methodological difficulties. The method of multiple linear regression models developed by Schaub & Jenni (2000) was used with some modifications to estimate the rate of fuel deposition in Blackcaps *Sylvia atricapilla* during their autumn migratory stopovers on the Courish Spit (Eastern Baltic). Only birds that had completed moult were included in the analysis. Two coefficients, the body mass increase during the day and fuel deposition rate (FDR) were estimated. To test for the effect of additional factors on fuel deposition rate, I included body condition index (BCI) at first capture, structural size as indicated by wing-length, date of the first capture, year and number of conspecifics at the stopover site in the maximal model. These factors were modelled as interactions with the two main effects. The final model was selected by backward stepwise elimination. Main significant influences were the daily average number of Blackcaps at the stopover site (positive), date (positive), and initial BCI (strongly negative). Inter-annual variation was also significant, FDR in 1999 being lower than in other years. According to the model, no mass gain occurred if the initial BCI exceeded 11.646 (which corresponds to the body mass of 24.37 g in a bird with an average wing-length, 76.5 mm). The initial BCI was above this threshold in only three birds out of 191 which stayed for two or more days. However, the negative relationship between initial condition and FDR could be an artefact due to heavy Blackcaps with high FDR having a low recapture probability. I calculated FDR for an 'average Blackcap', i.e. for a bird with the average wing-length, average number of conspecifics present, trapped in the median capture date, with the average initial body condition index. FDR was 0.24 $g \cdot day^{-1}$ in 1996 and 1997, 0.34 $g \cdot day^{-1}$ in 1998 and 0.09 $g \cdot day^{-1}$ in 1999, on the average 0.226 $g \cdot day^{-1}$. The positive relationship between the average number of Blackcaps at the stopover site and FDR suggested the absence of effective intraspecific competition. When available conditions facilitated quick fuel accumulation, many Blackcaps were recorded at the study site.

abstract 29 **Poster presentation**

Study on bird daily migrations in a small city

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The study on Corvids populations was carried out in a small city of central Russia. The main purpose was to define daily migration dynamics and their dependence on different factors. Also the Corvids numbers in flocks and the main sites of overnight stay were studied.
The morning migrations were determined to begin 20-30 minutes before the sunrise and led to foraging sites. The largest registered flock had 313 specimens and consisted of *Corvus cornix (*30%) and *Corvus monedula* (70%). Twice large flocks formed by solely *Corvus cornix* were observed (204 and 106 specimens accordingly). The main sites of overnight stay turned out to be buildings of a textile mill, situated in the center of the city. On the contrary to that, in middle-sized and large cities the sites of overnight stay were described to be outside the city's limits.
Some regularities became evident in the process of research. Intensity and direction of daily migration are dependent on the weather conditions. The passage peaks were marked to happen 20-30 minutes before the usual time during snowstorms, in wind weather, and with the fall of temperature. The daily migration intensity and its time-table gradually change according to the change of daylight length.

Oral presentation **abstract 30**

Breeding and migration schedules in light of global change

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There is considerable concern over population declines of migratory bird species as a result of man-made habitat loss and global climate change. Especially Palaearctic-African migrants are in decline but could soon start wintering in the North. For assessing the potential of migratory birds to extend their wintering ranges northwards in response to environmental changes, I tested the effect of day length on the timing of moult, spring migratory activity and gonadal development in the Garden Warbler, *Sylvia borin* – a migrant that breeds throughout Europe and winters in Central and Southern Africa. In a split-brood experiment, I reared 30 birds from 10 families and kept them during winter either under day lengths mimicking a potential wintering area in southern Europe at 37,5°N latitude or under constant equatorial photoperiods used for control. Birds exposed to the northern photo-cycle advanced moult and the onset of spring migratory activity jointly by about two weeks. During the migration period, total testicular volume in the treatment birds was approximately 15 times as high as in controls. The advancement of life cycle stages in response to the photoperiodic environment may have an adaptive value under conditions favouring shorter migration distances and earlier breeding. Further experiments on the Common Redstart, *Phoenicurus phoenicurus*, and the Pied Flycatcher, *Ficedula hypoleuca*, will reveal whether extant reaction norms of long-distance migrants allow wintering at northern latitudes in general.
The results of our research testify that daily migrations, like any other migrations, are of adaptive character.

Oral presentation **abstract 31**

Photoperiodic control of the annual cycle in birds and comparison with mammals

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Several obvious differences between avian and mammalian biology are reflected in differences in reproductive physiology. Birds fly, they have feathers (which need to be renewed each year) and they do not feed their young on milk. The consequences are that gonadal regression outside the breeding season is greater, and breeding seasons tend to be more restricted and more asymmetrical with respect to change in photoperiod, than is the case in mammals. In the majority of non-tropical species, photoperiod is the predominant proximate factor. Birds, unlike mammals, use "deep brain" photoreceptors, rather than the retina, to measure photoperiod. Increasing photoperiods of spring stimulate increased secretion of gonadotrophin releasing hormone (GnRH) from the hypothalamus. This stimulates gonadotrophin secretion and gonadal maturation, so defining the start of the breeding season. However, avian breeding seasons often end before the return of short photoperiods during autumn. This is the consequence of a second effect of long photoperiods – the induction of photorefractoriness. Gonadal regression through photorefractoriness is associated with a massive decrease in the amount of GnRH in the hypothalamus. This is essentially a reversal to a pre-pubertal condition, a phenomenon that does not occur in mammals. This dual effect of photoperiod imparts the asymmetry in breeding seasons. Although breeding seasons

are primarily determined by photoperiodic control of GnRH neurones, the hormone prolactin may be important in determining the exact timing of gonadal regression. Secretion of prolactin is controlled by photoperiod and by tactile stimulation from the eggs. Prolactin stimulates incubation behaviour and causes short-term gonadal regression. It may also have a role in moult.

Oral presentation **abstract 32**

Monitoring changes in numbers and distribution of waterbirds wintering in the Western Palearctic

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The International Waterbird Census (IWC) organised by Wetlands International is a site based programme for monitoring waterbird numbers and distribution in the non-breeding season at the continental scale. The census is best developed in the Western Palearctic region, where counts have been undertaken in many countries since 1967. These count data allow the calculation of population trends for a number of species, particularly Anatidae and Common Coot *Fulica atra*. We will present population trends for a selection of species, and suggest reasons for apparent changes in numbers. The data also allow examination of changes in distribution of waterbirds between winters and we will demonstrate apparent changes in gross distribution of selected waterbird species in a mild winter (January 1995) and a hard winter (January 1996). We will end with an outline of future plans for the IWC and applications of the IWC database, including web-based developments, plans for a Gap-filling census, and work on climate change and the bio-indicator function of waterbirds.

Oral presentation **abstract 33**

Why did granivorous passerines wintering in the Wadden Sea decline?

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The numbers of Shorelarks *Eremophila alpestris* breeding in Sweden and Finland have declined dramatically in the 2nd half of the 20th century. Recent investigations have confirmed this also for the wintering areas, but also have shown a similar decline for Twites *Carduelis flavirostris* and Snow Buntings *Plectrophenax nivalis*, two passerines sharing the saltmarshes of the Wadden Sea with Shorelarks. At least 53% of the Shorelarks and 47% of the Twites breeding in Scandinavia winter in the Wadden Sea. As the population size of many granivorous birds is regulated by food abundance in the winter quarters, the Institute for Avian Research "Vogelwarte Helgoland" launched a project on the wintering ecology of granivorous passerines in the German part of the Wadden Sea to unravel the possible causes of the decline. Twites prefer mainly *Salicornia*-fields for feeding, while Shorelarks and Snow Buntings are mainly present in lower saltmarsh vegetation and tidelines. Whereas Twite prefer nearly exclusively seeds of *Salicornia* and *Suaeda*, Shorelarks and Snow Buntings feed on a wider variety of halophyte seeds, but also on arthropods. Shorelarks show a high site tenacity and small home ranges, Snow Buntings and Twites have larger homeranges and a low site tenacity. The results will be compared with habitat changes in the Wadden Sea (e.g. grazing, embankments) and the causes of the decline will be analysed. Finally, the recent population trends in the Wadden Sea will be presented and the consequences of recent changes in the use of salt marshes will be discussed.

Oral presentation **abstract 34**

Numbers, weights and fat classes of three Palaearctic migrants at a constant effort mist netting site in Ivory Coast, West Africa.

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Patterns of migration, use of stopover sites and fat accumulation prior to migration of Palaearctic passerines in the Afrotropics are poorly known. We ran a constant effort mistnetting site in north-east Ivory Coast, West Africa, for four northern winters to assess whether migrants show 'itinerancy' there and use the area as a stopover site for fat deposition prior to further southward or northward migration. Mistnetting was performed in about 10-day intervals between October and April. Only Pied Flycatcher (33), Willow Warbler (136) and Melodious Warbler (61) were caught in sufficient numbers to be analysed. Monthly capture rates revealed low numbers for all species in January compared with other months but for Melodious Warblers there were no clear seasonal changes. Medians of mass and fat score of Pied Flycatchers did not differ between months. Willow Warblers had higher mass and fat scores in March than in other months. There was no difference in monthly body weights of Melodious Warblers but fat scores were highest in March. In general weights and fat scores were lower than those recorded at some stopover sites further north. It seems that Melodious Warbler stay in the area throughout the wintering period whereas Willow Warblers move through the area in autumn and spring. There is no fattening for further migration in autumn and in spring there is also only slight fat accumulation which is not sufficient to cross the Sahara. Observations in adjacent habitats suggested that seasonal changes in abundance of Pied Flycatchers may be specific to the mist netting site.

Oral presentation **abstract 35**

Quality matters: why Eider Ducks (*Somateria mollissima*) could starve while feeding on bivalves

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Staple food of Eider Ducks in the Wadden Sea consists of the two bivalve species *Mytilus edulis* and *Cerastoderma edule*. Since these bivalves are swallowed intact, birds have to cope with several problems when processing their food. Besides heating the water enclosed in the shells to body temperature and the extraction of salt, Eiders have to crush the shells of their food in the stomach. This type of foraging demands a high energetic input, making the relation between energy content of the food and energy needed for food processing crucial. Respirometry with Eider Ducks allowed to determine the energetic relationship between bivalve size, shell mass and required energetic input for food processing. The results show that only a small fraction of the mussels and cockles available in the Wadden Sea are suitable as food for Eider Ducks.

abstract 36 **Poster presentation**

Migration routes of Reed Warblers *Acrocephalus scirpaceus* through Morocco based on recoveries of ringed birds

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The analysis of 284 recoveries of Reed warblers *Acrocephalus scirpaceus* recorded by the "Centre d'Etude des Migrations d'Oiseaux" in Morocco between 1958 and 2000 revealed three populations of different geographical origin: Western Europe (75 %), Fennoscandia (13 %) and Central Europe (11.3 %). Migration routes and dates of passage differed according to the area of origin. The most common migratory route was from England (35,2 %) through the Atlantic Coast in Morocco. Time of passage peaked in September (autumn migration) and May (spring migration).

abstract 37 **Poster presentation**

Seasonal occurrence, body mass and stopover ecology of Reed Warblers *Acrocephalus scirpaceus* at Sidi Bou Ghaba (Mehdia, Marocco)

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Palearctic Reed Warblers spend the northern winter in tropical Africa. There is growing evidence that Morocco serves as a crucial stopover and fuelling area for many trans-Saharan migrants, including Reed Warblers, both in autumn and spring. However, only little is known about passage and stopover of migrants in Morocco. Therefore, we conducted standardised ringing at a coastal wetland, Biological Reserve Sidi Bou Ghaba near Mehdia, Atlantic Morocco, during the autumns 1994, 1999 and 2000.
Passage of Reed Warblers is between early September and early November. Peak migration varied between the three different seasons. Body masses and fat scores of first trapped birds were rather high revealing that Reed Warblers do regularly stopover in the area during their southward migration. Stopover duration is higher in lighter birds, and these birds gained mass and fat during stopover. The data clearly suggest that Morocco serves as an important staging area for Reed Warblers where they seem to gain much of their energy for subsequent trans-Saharan migration.

abstract 38 **Poster presentation**

Isospora (Protozoa, Sporozoa) infection in wild passerine birds: the effect of age and diet

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In poultry coccidia infection is well known. Almost nothing, however, is known about coccidia infection and its consequences in wild birds. *Isospora* coccidia infect a new host while being swallowed occasionally with food or water. Therefore we can expect that the diet influences host's chances to become infected by *Isospora*.
In total 1131 birds of 41 passerine species were trapped and sampled in summer and autumn in the afternoon at the Courish Spit (Baltic sea) and on the island of Helgoland (North Sea). The number of *Isospora* oocysts in faeces sample were counted after flotation centrifuging by standard methods.
The prevalence of infection in young and adult birds did not differ significantly, though the intensity of infection in young birds was slightly but consistently higher than in adults.
Data from young birds were arranged into four groups according to diet and feeding style: (1) aerial feeding, (2) foliage gleaning, (3) including berries into diet, and (4) ground feeding. Both, prevalence of infection and infection rate were related to the dietary group with highest values in ground feeding species and lowest values in aerial hunters.

Oral presentation **abstract 39**

How age, experience and condition affect the date of return in prospecting Common Terns

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Common Terns *Sterna hirundo* show strong philopatry. Most birds return to their natal colony for the first time when 2 years old and breed only one or more years later. Assuming that young individuals of long-lived birds gather information about their future breeding site during that period, these individuals are called ‚prospectors'. Since 1992, all fledglings of a Common Tern colony in Wilhelmshaven, Germany, are marked individually using passive transponders. They are recorded and weighed automatically at their natal colony. Meanwhile a large database of demographic parameters exists for individual birds including many prospectors. We show that prospectors arrive at the colony several weeks later than breeders. Three year old first time prospectors arrive earlier than two year old birds and individuals with a prospecting phase longer than one year return continuously earlier with advancing experience until their first breeding attempt. Consequently, both age and experience are likely to be important factors for the arrival date of a bird. Birds returning early are heavier when arriving back at the colony than birds returning late. Hence, condition, too, seems to have a decisive influence on a bird's ability to return early in the season. Returning in time may offer the possibility to start a first breeding attempt. The study was supported by the Deutsche Forschungsgemeinschaft.

abstract 40 **Poster presentation**

Comparative analysis of migrations in birds of different orders

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Comparing migrations of birds from different orders we can see that in general migration patterns are similar. Most birds from Russia in autumn fly south-westwards, reaching their wintering grounds in south-western Europe and in lesser scale, in north Africa. Large and heavy birds (including order Anseriformes) cover lesser distances from their breeding grounds, some wintering at British coasts and north-western Europe, some in southern Russia and Balkan Peninsula. The birds with morphologically developed flight abilities are the most distant migrants. Most species of the order Procellariiformes belong to this group, they cover the distances from the south of Southern Hemisphere to the north of the Northern one (up to 9000 km). This group is also represented by turns and skuas from the order Charadriiformes, birds of prey, swifts, and swallows. The White Stork stands out in the order Ciconiiformes: it reaches south Africa. Of the order Charadriiformes I would also like to mention waders, which are prominent not only for distant migrations to the south but also for ones from the west to the east and back (eastern Siberia - western Europe). In some bird species of different orders southern (northern) direction prevails, in some species south-eastern one. But in general most birds of all orders in autumn fly south-westwards and in lesser scale southwards.

abstract 41 **Poster presentation**

The breeding biology of the Wren *Troglodytes troglodytes* in Leningrad region, Russia

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We studied the breeding of the Wren *Troglodytes troglodytes* in Leningrad region (59°55' N, 29°15' E) in 1995-2000. 558 wrens were ringed during the study period, 102 males' plots were examined, 542 nests were found. In the area males arrive in the late March – early April, females – 10-14 days later. In the mid April males occupy plots and begin building nests. In observation area wrens prefer to place nests on the roots and branches of fallen trees (85% of nests). Intensive nest-building activity is registered during all reproductive period. At the plot of one male one can find 3-15 nests, the average is 7 nests (n = 22). We connect the building of many nests with the reproductive strategy of wrens' males. In the area 60 – 100 % of males attract to their territories 2-6 females during one reproductive period. The more nests a male has the more females it can attract ($r = 0.61 \pm 0.18$, $n = 21$, $p < 0.01$). Due to this facts we account that polygyny is the main reproductive strategy of wrens' males in the investigated population. The egg-laying takes the period from April 30 to July 20. Such a long period of egg-laying can be explained by the existence of recurrent and the second clutches. The second clutches are laid after the 10th of June. We suggest that more than 60% of females have two broods in the population. The clutch size is 2-8 eggs, the average is 6.3 (n = 94). Only females hatch the eggs. Incubation takes 13-20 days, the average is 15.6 (n = 22). The fledging comes in about 15-19 days, the average is 16.8 (n = 30). Males take part in rearing very rare (15 % of broods, n = 34). The disintegration of brood takes place in the second week after the leaving nest. The breeding success is 60.71%. The number of unfertile eggs is very large – 8.5% (n = 504). In the late September wrens abandon the investigation area. In other localities of Leningrad region wrens are registered until late November. Solitary birds can spend the winter in the region.

abstract 42 **Poster presentation**

Territorial behaviour and reproductive strategy of the Wren *Troglodytes troglodytes* in Leningrad region, Russia

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We studied territorial behaviour and reproductive strategy of the Wren *Troglodytes troglodytes* in Leningrad region (59°55' N, 29°15' E) in 1995-2000 by daily observations of marked birds. Thirty five males, 66 females, 447 nestlings, 10 juveniles were marked during the study period, 102 males' plots were examined. In the area males arrive in the late March – early April, females – 10-14 days later. In the mid April males occupy plots and begin building nests. Only one male returned in the successive year to the investigation area. Male territories in the area average 2.87 ha in size (n = 29), they vary from 0.89 to 5.40 ha. At the plot of a male one can find 3-15 nests, the average is 7 nests (n = 22). We connect the great size of plot and building of many nests with the reproductive strategy of wrens' males. In the area 60 – 100 % of males attract to their territories 2-6 females during one reproductive period. The more nests a male has the more females it can attract ($r = 0.61 \pm 0.18$, $n = 21$, $p < 0.01$). However, we did not find relation between the size of plot and the number of nesting females ($r = 0.35 \pm 0.21$, $n = 21$, $p < 0.05$). We account that polygyny is the main reproductive strategy of males in the investigated population of the Wren. Contrary, females are not attached to a definite territory and a male. We suggest that more than 60% of the females in the population have two broods at the plots of different males. Usually zoologists consider the territorial behaviour and reproductive strategy of art at large. Our observations and analysis of literature (Kluijver *et al*. 1940, Armstrong 1955, Garson 1980, Dallmann 1987) showed that in the Wren territorial behaviour and reproductive strategy of males and females are distinguish appreciably.

abstract 43 **Poster presentation**

The birds of Baikal region: migration, conservation and international cooporation

Ju. Durnev & M. Sonina

The Baikal region takes the central part of Asian continent, and its mountain systems and vast water mirror of the Baikal lake are natural factors, creating and forming the routes of flight of different birds. These variety of birds flighting throw is determined by high general variety of avifauna of the region : 435 species is numbered here of up to 2000 year. It explains the interest of european ornithologists for studing birds' migrations in the Baikal region.
Now the most attention of the investigators is paid to :

- Migrations of rare and disappearing species of Falconiformes. This project is being realising during 15 years and is connected with availability of very tense «migration corridor» along the west Baikal shore. During the period from the end of August to the middle of October from 10-12 up to 25-30 thousands of Falconiformes fly throughout it in different years *Pernis ptilorhynchus*, *Haliaeetus albicilla*, *Accipiter gularis*, *Buteo lagopus*, *Aquila pennata*, *A.clanga*, *A.heliaca*, *A.chrysaetos*, *Falco cherrug*, *F.gyrfalco*, *F.peregrinus* a.o. The registration of migrants at that plot of Baikal's shore give an opportunity to execute the monitoring of birds' populations of all Siberian North-East.
- Migrations of waterfowl birds at the East Baikal shore in the Selenga river delta. *Anser cygnoides*, *Anas formosa*, *Colidris subminuta*, *C.acuminata*, *Numenius madagascariensis*, *N.minutus*, *Limnodromus semipalmatus* a.o. species are of most interest here.
- The aim of the project is to return to the Baikal ecosystem two characteristic and numerous in past species of waterfowl birds - Baikal teal and Swan Goose which have practically disappeared in the region during last decades. The actuality of the project is in preservation of biodiversity of the unique region and creation of the first station of wild animals'reintroduction at the south shore of the Baikal.

Accounting the significance of the Baikal region concerning migrations of birds of the Asian continent, these materials are taken into consideration by Russian Government concluding the convention about protecting of transmigrating birds with India and Japan. In our opinion the attracting

of scientific organizations and the public of European countries for joint investigation of birds' migration at the Baikal is actual.

abstract 44 **Poster presentation**

Correlates of multiple paternity in the Aquatic Warbler *Acrocephalus paludicola*

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Aquatic Warblers show a promiscuous mating system and males do not help the female in incubating eggs or feeding nestlings. Paternity was determined in a total of 76 broods in the Biebrza (NE Poland) studied in 1993, 1994, and 1997 by microsatellite PCR analysis. A total of 19 broods was sired by a single male and 57 by two and more males (multiple paternity 75.0 %); maximally 5 fathers were detected in 4 broods (5.3%) indicating that in these broods almost each young was sired by a different father. The degree of multiple paternity varied significantly between years, i. e. 56% in 1993, 80% in 1994 and 90% in 1997. Only a few significant differences could be found in the characteristics of broods sired by a single male and broods with several fathers: Broods with single paternity were started significantly earlier than broods with multiple paternity. Climatic conditions differed strongly between years, especially the mean temperatures in the weeks before egg-laying. In years with low temperatures in the prelaying period broods had a higher rate of multiple paternity than in climatically more favourable years. Our findings indicate that the degree of promiscuity in Acrocephalus paludicola is apparently influenced by external factors.

abstract 45 **Poster presentation**

A Rapid Depletion of the Number of Black Tern in Western Ukraine

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Until the 60-ies researchers considered Black Tern to be the most numerous species spread out on the territory of Western Ukraine, with an exception of mountainous areas. During the 60-70-ies their number started decreasing. If there were 60-80 nesting colonies and up to 300 ones in Polissia before, their number decreased to 20-30 and even less in the 80-ies.
During April-July 1998 20 pond chains (mainly hatcheries) were explored in L'viv, Ternopil' and Ivano-Frankivs'k regions. No nests were found in any of these. According to the records about waterfowl colony dating back to 1986, there were from 6 to 250 nesting pairs.An overall number of the species used to be 2000-2500 nesting pairs.
It is often mentioned in literature that the number of the colonies of nesting pairs is changeable and the colonies themselves are not stable. But there is no record of species depletion from as big of a territory as 30 000 km2.
There are various reasons for Black Tern depletion expressed by different authors. Changes of habitat, tearing down of water weeds in hatcheries during the nesting period, direct human intrusion, pollution and possible rivalry with Whiskered Tern. The number of Whiskered Tern is constantly growing in the region. Obviously all these factors led to a rapid depletion of their number in the area explored.

Oral presentation **abstract 46**

Nomadism or site-fidelity: two different breeding strategies in Dark-bellied Brent Geese.

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Dark-bellied Brent Geese often nest in association with Herring Gulls, but can also nest very successfully within territories of nesting Snowy Owls, or more or less scattered on the tundra.
Because of year-to-year variations in predator pressure the latter two types of nesting habitat are not available every year. Snowy Owls tend to breed only in lemming peak years (once every three years on the Taimyr peninsula), and the same Snowy Owl territories are not occupied on a regular basis. This means that in order to use these types of nesting opportunities Brent Geese have to adopt a nomadic strategy and have to search for suitable nesting sites immediately after arrival in the breeding area.
Within Herring Gull colonies, which are predictable from year to year, individual Brent Geese can be be very site-faithful.
Individually marked Brent Geese have been studied during two complete lemming cycles from 1990-1995 in the Lidia Bay, Pyasina delta, western Taimyr.
Additional information from the wintering grounds allowed us to determine whether individuals were stiill alive and thus to estimate the rate of return of surviving individuals to the same nesting site.
The data were recorded as $Y_{ij} = 1$ in case goose i returned to the breeding site in year j, and $Y_{ij} = 0$ when goose i did not return in year j. The latter required a sighting of that goose at the wintering grounds or a return in any subsequent year. Observations which did not meet these requirements were denoted as missing. The observations were modelled by means of the following Probit-Normal model:

$$Y_{ij} \sim \text{Binomial}(1, P_{ij}) \qquad \text{for goose } i \text{ and year } j$$

$$\text{Probit}(P_{ij}) = \mu_{ij} + E_i \quad ; \quad E_i \sim \text{Normal}(0, \sigma^2)$$

$$\mu_{ij} = \mu + year_j + ringingsite_{k(i)}$$

The binomial distribution arises naturally in this context, with P_{ij} the probability of returning to the breeding site. This probability is linked to *year* and *ringingsite* effects, analogous to ordinary probit regression. A random goose effect E_i was added which reflects the assumption that some geese are nomadic (with low values of E_i and thus a low probability of returning) and others are site-faithful (with high values of E_i). Parameters in this model were estimated by means of maximum likelihood, which necessitated a general purpose optimisation routine.

It is postulated that at the present high Brent Goose population levels Gull colonies are fully saturated as a Brent Goose nesting habitat, and an increased proportion of the Dark-bellied Brent Goose population has to adopt a nomadic breeding strategy.

abstract 47 **Poster presentation**

A tidal clock in Oystercatchers: evidence from the field

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The daily rhythm of many birds living in intertidal habitats is dictated by the coming and going of the tides. Whether it is day or night, they forage at low tide and sleep at high tide. We might assume that specialized species have adapted their internal biological clock to this tidal cycle, which usually takes longer than 24 hours. There is overwhelming evidence for a tidal clock in many animal and even plant species, but surprisingly, there is just one published study on birds. We looked for indications of a tidal clock in Oystercatchers (*Haematopus ostralegus*) using their intertidal feeding grounds at Ballastplaat, Western Wadden Sea. During high tide, these Oystercatchers roost far inland. From that location the sea is not visible, so actual water levels cannot be monitored. Water levels are to a certain extent predictable, but local wind directions can change the time of exposure of the mudflats by as much as three hours. We recorded each day the arrival of the first Oystercatchers at the part of the mudflat that exposes first. We compared this arrival time with the expected (tabulated) time of exposure and with the actual time of exposure. The data shows that Oystercatchers do correct for early or late exposure, but imperfectly: they tend to arrive too close to the expected time of exposure. This indicates that an underlying tidal rhythm is influencing their decision to leave the roost and depart for the feeding grounds.

abstract 48 **Poster presentation**

Fitting large chicks into narrow eggs: egg size and shape variation along a latitudinal gradient

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In many bird species, there is a trend for body size to decrease with decreasing latitude. Since the breadth of the eggs is constrained by the width of the pelvis, the latitudinal trend in body size would imply a latitudinal decrease of egg breadth. If egg breadth to length ratio (sphericity) does not change (egg shape is kept constant), egg volume would tend to decrease towards the south. This latitudinal trend in egg volume has been found in some species. However, small eggs have disadvantages – hatchability is lower and nestling survival is decreased relative to larger eggs. A possibility for small-bodied (southern) populations to stop the latitudinal decrease in egg volume, overcoming the constraint of their narrow pelvis, would be to increase the length of the eggs, i.e. changing egg shape towards more elongated eggs. We explored this hypothesis compiling information on female body size and egg dimensions of 33 Great Tit *Parus major* populations along a latitudinal gradient (39 to 69 ºN). We found that (1) female body size decreased linearly with decreasing latitude; (2) egg volume decreased with latitude up to about 48º N, slightly increasing southwards (i.e. a curvilinear, not a linear, relationship); (3) female body size was positively correlated with egg breadth, but not with egg length or egg volume; (4) the sphericity of the eggs was largest at medium latitudes, and eggs were more elongated towards the North and the South. We suggest that female body size (which probably limits egg breadth), and the pressure for producing large eggs (which in turn increases the reproductive success) are the main determinants of geographic variation in egg size and shape. Small-bodied populations seem to escape from the limits of their size producing relatively elongated eggs, so that from certain latitude southwards, egg volume does not decrease in spite of a decrease in female body size.

Oral presentation **abstract 49**

The relationship between mechanised shellfisheries and shellfish eating birds in the Wadden Sea and Oosterschelde

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In recent years, wintering populations of birds eating large shellfish, i.e. the Oystercatcher *Haematopus ostralegus* and the Eider Duck *Somateria mollissima*, have shown noticeable declines and episodes of high mortality in the Wadden Sea and Oosterschelde. The evidence will be reviewed that these population declines and mortalities are linked to food shortages. If so, it must be investigated if these food shortages are caused by shellfisheries.
During the second half of the previous century fishing for cockles and mussels was increasingly mechanised. Nowadays, the Dutch part of the Wadden Sea is most heavily exploited with these mechanical dredges and a heated debate between fishermen and conservationists has been raging in the Netherlands since 1990 when shellfish stocks were low and fishing for shellfish was nonetheless continued.
When the food needs of the birds are simply compared to the total shellfish stocks, it would seem that the stocks are high enough to cover the needs of the birds. However, such a comparison ignores the fact that only a fraction of the shellfish can be considered harvestable for the birds. Factors reducing the harvestability of the shellfish are a.o. prey profitability (individual prey may be too small, too large, too thick-shelled, too deep etc.), interference during feeding (limiting the number of birds that can feed at the same time) and site tenacity (causing birds to sometimes miss good feeding opportunities elsewhere). Factors determining harvestability of shellfish are much better known for Oystercatchers than for Eider Ducks. Reduced cockle stocks are a likely explanation for the decline in Oystercatchers in the Oosterschelde, whereas the disappearance of the intertidal mussel beds is the most likely cause of the decline in Oystercatchers in the Wadden Sea. At present, it remains a mystery how 21000 Eider Ducks could starve to death in the Dutch Wadden Sea in the winter of 1999/2000 amidst a very high stock of intertidal cockles.

Oral presentation **abstract 50**

Simulating the Migration of Young Passerines

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A computer simulation provides a tool to investigate the complex interplay of environmental and behavioural factors in bird migration. Given a realistically simulated environment, theories can be tested and 'what if ...' scenarios can be inspected. We have written a simulation program to learn more about how young passerines may be behaviourally adapted in order to survive their first autumn migration with a certain probability. The underlying focus of this study is the crossing of topographical barriers (Mediterranean Sea, Sahara) and the reaction to weather when migrating from northern Europe to western Africa. With a sensitivity analysis we determine the environmental and behavioural factors with the largest influence on speed and survival rates. Time spent refuelling is probably dominant in determining the total time taken for migration. Therefore, we compare time minimising (theoretically optimal) and simpler strategies for allocating time to stopover sites of different quality. Strategies are compared in various environmental conditions by changing habitat

quality (for refuelling) and weather. Endogenous and behavioural parameters of birds are varied to assess the relative importance of these factors in a successful migration.

abstract 51 **Poster presentation**

Site fidelity and breeding dispersal of Great Reed Warblers in two study areas

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The Great Reed Warbler *Acrocephalus arundinaceus* was studied in 1985-89 at Lake Sebezhskoe (Pskov Region; 56.18N, 28.30E), and in 1993-2000 on the Courish Spit of the Baltic Sea (55.05N, 20.40E). The differences in local survival rates (in accordance with Kluyver s (1971) terminology) found in two sites were analyzed in term of affecting of different factors, such as sex, breeding success, weather conditions, size, configuration and attractiveness of the control areas. In these areas both males and females demonstrated a tendency to return in the following year to the same plot of reeds which they used for breeding in the previous season. Safety of dry reeds in the beginning of the season seems to be very important for bird behaviour. Destruction of dry reeds by ice early in spring can make birds disperse from the breeding site.

abstract 52 **Poster presentation**

The effect of a carotenoid-rich diet on immunocompetence and behavioural performance in Moorhen *Gallinula chloropus* chicks

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Carotenoids have attracted the attention of behavioural ecologists because of their modulatory effects on the immune system, colour expression and several physiological functions affecting body conditions. To evaluate whether carotenoid abundance influences growth, behavioural performance, immunocompetence and bill colour, we raised two groups of Moorhen chicks with different food intake (control diet *versus* carotenoid-rich diet) for one month. Colour intensity was included in the analysis because, in rail chicks, the head colour is an important feature used by the parents to selectively allocate food to the brood. We did not find significant differences in growth rate, nor in the red or yellow colouration of the bill. However, a challenging immune test (Phytohaemoagglutinin injection) showed a greater immune response in the carotenoid-rich group. Locomotor activity, tested in an open-field apparatus, did not differ between the two groups, but carotenoid-fed chicks showed more intense pecking at a model mimicking parental feeding. In this experiment, we demonstrated that carotenoid abundance can influence both immune and behavioural responses. We suggest that a threshold for adequate bill colouration is ensured first in Moorhen chicks; thus any deficiency of carotenoids should be reflected in a reduction of behavioural performance and/or immunocompetence.

Oral presentation **abstract 53**

Geographical variability of seasonal events in annual cycle of the Whitethroat (*Sylvia communis* Latham)

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The Whitethroat is a long distant migrant, which breeding distribution covers vast area in Palaearctic from subtropics up to middle taiga zone. Different populations of the species adapted to wide range of climatic, photoperiodical and habitat conditions. The observations on the Whitethroat ecology were curried out in 6 distant regions in 1992-1998: West Siberia (Novosibirsk), Belgorod Region, Riasan Region, Low Volga region, Caucasus coast of the Black Sea and East Ladoga region. The data on spring arrival, breeding, territoriality and moults were collected, the previous observations of the species, published by different researchers, were also used for analysis. The analysis reveal that the geographical variability concerns mainly parameters of annual cycle, providing adaptations to the wide range of environment conditions. Changes in timing and duration of seasonal events (migration, breeding, moult) may result in their decrease, complete reduction or transposition from breeding to wintering part of the distribution area. The duration of breeding period is the most important parameter of annual cycle, which determines the features of many others seasonal events. The breeding timings depend, first of all, on the climatic conditions in the breeding area (we found the strong correlation between the date of spring temperature rising above 10°C and the date of laying of the first egg by Whitethroat: $r=0.84$, $p<0.01$, $n=19$). In the areas with short vegetation period (northern and eastern parts of the Whitethoat distribution, mountains) the period of Whitethroat breeding activity also decreases. In this regions we can observe only one breeding cycle in a season; birds start to breed more synchronously, with lower average air temperature; the time span between spring arrival and beginning of egg laying decreases; the completeness of postbreeding moult decreases, while the completeness of prebreeding moult increases; postjuvenile moult begins in earlier age, its final stages overlap with the beginning of autumn migration. All this changes compensate the decrease of the season, favourable for breeding. Apparently, the ecophysiological parameters, characterising the seasonal events in annual cycle, are the most perspective features for revealing geographical structure of the species, since morphological and others (mt DNA) markers have not provided reliable results yet.

abstract 54 **Poster presentation**

The new ELSA-Ring: a modern tool for a venerable method

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A new type of plastic ring (preliminary for White Storks *Ciconia ciconia*) has been developed in cooperation between bird ringing and polymer engeneering experts. To enable field readings of ring numbers most White Stork rings have been fixed above the intertarsal joint of the leg. Is has been

discussed recently that crusts of dry faeces at the inside of the conventional stork rings may cause a handicap or even injury or death of the bird. As a consequence of this discussion the ringing of White Storks with conventional rings in general or at least with the above-intertarsal method has been prohibited in Germany. Besides that problem reading of the low contrasting metal ring inscriptions is difficult while conventional inscription methods on color rings have been too coarse to bear the complete inscriptions of a standard bird ring and were commonly reduced to few digits that often cause problems in retracing the origin of a sighted ring.
The new ELSA-Ring (European Laser Signed Advanced Ring) is made of very durable synthetic material with a smooth surface where fluids that may be expected in a stork's life cannot stick on. It has a robust irreversible snapping lock, smooth, rounded edges and an oval inside opening (like the cross-section of a stork's leg). The 8 plain surfaces on the outside are inscripted by laser which changes the color of the material itself and makes rubb-offs almost impossible. Production of different colors is possible although only few of them have been tested so far in terms of inscription contrast.
First tests with the rings with captive and free ranging storks showed good performance of the new rings. Production of 2 other ring sizes (Cranes, Falcons) is planned for the near future.

abstract 55 **Poster presentation**

Female bill morphology correlates with emancipation from bi-parental care

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We study how intra- and interspecific variation in bill morphology is related to mating systems in Sylviid warblers. Interspecific comparison in *Acrocephalus* warblers shows that species with uni-parental care (polygyny or promiscuity) live in rich habitats, have strong bills and catch large prey, while species with bi-parental care (monogamy) occupy poor habitats, have slim bills and feed their nestlings with small prey items. From this correlation we derive the idea that strong bills are an adaptation to catching large prey items in habitats with high food abundance and that the ability to catch large prey items helps females to raise nestlings without male assistance. Surprisingly, we find the same association intraspecifically, when looking at the dusky warbler, *Phylloscopus fuscatus*. Individual females with deep bills are more likely to mate as a secondary female. Moreover, independently of mating status, females with deep bills settle in territories with more food and they receive less male assistance in feeding the offspring. The mechanism leading to this intraspecific correlation between bill morphology and mating behaviour is not fully understood. It might be that morphology and behaviour are genetically correlated. As bill depth is highly heritable in most bird species, the above finding strongly suggests that there is a genetic basis for variation in female mating behaviour.

abstract 56 **Poster presentation**

Landscape patterns and genetic dispersion in South Italy populations of Jackdaw (*Corvus monedula*)

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Jackdaw breeds across middle and upper middle latitudes of west Palearctic, it builds colonies with rigidly fixed hierarchy. The dispersion and the foundation of new colonies are sometime imputable to isolated pair that found profitable habitat like rock-face or anthropogenic build up area. In this work we analysed jackdaw populations in the border of it range (South Italy) focusing the genetic relationship according to landscape organisation of them profitable habitat distribution. Landscape analysis are carried out on the base of Corine Land Cover level 3: the maps are been redrawing, according to jackdaw habitat, to obtain potential gene flow corridors. Genetic analysis are performed beginning the feather bulb of 50 free living individuals, from the 5 colonies, and screening 4 polymorphic and 1 monomorphic microsatellite loci. Genetic diversity in each colony was related to environmental characteristics. Colonies of the city or village seems to be more genetically isolated as results of the existence of heterogeneous environmental patches. The genetic similarities analysis suggest the existence of a corridor of gene flow across the mountain ridge (M. Appennini). This dispersal vector moves through mountain populations that are genetically distinct from coastal and sinanthropic populations.

abstract 57 **Poster presentation**

Differences in annual cycles of breeding, moult, migration and energy expenditure for its in granivorous and insectivorous passerine birds in moderate and high latitudes

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In 14 species of captured passerine birds were measured energy expenditures during annual cycles. The most essential difference in the annual cycle of energy expended by granivorous and insectivorous birds occurs during the moulting period. The distribution of the expenditure of productive energy during the year differs in sedentary and migratory birds. Migratory birds have significantly less time to complete the cycle of reproduction and postnuptial moult in the nesting territory. Also a limit in daily energy expenditure exists above which daily energy expenditure for a prolonged time cannot be increased (equal to four basal metabolic rates). The period of mating activity in migratory birds is shorter than in sedentary ones, which also leads to an increase in daily energy expenditure. Migratory birds, combining reproduction and moult into one cycle, have a greater daily energy expenditure than sedentary birds during this period. Energy expenditure on the moult depends on the diet: in granivorous birds it is twice as high as in the insectivores. Hence granivorous birds moult longer. These conditions reduce the duration of the cycle "reproduction-moult" in some northern birds or by the full exclusion of moult from this cycle and its postponement until winter (e.g., *Carpodacus erythrinus*). In the granivorous species, which combine moult and reproduction into one summer cycle, the energy expended on the moult must be compensated for by the energy expended on reproduction. This leads to a decrease in the energy expended on reproduction, which is corroborated, by the decrease of clutch and reproductive effort seen in the granivorous birds. Sedentary species have more time for the reproduction-moult cycle, and, as a result, second clutches are more common, mating behaviour is more expressed and they tend to retain a large nesting territory. There are energetic and ecological restrictions for the development of strict granivorousness in birds, especially in temperate and high latitudes. In addition, granivorousness and the tendency for lengthy migrations are not in the birds' best interest.

Oral presentation **abstract 58**

The time-activity budgets of Grey Plover and Dunlin in mixed-species and conspecific flocks during the spring migration on Yugorsky Peninsula

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Research was carried out in June 1995-1997 on Yugorsky Peninsula (69 º 36' N, 60 º 13' E). The association between the Grey Plover (*Squatarola squatarola*) and the Dunlin (*Calidris alpina*) was found. 19,8% of Grey Plovers and 14,6% of Dunlins made the mixed-species flocks. Dunlins walked closely behind the Grey Plovers, following their movements on the ground, took off and alighted with the Grey Plovers, and fed intensely when they were with the Grey Plovers. Usually 2-6 Dunlins followed 1-4 Grey Plovers. The daily time budgets of both species were calculated. There was no difference in the behaviour of Grey Plovers when they are either with or without Dunlins. The behaviour of Dunlins in association with the Grey Plovers differed significantly from the behaviour in conspecific flocks. In mixed-species flocks Dunlins reduced the time that they spent for antipredator vigilance and increased the time that they spent on feeding. The daily energy budgets of both species were calculated based on time-activity budgets. There was no difference in daily energy budgets in mixed-species flocks and conspecific flocks for both species. Activity energy of Grey Plover was equal to 2.4 BMR, total energy expenditure was equal to 3.3 BMR. Activity energy of Dunlin was equal to 2.4 BMR, total energy expenditure was equal to 3.5 BMR.

abstract 59 **Poster presentation**

The body size and movements of Marsh and Blyth's Reed Warblers at the Zvenogorod Biological Station during the spring period

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Research was carried out from 1 of May till 20 of June, 2000 at the Zvenigorod Biological Station of the Moscow State University (Moscow Region, Russia, 55º44' N, 36º51' E). Birds were caught by 28 mist-nets that were located in three habitats. In total 37 birds of Blyth's Reed Warbler (*Acrocephalus dumetorum*) and 87 birds of Marsh Warbler (*Acrocephalus palustris*) were caught. The differences between males and females of Blyth's Reed Warbler were significant ($p<0,05$) for lengths of wing, tail, tarsus, bill (from the front), head, third primary, weight. The differences between males and females of Marsh Warbler were significant ($p<0,05$) for lengths of wing, tail, third primary and head. Males of Marsh Warbler differed significantly ($p < 0,05$) from males of Blyth's Reed Warbler in all taken measurements except the length of tail. Females of two species differed significantly ($p < 0,05$) from each other in lengths of wing, tail and head. Marsh Warblers have more sharp form of wings, than Blyth's Reed Warbler. At the beginning of all species migration only the singular males were caught. The mass migration took place several days later the first catches of birds and had several waves. In both species the males prevailed among the caught birds, the ratio was 2:1 in average. The more fatty birds came first. The fattiness of females was significantly higher ($p < 0,05$) than males. The greatest locomotion activity of all species was noticed in the time interval from 5 a.m. to 6 a.m.

There is habitat divergence in two Acrocephalus species. Marsh Warbler prefer more open, wet habitat, it may be related to morphology of their wings.

abstract 60 **Poster presentation**

Use of a spoon/spatule to analyze the diet of cardueline nestlings

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Many methods have been used to analyse the nestling diet in passerines. We present an easy technique to obtain samples of food directly from gullets in carduelines. We applied the method on three species: Serin *Serinus serinus*, Greenfinch *Carduelis chloris* and Goldfinch *C. carduelis*.
Cardueline species stored the food in their gullets before swallowing. Then we use the spoon (8.2 x 6.5 x 2 mm) of a spoon/spatula to obtain samples of their gullets. Samples of each nest were combined and animal and seeds of plant species were separated. We dried each sample to 103º C during two hours to reach a constant weight. This method allows obtaining results of both animal and vegetal material in the same units (dry weight). The method had not effect on nestling success.

Oral presentation **abstract 61**

Gizzard size constrains prey choice and intake rate in red knots

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Digestive organ size is known to vary tremendously in long-distance migrant waders such as red knots (*Calidris canutus*). The size of one of these organs, the gizzard, can be monitored *in vivo* by using ultrasound echoscopy. Field studies on radiomarked knots show correlations between gizzard size and prey choice. Since the gizzard is used to crack hardshelled prey, it is hypothesized that the size of the gizzard puts a constraint on prey choice and intake rate. This hypothesis is tested in a series of four experiments with captive red knots. The first experiment proves that the maximum size class ingested increases with gizzard size. The second experiment showed that knots possessing a small gizzard have an intake rate on mussels which is half the intake rate of large-gizzard-birds. Moreover, when offering the mussels without shell, the intake was much higher and similar in both groups. The third experiment showed that the intake rate on crabs, shrimps and the smallest size classes of *Macoma balthica* did not differ between birds with a small and birds with a large gizzard. However, the intake rate on large *Macoma* and on all size classes of *Cerastoderma edule* were higher for the group with the large gizzard. The forth experiment revealed that prey *choice* was the same for both groups of birds: both groups preferred prey with small amounts of shell material in relation to fleshmass. The results of these experiments will parameterize an optimal diet model under construction, in which the allowable rate of shell mass intake is a function of gizzard size. Eventually, the model will be tested on radiomarked red knots foraging in intertidal areas.

abstract 62 **Poster presentation**

Changes in maturational rate of altricial nestlings (*Ficedula hypoleuca*) as determined by developmental conditions

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Age dynamics of biometrical indexes of developing nestlings depends significantly on the developmental conditions – food availability, climatic conditions, etc. The dependence of young development from ambient temperature was studied in hole-nesting pied flycatcher (*Ficedula hypoleuca*) nestlings during the breeding seasons 1994-2000 in Central Russia. Throughout the nest period we analyzed the body mass, plumage development, the moment of opening of external acoustic meatus, development of thermoregulation, and electrophysiological characteristics of hearing development. Nestlings of the same "astronomical age" from different seasons and/or different broods were found to differ significantly in their maturational level, to have different "physiological age". Plumage development was studied, on one hand, to formulate the criteria of defining youngs' age under various developmental conditions and, on the other hand, as an index of physiological maturity and rate of development. Even different parts of the same pterilia develop at different rate, and the state of pterilia provide very exact estimation of nestling's age. Complex pattern of dependence of the timing of acoustical meatus opening from ambient temperature was revealed, presumably determined by food availability and acoustic activity. When food was ample, higher ambient temperature significantly correlated with earlier meatus opening and more mature electrophysiological characteristics of hearing. Food shortage and resulting increased acoustical activity (intensive begging) also correlated with earlier opening of acoustical meatus. Developmental rates also differed with the clutch timing with respect to the breeding season, (early or late in the season, second clutch) – in later broods (or repeated clutches) external acoustical meati opened later.
Research was supported by the RFBR grant # 99-04-49076 and grant "Russian Universities – Fundamental Research".

Oral presentation **abstract 63**

Wintering areas of giant petrels tracked by light level geolocation

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We tracked for one year the foraging and wintering movements of breeding birds of the two sibling species of giant petrels *Macronectes halli* and *M.giganteus* breeding at South Georgia (54S, 38W) by means of light level geolocation. We recovered 42 geolocators (30g) out of 100 deployed. Distribution of most giant petrels ranged from Falklands (50S, 60W) to the east of Sandwich Islands (up to 10E) and from South Orkney Islands (61S, 45W) to the north of the Argentinean break shelf (35-50S, 55-60W). However, one bird performed a circumpolar migration and some other birds performed long trips as far as 5000 km from South Georgia, e.g. the Namibia coast (20S, 10E) or the Amundsen Sea

(65S 120W). On average, Southern giant petrels foraged further south and further east than did northern giant petrels, suggesting some spatial partitioning in wintering areas as well as in foraging trips during the incubation and chick rearing period. Some geolocators detected light during night, presumably as a result of the association of giant petrels with illuminated fishing vessels, such as those engaged in nocturnal squid fishing; most locations where light was detected at night were to the north of the Falklands in the area where such squid fishing occurs. This area was mainly visited by northern giant petrels, particularly females, which showed more pelagic habits than males.

abstract 64 **Poster presentation**

Wintering areas of giant petrels tracked by light level geolocation

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During last 30 years in Western Ukraine we observe significant changes in the use of nesting habitats by Hooded Crow (*Corvus corone cornix*) and Raven (*Corvus corax*). In both species the nesting behavior is noticebly changing and this fact leads to the new adaptations. During that period the drastic fluctuations of bird numbers have occured with regard to the general increasing of quantity for both species. The most intensive increasing of quantity for Hooded Crow on the flat part of Ukraine in basin of Buh river has occured during 1960-1985. For Raven the quantity has increased during 1975-1990 but during 1990-2000 the quantity has stabilised and slightly decreased. The significant conservative concentrations of Raven (up to 220-300) has created. They do not participate in nesting and can be found on rubbish territories. A tendency to polution of forests by different hand-made waste has promoted the increasing of quantity of Raven. Presently, the nesting population of Raven has significant influence on decreasing of nesting population of Hooded Crow. Obviously, the drying reclamation had negative influence on nesting population of Hooded Crow on plains. The more stable nesting population of Hooded Crow has created in the valley of Prypyat river and in Carpathian mountains where the hydrological regime is more suitable for this species. In contrast to the cities in eastern regions of Ukraine, in western regions Raven makes nests more frequently in cities and surroundings. That does not concern Hooded Crow. A synantropisation takes place for Raven and this species force out (displace) Hooded Crow even from trees and bushes growing along roads. This tendency takes place especially intensively within last 7-8 years. The significant negative interinfluence is observed between populations of both species. Also, the increasing of quantity of these species have very negative influence on the state of populations of some species Charadriiformes, *Pica pica*, *Columba palumbus*, *Asio otus*, *Fulica atra*.

abstract 65 **Poster presentation**

Interactions between Curlew Sandpiper's during autumn migration on Polish coast

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This poster show some data about interactions during stop-over feeding ecology of migrating Curlew Sandpiper (*Calidris ferruginea*) at the Reda River estuary, Gulf of Gdańsk, Poland (54˚39'N, 18˚30'E). The study was conducted during the autumn migration seasons in 1999 and 2000 years. All observation was made by binocular and telescope 20-60x, and foraging rates have been qualified in 3

minutes observation samples. All aggression observations were classificated in five categories: 1. Overtake other bird, 2. Overtake and chase away 3. Imperf to fly, 4. Single hit other bird, 5. Regular fight. Notes species and age aggressiveness birds and attacked birds. If observed any kleptoparasitism with Curlew Sandpiper to take part in it situation notes species and age of victim and attacker, and result of scuffle. The difference in feeding ecology were observed between two different closely situated habitats: the first one – the Reda river mouth and the second one kilometre away: the nearby ash dumps of the electric power plant. Curlew Sandpipers preferred the second habitat - they foraged there in largest densities.
Curlew Sandpipers migrating over Polish coastal stopped at this point only for very short period, but observed territoriality was very high, especially for juveniles birds. Birds foraged show intra- and inter-specific aggression. Juveniles' birds presented higher aggression than adult did. Many aggressive interactions were observed, but most of them take a place only between juveniles Curlew Sandpipers. Inter-specific interaction of foraging juveniles birds amount near 75% of all conflict situations. Territoriality and territory size is first of all connected with spatial food availability and birds flock size.
Kleptoparasitism on and between Curlew Sandpipers were observed 74 times. Gulls and plovers kleptoparasitized sandpipers foraging on *Nereisis sp.,* but most of kleptoparasitizing were observed between Curlew Sandpiper and small sandpipers like Dunlin and Little Stint.

abstract 66 **Poster presentation**

The acoustic relations between males in the multi-species nesting community by the method of point count

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The pervious studies show that acoustic interaction between birds may influence on their singing activity and rhythms of singing (Korbut, Goretskaia, 1998) which may affect the results of bird count. The studies of birds' number by point count were carried out during 1999-2000 in Central Russia (The Zvenigorod Biological Station, The Prioksko-Terrasnyi Reserve, Moscow Region). In total 40 points were observed. Point count took place at the beginning of breeding season from 5 a. m. to 11 a.m., the time spent on each point was 15 minutes. Fifteen minutes were divided for 5 min. periods when the count of birds number was carried out separately. Birds' number was counted in the main count zone (radius- 25 m.) and in the addition zone (25-100 m.). The number of birds of all species in one count zone for each five minutes correlates negatively with the number of birds of all species in the other count zone ($p<0.05$). Into each zone the increase in the mass species birds number leads to decrease in the number of others species ($p<0.05$). The number of birds of mass species in one count zone correlates negatively with the number of birds of this species into the other zone. Moreover, for each count zone, the number of birds of one mass species correlate negatively ($p<0.05$) with the number of birds of the other mass species. The results show that there are acoustic divergences between males of one and different species that may reflect the relationship between neighbouring birds and lead to redistribution of singing males. Besides, these divergences may unpredictably affect the results of point count, especially point count during a short time period (3-5 min.).

abstract 67 **Poster presentation**

Annual dynamics of bird communities of steppe belt of Southeastern Altai

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Two types of dynamics of communities of birds are characteristic for Southeastern Altai - immigration-emigratory and dynamically equilibrium. They are tracked on density changes of the population, biomass and general power costs of birds. The type of dynamics is determined by food base in wintertime - than more accessible forages, the more stable population. Small-sized passerines dominate on all parameters completely determining a course of temporary changes. The large species of birds do not render essential influencing on dynamics of the bird communities of this province of Altai. The power costs of birds of steppes of Southeastern Altai are indemnified in summer period, basically, at the expense of invertebrate animal, in remaining seasons - for the score seeds of plants.

abstract 68 **Poster presentation**

Mechanisms of polymorphism maintenance in the case of breeding plumage colour variation of males in the Pied Flycatcher, *Ficedula hypoleuca*: life strategies and understanding of the microevolution.

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Being quite systematics investigations, further studies of breeding plumage colour variation (BPCV) in Pied Flycatcher (PF) males became population researches aimed finding out the mechanisms of maintenance of a polymorphism. In spite of the fact that studies were very intensive, evolutionists could hardly understand causes of the stability of BPCV in PF males. In this review I intended to sum up results of BPCV studies and to reveal the most possible mechanisms of variation maintenance that may take place in nature. Ontogenesis (males tends to be brighter with age), heredity, and plasticity of the coloration were well described, and these findings allow us to treat PF populations as true polymorphic. Also, describing the geographical trends in frequencies of colour morphs in populations, evolution biologists gained a priori reason to suppose that the coloration is not selectively.

Oral presentation **abstract 69**

Effects of pollution on birds in river ecosystems: A case study on the Little Owl (*Athene noctua*) in the Netherlands.

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In the 1960s and 1970s, the large rivers in the Netherlands were severely contaminated with organic compounds like PCBs, DDE's and heavy metals. During floods, polluted silt was deposited in the river forelands. Model studies have shown that heavy metals such as zinc, arsenic and cadmium, and organic micro-contaminants such as PCBs and PAHs are still threatening organisms which depend on the river forelands for their food.
In 1997, a study of the literature was carried out into the possible risks of pollution in river forelands to birds. Important risk-related factors were the birds diet and the duration of their stay in the river forelands . Six bird species were identified as possibly affected by pollution in the river forelands: Greylag goose (*Anser anser*), Little Grebe (*Tachybaptus ruficollis*), Corncrake (*Crex crex*), Moorhen (*Gallinula chloropus*), Black-tailed Godwit (*Limosa l.limosa*), Black Tern (*Chlidonias niger*), Little Owl (*Athene noctua*) and Sand Martin (*Riparia riparia*).
The Little Owl was chosen as the object of an extensive field study because this species is found both in and beyond river forelands. They are also a very territorial species. In 1998, a study was launched into the possible effects of pollution in river forelands on the breeding biology of Little Owls in the Rhine basin (Gelderse Poort).
The effects of river foreland pollution on foraging birds will be most evident in species who stay in the river forelands for a longer period of time. Effects should be especially easy to measure when birds are under heavy physiological stress, such as during the breeding season or when food is scarce.

abstract 70 **Poster presentation**

Comparative bird migration dynamics studies

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The studies were performed at the spotting post, at Tömörd (47º22'N, 16º41'E), between 22nd August 1999 and 31st October 1999 according to the data of 3060 captured specimens of 34 species. Targets: Characterization of the dynamics of the migrating birds as well as their rambling following the hatching period. Comparison of the migration dynamics of different species and the classification of the species according to this feature. Hypotheses: In the phylogenetical system (Voous 1977) the migration dynamics of the species belonging to a family or a genus the migration dynamics does not differ significantly. The migration dynamics of the log-distance and short-distance species does not differ significantly. For the capturing 29, 12m-long each nets were used that were installed in the bushes and in the marsh next to the spotting post. The captured and recaptured bird's daily specimen number is shown on the graph. The migration dynamics is illustrated by migration diagrams composed according to the moving average calculated in each three days from the number of specimens ringed daily. The similarity between the species' migration dynamics was checked with function-adaptations as well as correlation calculations and according to this, the species having $r>0.9$ were ranked within the same group. The studied bushy area provides resting place for the short-distance (sub-boreal - Mediterranean) migrating species. The migrating and rambling species can visibly be separated to four groups according to their migration dynamics: 1. short-distance migrating and rambling species that can be characterised by linear function, 2. short-distance and long-distance species (palaearctical-african) that can be characterized by a linear function, 3. short-distance migrating and rambling species that can be characterized by polynomial function, 4. long-distance migrating species that can be characterized by logarithmic function. The first hypothesis can be partially accepted as the migration dynamics of the species belonging to the same family is similar, however, there are some exceptions. E.g. among the warbler genus (*Sylvia*) species, the blackcap (*S. atricapilla*) migration

dynamics differs from the migration dynamics of the other species. The second hypothesis can not be accepted as the long-distance migrating species' dynamics is substantially differing from the short-distance migrating species' dynamics. The short-distance migrating species spend a longer period on the area and in their diagram three or more waves can be distinguished.

abstract 71 **Poster presentation**

The Strait of Gibraltar as a major flyway of black terns in autumn

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It is well known that the Strait of Gibraltar is an important flyway for palaearctic black terns *Chlidonias niger*, but the spatial and temporal details have not been described so far. Based on a standardized sampling in autumn (from August to December) along a transect line across the Strait (between Algeciras, Europe, and Ceuta, Africa), during four transect series carried out between 1986 and 1993, net daylight migration (migrants west minus east) was estimated to be of the order of 75,000-250,000 individuals, but additional migration of unknown magnitude happened during the night. Migration peaked in August/September and extended into November. While most birds leaving the Mediterranean were encountered in offshore waters, with decreasing numbers from the European to the African shelf, an important fraction of the small cohort entering the Mediterranean (only about 4% of all migrants) occurred on the African side of the Strait. Whereas Gibraltar Bay was the area with the highest numbers of non-migrants, i.e. birds which were not flying continously east or west, the highest foraging activity was observed in oceanic waters in the middle of the Strait, where black terns were repeatedly observed to use driftwood for resting. A univariate Monte Carlo method for time series was used to explore the importance of wind, daytime and tide for the timing of migration across several temporal scales.

Oral presentation **abstract 72**

Energy expenditure in barn swallows *(Hirundo rustica)* during flight – is there an effect of body mass?

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Long distance migration forms a major challenge for a bird. To cover the energetic expenses of long-distance flights, birds have to accumulate sufficient amounts of fat. However, from current theoretical models it can be deducted that carrying this amount of fat will result in elevated flight costs, but direct measurements are not available to support these predictions. Here we report on a project designed to measure the energetic costs of changes in body mass at the individual level. To this end, hand reared Barn Swallows (*Hirundo rustica*) were repeatedly flown in a wind tunnel for extended periods of time (up to 6 h non-stop) at a speed of 10,3 m/s. Levels of energy expenditure were measured with the Doubly Labelled Water method. Additionally, wingbeat frequencies were recorded as an indicator of power output. The Barn Swallows showed a mean mass of 17,9 g, and an average power output of

2,35 Watts (SD =0,23, n = 9 birds). An intra-individual comparison in 4 birds with low (average 17,1 g) or high body mass (average 19,2 g) showed a significant increase in energy expenditure from 2,15 Watt to 2,35 Watt (P = 0.044). However, for the entire dataset of 9 individuals, no correlation could be detected between flight costs and body mass. Therefore, we conclude that intra-individual scaling of flight costs may not be compatible with inter-individual scaling. This finding may potentially have a significant impact on predictions of flight costs in relations to body mass.

Oral presentation **abstract 73**

Evolution of birds of prey (Falconiformes): multiple convergent adaptations inferred from nuclear and mitochondrial DNA phylogeny reconstructions

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Reconstructions of raptor phylogeny from DNA sequences have so far been based exclusively on mitochondrial DNA (mtDNA). Because mtDNA is inherited as a single molecule, a phylogeny derived from it must be regarded as a single gene tree. Such a tree may not accurately reflect the course of phylogenetic history in all details due to certain biases (codon usage) and/or because mitochondrial lineage sorting may not always track species phylogeny. It is, therefore, desirable to base a phylogenetic framework on DNA sequences of several independent marker genes. I here present results of the first such approach, in which I compare phylogeny reconstructions of birds of prey and their relatives (storks, New World vultures) derived from mtDNA (cyt b gene) with those derived from several transcribed (exon) and untranscribed (intron) nuclear genes. Although nuclear DNA evolves much more slowly than mtDNA and thus requires much longer sequences to achieve satisfactory resolution, trees derived from the various genes show a high degree of congruence. Nuclear DNA tends to better resolve basal branches (phylogenetically ancient splits) in the tree, while mtDNA better resolves more derived (recent) splits.
Interpretation of evolutionary adaptations among birds of prey against the background of this phylogeny reveals multiple incidents of convergent evolution, both in the general bird of prey lifestyle as well as more specific adaptations such as scavenging, foraging on aquatic prey, etc. The combination of independent nuclear and mitochondrial sequence data sets will take us a big step further towards a full understanding of the phylogenetic history and evolution of birds of prey.

abstract 74 **Poster presentation**

Hybridizing populations with different reproductive cycles: Winners and Losers

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Along with changes in landscape and climate, some bird communities decline in abundancy while others rise. Some changes are attributable to patterns of seasonal organization and migration. In the Stonechat (*Saxicola torquata*), the Asian subspecies *S.t. maura* expands its range into Central and Western Europe. Individual birds appear increasingly further from their previous range and can be expected to start interacting with the European subspecies *S.t. rubicola* and *S.t. hibernans*. Both differ from *S.t. maura* in their annual cycles, including the timing of reproduction. They typically lay several consecutive clutches over a long breeding season, whereas the long-distance migrating Asian Stonechats are generally single-brooded within a short breeding season. These differences may

constrain intergradation or impose differential reproductive costs and gains to the subspecies if crossbreeding. Due to mismatched breeding periods, reproductive success could be enhanced or reduced in hybrid breeding pairs compared to pairs of the same subspecies.
In aviary experiments, we breed and cross-breed *S.t. maura* and *S.t. rubicola*. Here, we report on preliminary data. While the subspecies readily hybridized, the per-pair output (number of clutches and eggs) depended on subspecies constellation. Due to multiple clutches, European Stonechats produced more eggs than Asian Stonechats. Egg production of mixed pairs approximated that of the female's subspecies. However, the proportion of fertilized eggs was greatly affected by the parents' origin. The proportion of fertilized eggs was high in breeding pairs of the same population, but clearly reduced in mixed pairs. European females laid repeated clutches, but few were fertilized. Asian females laid only one clutch which was fertilized in 5 of 6 cases. Based on gonad cycles of individually caged males of both subspecies, we presume that male gonad cycles limit the fertility of clutches. For European females paired with males of *S.t. maura* this led to reduced reproduction in spite of high costs. Similarly, the number of offspring was reduced for European males mating with *S.t. maura* females. In contrast, reproductive effort and success of Asian Stonechats was not affected by the breeding partner's subspecies. Based on aviary studies, we suggest that populations with shorter reproductive periods may profit from crossbreeding while those with longer reproductive periods pay costs. These costs may be high for females producing numberable infertile eggs.

abstract 75 **Poster presentation**

Migration of Palearctic birds in and around the Sahara. Circumstantial evidence from falcon ecology and radar observations

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Many routes taken by Palearctic migrants between the European breeding grounds and wintering areas south of the Sahara are well known. However, migration in and around the Sahara is still not well known as climatic, logistic and political constraints render on-the-spot investigations difficult. Therefore, I looked into a source of information that has yet to be fully exploited. Some falcon species prey on Palearctic migrants in order to feed their nestlings. The prey remains left by these falcon species give an indication of the occurrence of Palearctic migrant species and their relative frequency in a specific area. The breeding success of these falcon species allows conclusions on the availability of migrants. Changes in the distribution of occupied nest sites in an area gives circumstancial evidence on changes in the spacial availability of migrants. Seeking to expand on this fundamental research of falcon specialists I studied the distribution of these falcon species to infer super-regional patterns of Palearctic migration. I compared these results with radar observations on migration in the Mediterranean region. Data collected by these two methods provide circumstantial evidence that in autumn the density of Palearctic migration is highest at the desert's extremities while spring migration takes place on a much broader front.

Oral presentation **abstract 76**

Arrival of Avocets at their breeding site: effects of wintering sites and consequences for reproductive success

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For many migratory birds the right timing of arrival at the breeding grounds is crucial for the breeding success. Among the many factors know to affect arrival, the influence of the winter quarter has received little attention. I studied individually colour-ringed Avocets (*Recurvirostra avosetta*) breeding in Northern Germany and wintering either in France and UK (the North) or in Portugal and Spain (the South). Arrival depended on age (delayed arrival of Avocets less than 5 year old), on sex (females arriving on average 7 days later than males) and on weather. Male Avocets wintering in the North arrived significantly earlier than male Avocets wintering in the South in most springs, except in a year with an extremely late spring. In females, differences between wintering sites were not significant. Individual males wintering in the South had a significant tendency to arrive at a similar date each year. Females and males wintering in the North showed more intra-individual variation in arrival time between years. Timing of arrival had a strong influence on breeding success. Avocets wintering in the North hence were significantly more successful than Avocets wintering in the South. Costs and benefits of early and late arrival will be discussed.

abstract 77 **Poster presentation**

Forest fragmentation induced nest predation in the Eurasian treecreeper (*Certhia familiaris*).

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We used data from seven breeding seasons to study the effects of forest fragmentation on nest predation of the Eurasian Treecreeper (*Certhia familiaris*) in different spatial scales. The data was collected repeatedly from the same forest patches varying in size. Nest predation was the primary cause of nesting failures (mean annual rate of 13.96 ± 9.55%) and it explained most of the variation in fledgling production in the treecreeper during the study period. Further, the nest predation pattern showed strong dependence on various landscape characteristics measured in the surroundings of nest sites. Nest predation rate was (28.71 %) in fragmented as compared to less fragmented landscape (11.54 %). Nest loss was higher in small forest patches than in large ones and it correlated positively with forest-open land edge density, overall patchiness of forest habitat, and the amounts of sapling stands and fields in the vicinity of a nest site. Correspondingly, high amount of old-growth forest decreased predation risk. Among vegetation variables, high number of tree trunks close to a nest site increased predation risk. The results suggest that reproductive success of treecreepers nesting in less fragmented old forest areas is higher and severe reproductive dysfunction as a result of nest predation exists in fragmented forest areas. The results also support the hypothesis that forest fragmentation due to agriculture has a harmful influence on reproductive success of forest birds.

abstract 78 **Poster presentation**

Short-toed Eagle in Pre-Caucassu

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Short-toed Eagle (*Circaetus gallicus*) in Pre-Caucasus is rare breeding and poorly known species. The modern places of breeding in region are dated to woods and artificial wood files among of steppes, rich fodder base - xerophil reptilies (snakes and lizards). The total Pre-Caucasus population of the Short-toed Eagle is assessed at present as 15-20 breeding pairs, including 6-7 pairs in placor woods of the Stavropol height, 4-6 pairs in forested areas along of river and 5-7 pairs in artificial wood files. The Short-toed Eagle started nesting at three (sometimes nearby town) at second half of April. On breeding territory the birds keep very silently and cautiously. In all cases nest of Short-toed Eagle are reliably covered and difficultly are accessible to the man and ground predators. Average clutch consist of 1 egg. At the beginning of June nestlings hatched and they left nests at the first half of August. The limiting factors are: 1) reductions of the snakes in nature caused by antropogeneous influence (plough up of steppes) and influence abnormal synoptic processes; 2) increased recreation of loading on wood ecosystems; 3) elimination of birds from impact by an electrical current on support of transmission lines; 4) probable competitions for breeding territory on other predatory birds – Booted Eagle (*Hieraaetus pennatus*), Spotted Eagle (*Aquila pomarina*), Black Kite (*Milvus migrans*), Goshawk (*Accipiter gentilis*) and Buzzard (*Buteo buteo*).

abstract 79 **Poster presentation**

Ecology of Red-footed Falcon in Pre-Caucasus

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The field study of the Red-footed Falcon (*Falco vespertinus*) ecology was carried out in Pre-Caucasus (180 000 km^2) between 1989 and 2000. Found breeding in artificial field shelterbelts. The average time of appearing of Red-footed Falcon in places of nestling is the end of April. Eggs laying in nest of Rook (*Corvus frugilegus*), Magpie (*Pica pica*) and Crow (*Corvus cornix*) at the end of May. The clutch size (n=42) varies from 2 to 5 eggs, mean is 3.40±0.13. The dimensions of eggs were: 36.71±0.09 x 29.17±0.07 mm (n=215); weight (n=129) 16.60±0.13 g. At the end of June nestlings hatched and they left nests at the end of July. The reproduction effectiveness is characterised by 1.90 nestlings per nest, and by the breeding success of 55.9%. The food for nestlings and adults consisted of large insects.From the beginning of September the Red-footed Falcon began moving to the south. The total Pre-Caucasus population of the Red-footed Falcon varies very slightly and estimated as 8000-10000 breeding pairs.

abstract 80 **Poster presentation**

Changes in the Diversity and Environment of the Birds During Anthropogenic Transformations of the Ecosystem of Xerophitic Forests in the Western Caucasus

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An economic development of the xerophitic forests aimed at creating the zones for medical treatment, recreation (on the territories adjacent to the sea), and vineyards (on mountainsides), which has become especially intensive from mid-70's of the 20th century, made a substantial impact on the number, structure of the birds' population, etc. Changes in the environment of the birds took place in conjunction with fluctuations in the intensity of anthropogenic factors, which had been on the rise between 1975 and 1989, and then swiftly diminished
Relaxation in the anthropogenic pressure was accompanied by higher density of the birds' population (from 121.2 couples/sqkm in 1989-1990 up to 140-145 couples/sqkm in 1997-1998, and 2000). This, however, failed to restore the image of former ornithocenosis (prior to commencement of any drastic increase in the economic activities, the density of birds' population in 1973-1974 was at the level of 165.1 couples/sqkm). Despite fluctuations in the density of birds' population in the hornbeam-oak forest, a share of polyphages in the total biomass has gone up. While in 1973-1974 the polyphages accounted for 6.9%, in 1982-1984 this indicator was 9.4%, in 1987-1988 - 10.2%, and in 1997-2000 - about 11% of the biomass of birds' population. Due to replacement of the natural growth with decorative vegetation (*Larix decidna*, *Populus bolleana*, *Juglans regia*, *Aesculus hippocastanum*, etc.) and because of general urbanization of the landscape, the number of ravens and crows (*Gurrulus glandarius*, etc.) and of several insectivorous birds (*Phoenicurus phoenicurus*, *Parus major*, etc.), who discovered favorable conditions for nesting and feeding, has become higher than in the adjoining areas of the xerophitic forest.
Over the last decade, biodiversity in the xerophitic forests dropped. In the first half of the 20th century, 153 species of birds including 106 species that were nesting and settled were registered in the xerophitic forests and biotopes adjoining them including the territory of Abraussky peninsula and a coast line covering the foothills from the city of Novorossijsk up to Mikhajlovsky pass. By 2000, the birds'diversity shrank by 17% and those that nest - by 4%. During the last twenty years, one failed to come across *Accipiter gentilis*, *Haliaeetus albicilla*, *Aquilla chrysaetus*, *Apus melba* that used to nest in the first half of the 20th century. However, the species that had never been found in the past started to nest here: *Cerchneis tinnunculus*, *C.naumanni*, *Curcus cyaneus*, *Milvus korschun*, *Corvus frugilegus*, *Coloeus monedula*.

abstract 81 **Poster presentation**

An approach to annual cycle evolution in the Scarlet Rosefinch *Carpodacus erythrinus*, based on field and experimental data

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Two features of ecology of the Scarlet Rosefinch sharply distinguish it from the other species of the *Fringillidae* family: it is the only long-distant migrant and its postjuvenile and postnuptial moults take place in the wintering range after finishing fall migration. In addition it has the largest breeding area,

and its expansion continues at the present. I propose a model of evolution of its annual cycle, based on (i) data analysis of longterm field studies of the geographical features of seasonal events in two populations (*C.e. ferghanensis* in Tien Shan and *C.e. erythrinus* in the Ladoga Lake region), (ii) a comparative study of annual cycle of this species and the Redmantled Rosefinch *C. rhodochlamys* and (iii) experimental data of photoperiodic control of seasonal events. In accordance with this model that kind of annual cycle was evolved in primary mountain habitats which are characterized by late dates of the onset of breeding. A long prebreeding period could be used by birds that are searching for new suitable territories, distant from the primary area. In accordance with increasing the distance from the wintering area but keeping with late dates of breeding, birds from these new occupied mountain territories with a short summer period of favourable conditions had no possibility to finish moult in time. As a result both moults occured in the wintering area. This transformation of annual cycle was one of prerequisites for further expansion of the species. The following observations confirm this hypothesis: geographical variability in dates of seasonal events, rudiments of postjuvenile moult found in the birds on the birth places, comparative analisys of the second set of juvenile plumage development and sequences of moult in this species and in the Redmantled Rosefinch, their hybrides and other cardueline species, features and mechanisms of photoperiodic control of seasonal events in different age groups, data on territory behaviour, food specialisation and many other ecology peculiarities of the Scarlet Rosefinch.

Oral presentation **abstract 82**

Declining number of breeding ducks: the effect of succession course at the Rakovye Lakes

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The species diversity and breeding number of ducks of the genera *Anas* and *Aythya* are known to be the highest at eutrophic lakes. But different limiting conditions for their breeding can be created during succession processes at similar kinds of lakes. The Rakovye Lakes (60° 38′ N; 29° 25′ E) are shallow eutrophic water bodies (main depth up to 1 m), framed with wide floating mats. They were well known as the places containing very high numbers of breeding waterfowl from the end of the XIX century. Dramatic changes of water level and of plant communities in space and in time occurred during the XX century. In order to reveal tendencies in change of breeding density during the XX century we have compared our data for 1999-2000 with data published by E. Merikallio for 1925 and by A.V. Moskalev for 1970-1975, 1980-1981 and 1988-1989. For analysis of the succession processes we used published data, our own data from air and satellite photography for 1969, 1974, 1986 and 1999 and original observations for 1999-2000. The number of broods significantly declined during the last 30 years approximately 10 times. This change is correlated with the succession course at the lakes. We consider as the main reasons for the declining number of breeding ducks to be succession and processes connected with it such as reducing the expanse of water, extending and condensing floating mats, scharp reduction of the belt of floating islets, development of thick reed “borders”, complete disappearance of the coastal meadows.

Oral presentation **abstract 83**

Social organisation and behaviour of Paddy Field Warbler *Acrocephalus agricola*

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The social organisation, reproductive behaviour and population dynamics of the individually marked Paddy Field Warblers were studied during 1999-2000"s at Sosta Lakes in the South of Kalmykia. In total 70 individuals were marked during 1999 at two study plots (2 ha). But no one of these individuals was recaptured and only three of them were seen during 2000 when 82 individuals were marked at the same plots. Both the overall number and local density of the species was high. Up to 12 breeding pairs and 12 bachelor males occur simultaneously within the main observational area of 0,4 ha. The size of breeding territories varied from 100-200 m^2 at the onset of arrival up to 20-50 m^2 in the time of egg lying. Males advertised their territories vigorously sitting on the very tops of the reeds or shrubs. The aggressive responses of territory owners were directed only to singing intruders. Silent males were normally neglected and allowed to move freely across the territories. Bachelor males did not posses constant singing posts. Within the main observational area the social activity of the majority of the settlement members was concentrated largely in the common center - a dense *Tamarix* shrub within the territory of the breeding pair. A lot of breeding and non-breeding birds (both males and females) often grouped together at this shrub during the day. Only one case of polygyny was documented in this apparently monogamous species. Nests were built exclusively by females. Males take a limited part in the incubation. Both parents feed the nestlings. Breeding success was 70% in 1999 and only 12,9 % in 2000. The study was funded by "University of Russia : Fundamental Research" and Russian Fund of Basic Researches.

abstract 84 **Poster presentation**

The structure of reed warblers (*Acrocephalus spp.*) community at the steppe lakes in southern Russia

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Species diversity, numbers, habitat distribution, and interspecific relations of reed warblers were studied during 1999-2000"s at Sosta Lakes in the south of Kalmykia. *A.agricola* was found to be the most widespread and numerous species occurring across the broad range of habitats beginning from the heavy reed stands and lasting to the wet grass meadows overgrowthing with sparse *Tamarix* shrubs. *A.scirpaceus* occur within the most tall and dense reed overgrowth. In difference to *agricola* no breeding records of *scirpaceus* was registered within the narrow reed belts and *Tamarix* shrubs. *A.arundinaceus* occur along the edges of heavy reed stands adjusting to the open water. The ratio of co-occurring *agricola, scirpaceus,* and *arundinaceus* within the reed stand was estimated to be 57, 36 и 4 % - according to mist netting, and 50, 18 и 24 % - according to singing males censuses. The rest consists of small numbers of non-breeding *A.palustris* and A.*schoenobaenus*. No mutual interspecific territorial exclusion was found. Breeding territories of all warbler species overlap freely. The species show different responses under the conditions of severe drought. *A.arundinaceus* normally disappears from the lakes as soon as the sand beaches separate reed stand from the water surface. The number of *scirpaceus* declines sharply while the *agricola* number remains at the former level at least during the first year of the drought.

abstract 85 **Poster presentation**

Features of new populations of the Pied Flycatcher in Russia and Germany

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Pied Flycatcher (*Ficedula hypoleuca*) populations of new areas supplied with nest-boxes are able to increase rapidly. In order to study the features of pioneer males occupying nest-boxes we compared the age and phenotypic structure of males in old plots and in new plots arranged nearby (considered only in the first year), both in Lower Saxony (LS) and in the Moscow Region (MR). The breeding populations of these regions differed markedly in mean colour type according to Drost's (1936) scale and in recruitment rate (9 % and 0.5%, respectively). In both regions, breeding densities were 1.4 - 1.7 times higher in old plots than in new ones. In LS, the portion of old males (>= 2 years) was lower in new than in old plots (28.9%, n=121 vs. 78.4%, n= 1681). In MR populations which consisted mainly of immigrants, a similar trend was shown indirectly by the portions of recaptured males that bred in previous years. In both regions, breeding males from old plots were more conspicuously coloured than those from new plots (mean colour types 5.93, n = 1583 vs. 6.45, n=121 in LS; 4.21, n=204 vs. 4.65, n=60 in MR). In new plots arranged in MR, breeding success was maximal and decreased in subsequent years due to predation pressure. In MR, removal experiments allowed to evaluate the number and features of all competitors trying to settle in new plots (10 ha, 100 nest-boxes) during the pre-nesting period. The birds occupying new plots were younger, less conspicuously coloured and worse in their condition than males from old plots. The trend in colour type was independent of age. The results suggest that known disadvantage of cryptic phenotype in competition for reproductive resources is combined with a better ability to occupy new areas. This feature may provide some reproductive benefits reducing predation risk for their mates and offspring.

abstract 86 **Poster presentation**

Directional preferences and migration dynamics of Reed Warbler *Acrocephalus scirpaceus* and Sedge Warbler *A. schoenobaenus* during autumn migration at Druzno lake (N Poland).

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Study was conducted in "Druzno Lake" reserve in northern Poland in seasons 1999-2000. Birds were caught (in 22-23 mistnets located in reedbeds and Salix bush), ringed and measured. A part of those birds was tested by Busse's method that enables to study migration preferences of night migrants during daytime (Busse 1995). All studied birds showed differentiation of directional preferences. In case of Reed Warbler in majority of tests SW direction dominated. In case of Sedge Warbler SSE direction dominated. Results of tests of directional preferences were compared with the recoveries of birds ringed at Druzno lake and again caught abroad (data from 1990-2000). Migration dynamics (ringing dynamics) of both studied species were very similar in each year. In all seasons the majority

of Sedge Warblers and Reed Warblers was ringed in the end of July and in the first part of August. The number of ringed Sedge Warblers decreased in the second part of August and remained more stable. In case of Reed Warbler situation was similar but in a few seasons increase of number of caught birds was recorded in the end of August and in the first decade of September. The majority of birds which were recovered abroad (Reed Warbler - Belgium, Spain, Ireland, France, Germany, Luxembourg; Sedge Warbler - Hungary, Austria) was ringed at Druzno lake in the first part of August.

abstract 87 **Poster presentation**

Chick feeding rate and fledging success of Grey Heron Ardea cinerea in relation to brood size.

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The study was conducted in the breeding season 2000 in three heronries in northern Poland – Mosty (279 nests), K¹ty Rybackie (879 nests) and Kiersity (277 nests). Time and number of shifts during incubation as well as chick feedings rate during the nestling period were observed from shelter from dawn to dusk in each colony. The mean clutch size was 3,5 - 4,0 in all studied heronries. Adult birds changed their mates on the nest 0,6-0,8 times a day during the incubation period and no differences between the colonies were observed ($p>0,05$, ANOVA). Mean number of feeds ranged from 2,2 to 2,9 per nest per day and differed significantly between the colonies ($p<0,05$, ANOVA). The number of feeds/nest/day was positively correlated with brood size in all heronries ($p<0,05$). Mean number of parents' visits in the nests decreased along with a progress of the feeding period. In two colonies (Kiersity and Katy Rybackie) the number of feeds per nest per chick were similar in nests with different brood size ($p>0,05$; Kruskal-Wallis test). Only in Mosty nestlings from smaller broods (1-2 chicks) were fed in higher rate ($p<0,05$ Kruskal-Wallis test). Mean brood size changed from 3,7-3,9 in different colonies in May to 2,2.

abstract 88 **Poster presentation**

Annual cycle of the Grey Heron Ardea cinerea breeding in northern Poland. Phenology and daily rhythm of activity.

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The study was conducted during the breeding season 2000 in four heronries situated in northern Poland - Mosty (279 nests), Katy Rybackie (879 nests), Kiersity (277 nests) and ZOO in Gdañsk (32 nests). Each colony was controlled once a week and basic phenological data were noted. The studies of daily rhythm of activity comprised: 1. observations of adult birds incubation shifts and chick feeding activity (daylights hours); 2. tape recording (24h) of greeting ceremony of adult birds replacing at the nest during incubation period; 3. tape recording (24h) of nestling vocalisation accompanying arrival of the parent birds and feeding; 4. observations of the number and direction of foraging flights during the incubation and nestling periods (daylights hours). Adult herons arrived (1 part of February) and started to breed ca 2-3 weeks earlier in those colonies where some birds overwintered in the vicinity (ZOO in Gdañsk and Mosty). Also duration of the hatching period was longer in those heronries (103 days in Mosty comparing to 71 days in Kiersity). In small and medium

colonies (Mosty, Kiersity and ZOO) the highest number of egg shells removed from nests after hatching was found between the second decade of April and the first decade of May. In the largest heronry in Katy Rybackie almost 50% of all egg shells was found earlier, in the second and third decade of April. However, the hatching medians were similar in all colonies ($p>0,05$, Kruskal-Wallis test). Mean number of feeds 6 per nest per day amounted to 1,2-2, (from dawn to dusk) at the beginning of the nestling period (0-1 week). At the age of 3-4 weeks the chicks were fed in higher rate (3,3-4,2 meals). Towards the end of the nestling period the feeding rate decreased and amounted to 0,7-3,4 meals/nest/day in chicks older than 5,5 week. Arrivals and departures of the parent birds as well as sound activity of adults and nestlings peaked early in the morning and also in the evening in all studied colonies.

abstract 89 **Poster presentation**

Time budget of adult Grey Herons Ardea cinerea breeding in Gdañsk (N Poland).

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The study was conducted during the breeding season 2000 in small heronry (32 nests) situated in the area of Gdañsk ZOO. One occupied nest situated on the alder (8 m height) was observed and filmed with TV camera. The camera worked 24 h a day (1 day in the incubation period and 8 days during the nestling period). In total 216 hours (9days x 24h) were video recorded. During the incubation period adult birds changed their mates on the nest four times a day (from dawn to dusk). Adult birds incubated eggs for 86,6% of time of their presence in the nest and motionless standing on the nest took them 10,5% of the time. Nest fixing and repairing, taking care of feathers, eggs turning over and other activities took the rest of the time (2,9%). When the chicks were about 5 days old, adult birds spent 70,0% of their nest time budget for brooding chicks, 25,1% for motionless standing, 1,8% for

Oral presentation **abstract 90**

Extinction Risk and Evolutionarily Stable Optimum Clutch Size

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Extinction risk is not randomly distributed among bird species: low rate of fecundity and large body size tend to predispose certain lineages to extinction when controlled for phylogeny. Additional mortality by human persecution and introduced predators are associated with lineages characterised by large body size and long generation times. An ESS model of clutch size evolution is used to examine the effect of additional mortality on equilibrium population size and extinction risk.
Sib competition in nestling birds has both ecological and evolutionary consequences: density-dependent number regulation and evolution of optimum clutch size. In a simple model that includes both number regulation and evolution of clutch size, the ESS situation entails the lowest possible optimum clutch size for each breeding attempt and leads to the highest possible equilibrium number. The ESS optimum clutch size implies stable equilibrium number. The ESS optimum clutch size is geared to prevailing density-independent juvenile survival to age of first reproduction and prevailing density-independent adult survival between breeding attempts. At the ESS, the role of density-dependent number regulation in the

evolution of the ESS optimum clutch size and ESS equilibrium number might not be apparent, due to high nestling survival.
In the ESS population additional environmental causes of juvenile or adult mortality appear. A population at ESS population size and ESS optimum clutch size has difficulty compensating any increase in juvenile or adult mortality as density-dependent mortality is low. Non-ESS populations at higher fecundity and lower density-dependent survival are better able to compensate any additional mortality. The population might become extinct before it evolves towards a new ESS optimal clutch size and population size at the new juvenile and adult mortality. The model shows that bird species with high adult survival between broods are especially prone to extinction as a consequence of a slight, human-induced increase in adult mortality.

abstract 91 **Poster presentation**

Treated wastewater, a burden or a source of food? A study aimed on improving nature quality and especially the food situation of Spoonbills on the island of Texel

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The island of Texel has a significant breeding population of Eurasian Spoonbills (*Platalea leucordia*), around 200 pair. The Spoonbills feed mainly on Three Spined Stickleback (*Gasterosteus acculeatus*).
The dikes in The Netherlands defend us against the sea, but make it very difficult for migratory fish like Stickleback to return from the sea, where they grow up to spawn in the inland waters. In 1995, a siphon fish ladder has been constructed on the northern tip of the island. The fish ladder lures fishes from sea and siphons the fish over the dike to the inland waters. The construction costs were about 150.000 Euro. The fish ladder works well, but needs a constant supply of fresh water, which is not available during dry summers. However, the adjacent sewage treatment plant De Cocksdorp provides ample water for the fish ladder.
This led to the idea of using this wastewater in a new and innovative water management concept, solving the problems for Sticklebacks and Spoonbills. We learned that sludge particles in the treated wastewater can be used to grow high numbers of Daphnia (mainly *Daphnia magna*). The quality of the treated wastewater is improved in a constructed wetland. Sticklebacks, brought in by the fish ladder can feed on the produced Daphnia, this leads to a higher survival rate of the fish and thus to a better food situation for Spoonbills. In 2001, the research programme focuses on the scale up of the growing of Daphnia with experiments on m^3 scale aimed on optimising the production of Daphnia and eco-toxicological aspects. We expect to construct a full-scale constructed wetland system in 2002. The effect on the food situation of Spoonbills in the northern part of the island will be monitored in the following years.

Oral presentation **abstract 92**

Seasonal variation in ectoparasite load in the open nesting Australian reed warbler

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In migrating bird species the time of arrival at the breeding ground is of crucial importance to reproductive success. Individuals in good condition arrive earlier at the breeding site and, hence, they may gain a higher reproductive output than individuals in lower condition. Environmental factors and the degee of parasite infection can affect a bird's body condition. In the Australian reed warbler (*Acrocephalus australis*) males arrive earlier at the breeding ground than females. On the whole, 70% of the population was infected with ecto-parasites. Parasite-free individuals arrived earlier, were older, and had a higher body condition than infected individuals, irrespective of sex. We expect therefore that parasite load has an important effect on reproductive success.

Oral presentation **abstract 93**

Sex-dependent patterns of basal metabolic rate variation in wintering Great tits

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In preferable habitats of Moscow region, wintering flocks of Great tit consist mainly of males (> 70%) which are more successful in competition for limited food resources than females. The females that managed to join winter flock have better chances to choose high ranked mates in future and to breed in high quality territories. According to the model of avian energetics (Gavrilov, 1997), basal metabolic rate (BMR) reflects the long-term working capacity of a bird, and consequently its competitive potential. The BMR of wintering Great tit males recently was found to relate with age and various indexes of their social position (Kerimov, Ivankina, 1999). During non-breeding season, the rates of oxygen consumption of Great tit females at night time were measured as estimates of their BMR. The mass specific BMR of females and their BMRs performed as body mass residuals exceeded those of males ($p=0.000$; $F= 53.9$; $df=786$). In contrast to males, the BMR of females did not decrease with age and was similar in winter flock members and transient birds. Sharp differences between sexes in the sources of BMR variation combined with distinct patterns of body mass changes. As distinct from yearlings, old females significantly increased their body mass in mid-winter ($p<0.001$; $F=7.2$; $df=37$). At the same time, seasonal mass change was not influenced by flocking bonds both in old and young females. Among wintering males, the mid-winter increase of body mass was not related to age and was mainly affected by flock membership. Both old and young flock members were heavier than transient males of the same age during cold season ($p=0.000$; $F=22.2$; $df=526$). The results suggest that the asymmetry in social positions of wintering males and females leads to opposite ways of their energetic adaptation.

Oral presentation **abstract 94**

Termination of parental investment in the Red-necked Grebe: ambisexual offspring desertion

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Offspring desertion by either the male or the female is uncommon in birds. In 70% of the Red-necked Grebe pairs breeding on fish-ponds in SE Poland, one of the adults left the family over a week before the other mate (range 13-43 days after brood hatching). Both sexes were involved in offspring desertion (females: 2/3, males: 1/3 of deserted broods), but females left the family on average of 4.6 days earlier. Duration of posthatching parental care did not differ between the deserted parents and the pairs where both mates cared for the brood for a similar period of time. Responses of all family members to desertion by one of the parents were studied in 18 sexed pairs, for which time budgets were collected from brood hatching till leaving the territory by both adults. The remaining adults compensated for the absence of their mates by increasing their foraging effort. Competition for food and aggression among sibling increased, especially in the broods that were divided between parents before and re-amalgamated after desertion of one adult. Factors affecting occurrence and timing of family desertion (brood size, hatching date, food availability in the occupied territory) were investigated. Broods that hatched later in the season suffered unilateral desertion at an earlier age than those hatched earlier. The deserters did not renest in the current season. Benefits associated with an early timing of moult may be the primary reason for the early abandonment of breeding activities.

abstract 95 **Poster presentation**

Cuckoo *(Cuculus canorus)* breeding success and descendants mortality in the North-east of Ukraine

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The study was carried out near the Sumy-city (Ukraine, 51°01' N 34°55' E) in 1966-2000. There were analysed 89 cases of Cuckoo breeding in nests of 11 species of *Passeriformes*. Total hatching success was 43,82 ± 5,29% and flight success (reproduction effectiveness) - 32,58 ± 5,0%. In White Wagtail nests (N = 6) they were 100% and 83,3% accordingly, in Red-backed Shrike nests (N = 17) - 29,4% and 23,5%, in Marsh Warbler nests (N = 49) - 32,7% and 20,4%, in Whitethroat nests (N = 4) - 50,0% and 50,0%, in nests of Robin, Reed Warbler, Great Reed Warbler, Garden Warbler, Spotted Flycatcher, Chaffinch, Scarlet Rosefinch (N = 13) - 76,9% and 61,5%. Cuckoo breeding success varied greatly in different years. For example in Marsh Warbler nests during 1981, 1993, 1995 it was 66,67% (6 nests totally). In 1996 – 33,33% (N = 6), in 1997 – 28,57% (N = 7), in 1998 – 0% (N = 10), in 1999 – 11,76% (N = 17), in 2000 – 0% (N = 3). According to combined data 51,56 ± 6,30% of Cuckoo nestlings hatched out the eggs (N = 64) laid during first half of the season (till June, 15), in the same period 39,06 ± 6,15% of nestlings flew out. During second half of the season much less eggs were laid (N = 25), 24,0 ± 8,72% of nestlings hatched out and 16,0 ± 7,48% flew out. Total descendants mortality was 67,42% while losses of eggs were more than five size bigger than nestlings losses. The main mortality factors were: pecking and throwing out eggs (sometimes nestlings) by the nest owners - 25,84% (Red-backed Shrikes rejected 9 among 17 Cuckoo eggs, Marsh Warblers - 14 among 49); leaving "infected" nests by the owners - 11,24%; predatory activities - 13,48%; unfavourable weather (hail, heavy shower) - 6,74%. Besides some eggs were destroied (stolen) by Cuckoos themselves - 4,49%, by man - 1,12%, or they were undeveloped - 3,37% (non-impregnated - 2,25%, embryonic mortality - 1,12%).

abstract 96 **Poster presentation**

Community structure and acoustic behaviour of forest passerine birds under forest habitats disturbance and fragmentation

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In Moscow parks and in mixed forests of Moscow Region (especially in the old protected forest of The Zvenigorod Biological Station) the acoustic behaviour of forest passerine birds (*Fringilla coelebs*, *Phylloscopus trochilus*, *Ph. sibilatrix*) was studied in connection with the population structure of nesting communities research (Korbut, 1999; Korbut, Goretskaia, 1996, 1999). Within many species communities the peaks of singing activity (> 6 song/min) as well as the relatively short (1-5 min.) con-/heterospecific acoustic contacts between (2-3) neighbouring birds occurred during birds chaotic singing. During these contacts the song rate and song rhythm of participants partially or completely coincided. These contacts consist of up to 40 % of singing. More often they appeared in the certain places such as different kind of glades. Peaks of singing activity and acoustic contacts make the detectability of singing males unpredictable. Random variation (in 2-3 times) in the number of singing birds on regular routes of 2-3 km long, which had been visited up to 5-10 time per day, was found (Korbut, 1999, Korbut, Goretskaia, 1999). The number of birds also varied in 1,5-2 time during point count. The acoustic behaviour is appeared to be weekly linked with density of birds' population. In parks and forests of different size (gradient from park to forest) with different density of mass species population the changes in birds singing activity were not detected. However, the peaks of singing as well as acoustic contacts occurred more often in community with small density of birds' population. These circumstances may affect the detectability of singing birds. The research was carried out at the Zvenigorod Biological Station during 1978-2000 and forest has been changed significantly (destruction of fur-trees, partial felling). In this period the density and abundance of birds varied, while the activity of singing, as well as the number of acoustic contacts remained constant.

abstract 97 **Poster presentation**

Plumage development in altricial Pied flycatcher nestlings during the nest period

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Age dynamics of biometric indexes of developing nestlings depends to a large extent on the developmental conditions – food availability, climatic conditions, etc. As a result, nestlings of the same "astronomical age" may differ in maturational level in different broods and across breeding seasons, i.e. have different "physiological age". Plumage development was studied to define the criteria of "physiological age" on one hand, and to access the rate of development under varying environmental conditions – on the other hand. Nestlings' plumage was estimated throughout the nest period in Central Russia location in 1995-2000. Every day pterilia were sketched and qualitatively described, length of the stems and brushes in primary and tail feathers was measured and chicks were weighted. The following pterilia were defined in nestlings: head, back, thoracal, humeral, femoral, leg, wing and tail. Additionally, within each pterilia, separate bands were defined, characterised by specific pattern of feather rudiments. The set, described unilaterally, consisted of 21 bands. These separate

bands were found to appear and mature asynchronously, forming, together with pterilia, a very consistent pattern which correlated rather with the level of maturity than with "astronomical age", thus allowing for rather acurate estimation of nestling's "physiological age".
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Oral presentation **abstract 98**

Zwischenzug of Starlings - summer migration or feeding movements?

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Zwischenzug is summer movements of Starlings (*Sturnus vulgaris*) from mid June till late July after the end of the breeding season. Zwischenzug is remarkably pronounced in the Eastern Baltic. Studies were done on the Courish spit of the Baltic Sea, Russia, which is a place of concentration for Starlings moving from their breeding grounds in north-eastern Europe to intermediate resting places in northern Poland, Germany and Belgium. Results of 40-year trapping, 2-year visual observations and experiments in captive birds are presented. Distance of summer recoveries reaches 1700 km, average speed of movements during 10 days after ringing is 66 km/day in summer, 73 km/day - in autumn. Median trapping date of adult birds is 28.06, which is 8 days earlier than in juveniles. Trapping in opposite oriented traps shows the absence of clearly directed movements for >2 year birds, but movements of second-year and juvenile birds are directed mostly to the SW and have strong a morning peak and a smaller evening peak of activity. Movements to the NE do not demonstrate pronounced peaks. Visual observations showed that passage to the SW occurs in days with tail winds and high atmospheric pressure, movements to the NE do not correlate with wind direction. Passage to the SW has clear morning and smaller evening peaks compared with north-westerly movements which may be completely absent. As many as 32% of Starlings move to the SW at altitudes exceeding 100m, birds moving to the NE never occurred above 100m. Evidence is available that Zwischenzug also occurs by night (Bolshakov 1981, Bulyuk 1983). Juvenile birds kept in individual cages constantly increase mass from 76g in the middle of June to 98g in the beginning of November and show nocturnal restlessness during summer. All these facts allow to suggest that Zwischenzug of north-eastern populations of Starlings is a true migration regulated by a special complex of migratory programs.

abstract 99 **Poster presentation**

Effects of habitat fragmentation on a stenotopic bird species: a case study of the Middle Spotted Woodpecker in the Desna woodland, Russia

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The study of habitat fragmentation effects on the Middle Spotted Woodpecker *Dendrocopos medius* was carried out in 1997-2000 in the Desna River valley within Bryansk Region of Russia. Most important population properties as density, reproduction, mortality and dispersal were compared between continuous and fragmented habitats (oak-dominated forests). There was significant difference in density between the two habitats (on average, 1.22 and 0.20 pairs/10 ha, respectively). Among reproduction indices only proportion of eggs fledged was significantly lower in fragments in 1997.

Nestling mortality in fragments (25%, n=94) was much higher than in continuous habitat (7%, n=179) due to a number of cases of nestling abandon. A rate of annual mortality of adults in continuous habitat did not differ significantly from that in fragments. The distances of breeding dispersal were similar in the two habitats and did not exceed 1 km. A maYimal distance of natal dispersal (10,5 km) is recorded in fragmented oak forest. In general, the differences between continuous and fragmented habitats in breeding performänce, mortality and breeding dispersal of the Middle Spotted Woodpecker are too minor to explain significant discrepancy in density. The lower probability of breeding pair formation due to a spatial segregation of habitat remnants seems to be a major cause of habitat fragmentation effects.

abstract 100 **Poster presentation**

Moulting on nesting places of Common Kingfisher

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During 24 nesting seasons (1976-1999) was studied biology of Common Kingfisher (*Alcedo atthis atthis*) in Ryazanskaya region. Caught and is examined more 1500 adult propagating birds. Many from them are examined 2-10 times during a season.
Birds fly in to region in second half of April, last occurrings in the autumn register up to the end of October. The nesting season is spread since April 28 (date of start of earliest clutches) till September 18 (date of flight of nestlings late brood) . The replacement of a skin on legs starts on wintering area and finishes to beginning - middle of July. The moult of feathers starts in second half of June or beginning of July. Feathers of body are moult first of all then upper and under wing-coverts, remiges and tail. Very much often peak of a moult is watched during this period, when birds finish feeding nestlings first brood and simultaneously are incubating second clutch. In middle August - beginning of September the moulting was stopped. On places of nesting all feathers of body are replaced, the large part or all wing-coverts (never was marked a moult upper primary coverts), and also P1, P2, P7, P8 and remicle (is rare also P3, P9), S8-S12 (S7, S6) and from half up to two thirds of rectrices. Feeding habits and the rich food supply make possible overlapping of a nesting and moulting.

abstract 101 **Poster presentation**

Autumn migration and destiny of late broods of the Common Kingfisher

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Population of the Common Kingfisher studied during 24 nesting seasons on the 54-km section of Pra river in Oksky reserve. Annually here breed 8-43 females and 8-31 males, which one had 14-79 nests. Fresh sets occur in the term from April 28 till August 1. The adult birds vanish from places of a nesting in August - September, and some already in middle of July.
From registered 1051 nests 399 have perished on the miscellaneous causes. Among them 53, which one were deserted. The most interquartile cause of leaving of the majority of such nests not decease of adults but their passage from places of nesting. It confirm both visual observations and ringing data. In all deserted nests clutch started in second half (after the 18 of June) breeding season. The alone clutch, deserted in a consequence, started on June 8, however the male of this couple was retrieved on dead July 24 of the same year in 820 kms to the south of the nesting-place. The number of deserted broods depends on density of nests (r=0.67, p=0.0005) and breeding females (r=0.66, p=0.0006). From 53

females which thrown nests 43 had from 2 up to 4 clutch during a season. Remaining females probably bred earlier in the same season outside a monitoring plot. It is supposed, that in a individual annual cycle autumn migration is begin irrespective of nesting stage. Thus birds which one already have fledglings during a season desert late nests more often.

abstract 102 **Poster presentation**

Annual cycle of Great Spotted Woodpecker – combination nesting with moult among adults and moult with postbreeding movement among young birds in the north-western region of Russia

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The study of nesting, moult and other components of Great Spotted Woodpecker *Dendrocopos major* annual cycle was made in Leningrad Region (north-west of Russia) in 1989-1999. Among 110 woodpeckers which were caught near nests with nestlings moulting was marked with 17 birds. Both males and females had moulting during the breeding cycle, but males were marked more often (65% moulting birds during the nesting period). Two birds (males) began moulting when their nestlings were 7 days old. All the other woodpeckers began moult when their nestlings were more than 15 days old. Moulting during the nesting cycle woodpeckers were changing only one primary and corresponding to it greater primary covert. 3 birds from 17 had moulting of the first two primaries and their greater primary coverts. Moult of young woodpeckers begins at the first or second ten-day period of June at the age of 18-20 days. Postjuvenile moult continues till the end of November. Postbreeding movements of young birds are marked from the first or the second ten-day period of July. The most intensive movement is observed in August, and in the years of invasion of woodpeckers – in September. By the end of October movement of young birds decreases abruptly. During intensive movement the speed of primary changing among all young birds slows down. Postjuvenile moult of some birds can be determined only by contrast in colour between the new primaries and left juvenile primaries of distal wing part.

Selected as oral presentation **abstract 103** **not presented**

Rank-dependent take-off ability in wintering Great Tits

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When birds are attacked by predators, initial take-off is crucial for survival. Theoretical studies have predicted that predation risk in terms of impaired flight ability increases with body weight. However, studies in which attacks were simulated and within-individual daily changes in body mass were used to test mass-dependent take-off outside migration period, so far have failed to show an effect of mass on velocity. Under field conditions I compared the mass/velocity relationships of alarmed adult male and juvenile female great tits, *Parus major*. Fattening strategies differ among members of the dominance-structured basic-flocks of wintering great tits, and dominant individuals often carry significantly less amount of reserves than subordinates. Since the range of body mass gain/loss is the least among dominants, it was expected that impaired flight ability is more possible in lower-ranked female great tits. The results show that the birds significantly differed in their daily increase of relative

mass. Average daily mass increase of males was 6.2% and it was 12.2% in female great tits. Males were faster than females at take off both at dawn and at dusk. Flight velocity of males did not differ significantly between dawn and dusk, whereas females took off at a significantly lower speed at dusk than at dawn. The results suggest that larger fat reserves of subordinate females needed to increase their chances of overwinter survival probably place them at increased risk of predation.

Oral presentation **abstract 104**

Daily energy expenditure in precocial shorebird chicks: smaller species perform at a higher level

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The arctic environment imposes two critical limits to the existence of many forms of life: adverse weather conditions and a brief growing season. This environment is especially stringent for shorebirds. Their precocial chicks, which are among the smallest of warm-blooded animals (weighing as little as 4 g), are especially susceptible to frequent low temperatures during the arctic summer. We measured the daily energy expenditure (DEE) of chicks of 5 species raised in an outdoor enclosure on the sub-arctic tundra of Churchill, MB, Canada, using the doubly labeled water technique. Estimated peak metabolized energy was ca. 20% higher than estimates for altricial chicks. This is in accordance with the precocial life-style, which encompasses investment of energy not only in locomotion for foraging but also in thermoregulation. Chicks of small species showed a level of DEE that, on a per gram basis, was high compared to chicks of larger species. Whereas chicks of small species (eg. least sandpiper *Calidris minutilla*, dunlin *C. alpina*) raised their DEE to almost adult levels soon after hatching, chicks of larger species (eg. Hudsonian godwit *Limosa haemastica*, whimbrel *Numenius phaeopus*) exhibited DEE that was initially much closer to their resting metabolic rate, and increased their DEE only later in their development. Levels of DEE were close to peak metabolic rates measured in the laboratory under cold stress. Thus, chicks of small species perform at a high level, combining rapid growth and high levels of energy expenditure. Chicks of larger species grow more slowly and metabolize less energy on a per-gram basis. However, their larger size and consequent greater capacity for heat conservation compensates this reduced performance. These results suggest that small and large species may adopt different strategies of growth and function early in development.

abstract 105 **Poster presentation**

Fishponds as a main breeding habitat for Grebes in the Western Ukraine

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The number, population density and breeding ecology of 4 Grebes species were studied mainly in 1985-98 on natural and artificial waterbodies in the Western Ukraine. During breeding period Grebes

revealed in 116 points of study region, 80% of them are fishpond systems. Population density in the 11 fishfarms in 1998 averaged: *Podiceps cristatus* - 2.76 pairs/ha; *P. grisegena* - 1.72; *P. nigricollis* - 15.93; *Tachybaptus ruficollis* - 0.46. Only the Great Crested Grebe equally well breeds on natural and artificial bodies, but on lakes its number is more than four times lower (0.62 pairs/ha). Another species occure on lakes only sporadically.
Only the three factors significantly influence number and habitat preference of Grebes on fishponds: pond size, % of vegetation cover, and its character; while on natural bodies the forage reserve play a main role. The vegetation cutting, hunting and other forms of human presence are not of great importance, especially under conditions of poor economical situation.
Comparison of the main nest characteristics of the Great Crested Grebe from the natural and artificial waterbodies reveals a considerable differences in nest site preference (expecially vegetation density and plant communities), nest types and nest material. On the fishponds utypical nesting in open, exposed habitat without emergent vegetation more freequently occures. On the fishponds the Great Crestsd Grebe start egg-laying significantly ealier (average - 8.05 versus 17.05), and terms of egg-laying are more extended. Clutch size, egg dimensions and breeding success are not differ significantly in both types of waterbodies.
Generally, owing the high bioligical productivity, fish rearing and mosaic habitat structure fishponds play the most important role in supporting Grebes populations in the Western Ukraine.

abstract 106 **Poster presentation**

Winter food analyses in Long-Eared-Owl (*Asio otus otus* L.) (Aves: Strigiformes) from Jassy and Bacau cities – Moldavia, Romania

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A number of 236 pellets collected in 1995 in Jassy and 317 pellets, since 1998 in Bacau were examined. Synanthrope mammal species (*Mus musculus* and *Rattus norvegicus*) as well as species from natural surrounding ecosystems (e.g. *Crocidura leucodon, C. suaveolens, Microtus arvalis, Micromys minutus, Apodemus flavicollis, A. agrarius, A. uralensis* and *A. sylvaticus*) were identified. In both samples, mammals were with highest percentage (93.77% in Jassy with biomass of 9,244.7 g and 95.53% in Bacau with biomass of 19,488.7 g). As a main pray between mammals were *Microtus arvalis* (52.93% in Jassy and 74.12% in Bacau), followed by *A. sylvaticus* (23.38% in Jassy and 8.53% in Bacau). *Mus musculus* was with almost equal percentage - 13.76%, respectively 11.11%. As an additional pray were small birds (6.23% and biomass - 487 g in Jassy and 4.47% with a biomass of 756 g in Bacau). The most frequent bird was *Passer domesticus*. The basic winter food of *Asio otus otus* in two different years and localities was not provided from the urban areas.

Oral presentation **abstract 107**

Population-genetic differentiation and historical demography of five "Lesser Black-backed Gull" taxa

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The species Lesser Black-backed Gull (*Larus fuscus*), according to current taxonomy, comprises five subspecies distributed from the North Atlantic and North Sea (*graellsii*) through Scandinavia (*intermedius, fuscus*) eastward to the Taimyr Peninsula (*heuglini, taimyrensis*). In the recent past there have been dramatic changes in population size in opposite directions among some of these taxa: *graellsii* has increased spectacularly and expanded its range during this century, while inland breeding *fuscus* in Finland are in continuous decline. Phenotypically, there is a broad range of differentiation between these forms, not only with regard to size, mantle colour and pattern of primary tips, but also with respect to migration behaviour (fuscus being a long-distance migrant, graellsii a partial migrant and partly resident).
We studied the population genetic structure of these five taxa based on sequences of the hypervariable portion (HVR-1) of the mitochondrial control region (430 nucleotides). We were interested to see to what extent the taxa are genetically differentiated, whether there is evidence for intrinsic gene flow barrier between them and to what extent the contrasting demographic histories might be reflected in their population genetic make-up. HVR-1 sequences proved highly informative with regard to these questions. All taxa were significantly differentiated among each other. Gene flow appeard to be restricted between *heuglini* and *fuscus*. *Taimyrensis* is subject to strong introgression of mitochondrial haplotypes from more easterly populations (*biruai, vegae*), but these have hardly penetrated into the *heuglini* population so far. *Graellsii* shows clear signs of recent population expansion (poor genetic diversity, shallow haplotype phylogeny), while more easterly taxa appear progressively more diverse genetically. The colonisation history, phylogenetic relationships of the taxa and the taxonomic implications of our findings will be discussed.

abstract 108 **Poster presentation**

Settlement behaviour and dynamics of reintroduced Purple Gallinule *Porphyrio porphyrio* in the Mondego valley (Portugal)

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The Purple Gallinule is currently an endangered species in Europe (3.990-5.154 breeding pairs). Europe holds the nominal subspecies *P. p. porphyrio*, that shows a fragmented distribution range as consequence of large decline between the end of 19th and mid 20th century.
To promote the conservation of the species in Portugal, that currently holds 40-50 breeding pairs in natural populations, a reintroduction project has started in 1999 in an area where the species became extinct 25 years ago, due mainly to excessive hunting.
The reintroduced birds come from captive breeding programme in Spain and have been released in protected wetlands. Birds were monitored since the beginning of the project and a subsample of birds was radiotracked for dispersion analysis. We present the results obtained so far by this reintroduction project concerning the success of the reintrodution.

abstract 109 **Poster presentation**

Identification of nest predators of Reed Warbler and Great Reed Warbler with tape-lapse videos.

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Nest predation is very often the main determinant of reproductive success and so it exerts a great influence on life history evolution in birds. Moreover, it has been suggested that shared predators may favour the competition of prey species for an "enemy free space" a process that has been termed also "apparent competition" and that could influence the composition of breeding birds communities. Reed Warblers (*Acrocephalus scirpaceus*) and Great Reed Warblers (*A. arundinaceus*) coexist in most european wetlands and nest in reedbeds, a relative simple habitat that reduces the possibilities for nesting microhabitat differentiation. In this study we attempt to determine the predator community that attacks nests of these species in a mediterranean wetland (El Hondo Natural Park, Prov. Alicante, SE Spain, 38º16'N, 0º41'W).
We used time-lapse videos and small cameras equipped with infrared light to record continuously the activity at nests of both warblers. Between the breeding seasons of 1998 and 2000 we have video-taped the activity of 29 Reed Warbler nests and 6 Great Reed Warbler nests. Five nests of Reed Warbler (17.2%) and 2 nests of Great Reed Warbler (33.3%) were predated. The predators identified were (between parenthesis acronym of bird species and number of nests attacked): Montpellier snake (*Malpolon monspessulanus*) (1 RW), Rat (*Rattus sp.*) (2 RW, 1 GRW), Genet (*Genetta genetta*) (1 RW) and Cuckoo (*Cuculus canorus*) (1 RW, 1 GRW). Rats and Genet were nocturnal predators while the rest were diurnal. Cuckoos were only detected eating eggs and the Genet eating nestlings, while the Rats predated both on eggs and nestlings. The snake attacked a nest containing nestlings the day before the expected date of nest abandon, but nestlings left the nest before the snake arrived. In all cases the nest remained intact and without rests of eaten eggs or nestlings. Despite the low number of data, these results show that these species may share most predators.
This study is a communication of the project GV99-45-1-3, supported by the Consellería de Cultura, Educación y Ciencia de la Generalitat Valenciana.

Oral presentation **abstract 110**

Recruitment in the Common Tern: Do earliest birds win ?

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After fledgling and migrating southwards Common Terns *Sterna hirundo* stay for at least one year in the wintering areas of Africa. Most terns return at the age of two years to their natal colony site. After one or exeptionally more years prospecting the colony the individuals recruit. At the colony site „Banter See" in the harbour area of Wilhelmshaven, Germany, all chicks fledged since 1992 were marked using subcutaneously injected passive transponders, enabling annual and life-time identification. 62 % of all first-time breeders which recruited during the breeding seasons 1994-2000 (cohorts 1992-1997; n = 217) were 3 years old. 8 % start breeding already in the first year of return when only two years old, and 30 % of the birds recruit at an age of 4 to 6 years depending on years of prospecting. Our data shows that in the Common Tern age and expierence of prospecting as well as arrival date have an influence on recruitment probability. Arrival and laying dates of the recruits are

delayed compared to the experienced breeders in the colony. Supported by the Deutsche Forschungsgemeinschaft.

Oral presentation **abstract 111**

What happens to conclusions when second broods are involved: a study on Great Tits *Parus major*

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Majority of studies on multiple breeding species are based only on the data of first broods. Here we present some evidence revealing how erroneous conclusions about individual reproductive success or about the quality of different habitats may be, when the data of second broods are ignored. The study was conducted in SW Estonia in 1999-2000. In both years approximately 60% of Great Tits laid a second clutch. Despite the significantly smaller size of the second clutches compared with the first clutches in 1999, there was no significant difference between the first and the second broods regarding the number of the fledged young. In 2000, however, the number of the young which fledged in the second broods was significantly smaller than in the first broods (5.9 and 8.3, respectively). These results show how variable a role second broods may play in Great Tits' reproduction in different years, and how risky it is to judge about individual breeding success by the results of only the first breeding period. Second, woodlands in our study area can be divided into two different habitat types: coniferous habitat and decidious habitat. Although tits breeding in deciduous habitat produced more eggs with a larger volume than tits breeding in coniferous forest, the proportion of the pairs who layed a second clutch was higher in coniferous compared with deciduous habitat. Moreover, the number of laid eggs was significantly larger in coniferous than in deciduous habitat in the second breeding period (so was also the number of the fledged young in 2000). Third, feeding with supplementary calcium-rich items did not contribute significantly to the number of fledglings in 1999 when only first broods were taken into account. However, Ca-fed pairs raised significantly more fledglings compared with controls when also second broods were included in analysis.

abstract 112 **Poster presentation**

Movements of Great Cormorant (Phalacrocorax carbo sienesis) in the Czech Republic

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Until the beginning of 1980s, Great Cormorant was only irregular breeding species in the Czech Republic. The establishment of breeding population in 1982 (Nové Mlýny water reservoirs, South Moravia), resp. 1983 (Trebon Biosphere Reserve, South Bohemia) was probably closely related to current expansion of this species in Northwest Europe. Because recoveries of Danish birds predominated in the first half of 1980s, it is expected the Cormorants breeding in our country originated from the breeding populations on the Atlantic coast. However, apart from recoveries of Polish, German, Dutch and Hungarian Cormorants, Swedish birds have been mostly recorded since 1988. In addition, recoveries of birds from Russia and Estonia were also found out in 1990s.
The study of migration of Cormorants ringed in the Czech Republic was based on processing of recoveries and resightings being known since 1982. In the post-breeding period, majority of young

bird recoveries (no more than 2 years old) was located in the area of the Baltic Sea. Just only one report originated in Hungary and Tunisia. In time of autumn migration Cormorants migrate through the central Europe back to the southern wintering areas, although winter recoveries from Belgium, Switzerland and Germany are known as well. Majority of adult birds (older than 2 years) occurs primarily in the Czech Republic.

abstract 113 **Poster presentation**

Hatching asynchrony in Burrowing parrots

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Data of growth and survival of nestling Burrowing parrots (*Cyanoliseus patagonus patagonus*) were collected at a colony in El Cóndor, Río Negro, Patagonia, Argentina, during the breeding seasons 1998/9 and 1999/2000. The data were analysed in order to test hypotheses about hatching asynchrony. The chicks hatch asynchronously with an interval of two days. Variation in growth and survival in relation to the hatching order was examined, and the influence of clutch size was analysed. Between-year variation was examined. We found that:

- Some parameters of growth decreased with the hatching order in a year with average precipitation.
- Some parameters of growth that did not vary between chicks of different hatching order in a normal year, showed statistically significant variability between chicks of different hatching order during a dry year.
- The youngest chicks of a brood showed retarded growth.

abstract 114 **Poster presentation**

Do electromagnetic fields affect hole nesters' breeding?

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Field studies on relation between effects of electromagnetic fields (EMF) and animals are scarce. In 2000 preliminary investigations were carried out on the area of military radar station near Warsaw (Poland). It was found some differences in frequency of nest-box occupation between radar station and control area placed in sourrounding forest. No differences in clutch size, chicks' condition and nestling survival in two study areas were found. The study will be continued in subsequent breeding seasons.

Oral presentation **abstract 115**

Old nest material and breeding biology in Starling Sturnus vulgaris

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The question whether the presence/absence of the old nest material influences the nest site choice or breeding biology of hole nesters has been so far analyzed for several bird species. Our paper presents the results of such analysis conducted on Starling Sturnus vulgaris - the species, which can remove such old nest material while preparing its breeding site. For the purpose of our study we compared pairs of Starling which bred in nestboxes with old nest material with pairs which bred in nestboxes from which such material was removed by researchers. It was found that in cleaned nestboxes Starlings bred more frequently, laid more eggs and had more fledglings. The parental effort - measured grossly as a number of feeding trips per nestling per hour was greater among pairs that bred in cleaned nestboxes. However, there were no significant differences in the nestlings' condition in relation to the nestbox status. Nests, which were build on the old nest material, contained more ectoparasites than nests build in cleaned nestboxes.
In conclusion: presence of the old nest material diminishes the breeding success of the Starling. It could be attributed to the negative influence of the ectoparasites, but also likely cause is the lowered condition of the adult birds - which may be related to the ectoparasites but also to nest-cleaning effort.

abstract 116 **Poster presentation**

Changes in availability of old woodpecker holes and their occupation by cavity nesting birds

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In forest habitats primary cavity nesters i.e. woodpeckers are the most important producers of holes used later by secondary cavity nesters. However, availability of holes for birds is connected with rates of their natural or artificial losses. In order to establish age of particular hole during 5 years of study Great Spotted and Middle Spotted Woodpeckers active nests were found. During following breeding seasons status of the holes and their occupation by cavity nesters were observed. The rate of holes losses was different in two areas, and related to forest management practices. On the fourth season after holes excavation only 70% of holes were available for birds in area stronger influenced by human. Woodpecker holes were mostly used by Starling Sturnus vulgaris. The rate of holes occupation strongly decreased with their age. It should be concluded that losses of old holes, should not influence the cavity nesters community due to their smaller attractiveness to birds.

abstract 117 **Poster presentation**

Spring migration of some species of waterfowl in the Nemunas Delta Regional Park in 2000

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Nemunas Delta Regional Park located in western part of Lithuania on the coast of Curonian Lagoon. The park covered 28.870 ha. At present the delta regional park has 21 summer and winter polders,

fully or partially belonging to it. In 1993 park, according to Ramsar Convention criteria, the park was recognised an important area for migratory waterfowl.
Observation carry out between 27th February and 7th May every 6-7 days. Were counted 531676 birds of 16 main migratory species: 13190 swans, 373946 gees, 126560 ducks and 17980 waders. Migratory birds have used 9 summer polders, mostly choose by biotops and disturbance level.
Total counting of migratory waterfowl in the whole park territory was carrying out at first time.

abstract 118 **Poster presentation**

Study of waterfowl population's density in the north of West Siberia

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Main tasks: study of peculiarities of territorial distribution and monitoring of the fluctuations in the numbers of waterfowl in Yamalo-Nenetzki district. Its vast territory (750,0 th.sq.km) includes three pfysical geographical zones: tundra, forest-tundra and part of forest zone - mainly northern taiga. More or less regular estimates have been conducted since 1977 to 1995.
The research carried out by the author for twenty years showed that different groups of species are characterized by different types of population density. The ducks inhabiting the flood-lands of major rivers are redistributed throughout the territory according to the hydrological situation during their nesting period but their total population remains relatively stable year after year. The analysis showed that the number of birds nesting in water-meadows diminishes with the rise of water level in June. At the same time there is no correlation between the number of nonnesting birds and the water level.
The total population of geese in tundras of West Siberia has not undergone considerable change in the last thirty years but the general character of the population density has changed. This period was characterized by continued decrease of geese population in tundras of South and Middle Yamal and by substantial increase of their population in arctic tundras.

abstract 119 **Poster presentation**

Seasonal decline in survival of fledgling Great Tits.

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Many studies have reported a seasonal decline in the reproductive performance of bird populations. Out of the traits considered, the most important one is the recruitment of chicks into the breeding population, and a few studies have shown that fledglings produced early in the season are more likely to be recruited into de local breeding population next year. Nevertheless, estimating real recruitment has difficulties, and most studies suffer from two potential biases: (1) they assume recapture probabilities equal to 1 (return rates); and (2) they assume that, if present, a recruit is captured in its first year (while it is known that a fraction of breeding birds is not captured each year for different reasons). Recent advances in capture-recapture models and software are now available that allow the separate estimation of survival and capture probabilities, and the use of individual variables as „covariates" to explain variation in survival rates. We explored the local survival probabilities of 2051 individually ringed Great Tit *Parus major* fledglings in relation to the density of breeding pairs and the

hatching date. Data were collected during a long-term population study in eastern Spain, and include birds ringed since 1992. Analyses were performed using program MARK. 184 of the ringed nestlings were subsequently captured as breeding birds within the study area. The best model included constant capture rates over the period of study (43%) and two age groups. On average, 13% of the fledglings survived to their first breeding season, while the survival probability for adults was 72%. Local recruitment probability was not related to density of breeding pairs. There was a significant, quadratic, relationship, between survival probability and hatching date, with maximum probability (17%) 6-7 days before the mean hatching date, decreasing for earlier and later fledglings.

abstract 120 **Poster presentation**

Incubation and nestling period in two cardueline species: effects of temperature and clutch size.

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The effect of temperatures and clutch size on the incubation and nestling period were studied in two cardueline species, the Goldfinch *Carduelis carduelis* and the Greenfinch *Carduelis chloris*, in eastern Spain. Only nests for which either the exact incubation period, or the exact nestling period, were known were included in the analyses. The mean daily temperature during the incubation period, and the clutch size, were not related to the duration of the incubation period in any of the two species studied. Similarly, mean daily temperatures during the nesting period and clutch size were not related to the duration of the nesting period in any of the studied species, but the duration of the incubation period was positively related to the duration of the nesting period in the Greenfinch. Since unfavourable environmental conditions are usually related with a lengthening of the incubation period, the lack of relationship between ambient temperatures and the duration of the incubation period in our study area suggest that environmental conditions are not specially stressful for the incubating birds. On the other hand, the lack of relationship between the nesting period and ambient temperatures and clutch size was consistent with that found in other studies. The positive correlation between incubation and nesting period suggest either a parental effect (some birds are „better“ than others both in incubating eggs and in feeding young), or differential developmental rates of the chicks, both within and outside the egg.

Oral presentation **abstract 121**

Mechanism of realization of juvenile dispersal in the Reed Warbler *Acrocephalus scirpaceus*: its relationships with internal state and environmental conditions

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Juveniles of most bird species, show an urge to disperse after they become independent. Due to methodological difficulties many aspects of juvenile dispersal of many passerines remain poorly studied. Reed Warbler *Acrocephalus scirpaceus* is no exception. It was suggested that during post-fledging dispersal, Reed Warblers prefer to move within reed stands. However it remains uncertain how birds disperse when reed patches are isolated. To study this phenomena we conducted mass marking of Reed Warbler pulli in three isolated reedbeds. Then, at nearly every night between late

July and mid September we tape-lured Reed Warblers in an atypical Reed Warbler habitat – on sand dunes covered by willow bushes. Capture location was nearly equidistant from the two main areas where pulli were marked. In addition, in one of reedbeds Reed Warblers starting and ending flight at night were captured in high mist-nets. At that place at daytime, birds were trapped in standard mist-nets. The analysis of capture histories of birds ringed as pulli shows that: (1) juvenile dispersal of Reed Warblers takes place at night during the last two hours before sunrise; (2) age of birds during nocturnal movements was 33-49 days; (3) flight duration did not exceed 75 min; (4) all birds had low fuel stores and were in active moult; (5) nocturnal juvenile dispersal occurs by movements from one isolated reedbed area to another.
Our analysis of the weather in the period with many juvenile Reed Warblers were apparently dispersing showed that birds preferred to make nocturnal movements, firstly, when visibility was good, in high pressure systems, secondly, in still air or with slow winds. Such conditions allowed birds to minimize flight costs and to have optimal conditions for selecting landing sites.
Reed Warblers have a very protracted breeding period that impedes distinction between dispersing and migrating juveniles on the basis of nocturnal tape-luring. Only known age and natal site permit to say whether a bird was dispersing or on migration.
An important question is the role of internal factors in the control of dispersal. The available data on the activity of caged Reed Warblers suggest a possible endogenous basis.

Oral presentation **abstract 122**

One million migratory waterbirds on isolated wetlands in Niger: patterns in resource use, resource availability and waterbird-livestock interactions.

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Waterbird censuses have been carried out annually in Niger, starting in January 1992. More than 20 sites along the 550 km of river, and 60 out of the more than 1000 isolated wetlands in Niger, have been surveyed since that time. Some sites have been surveyed each of the ten years. Sites have been surveyed in all parts of the country except the north-east. At two river sites monthly waterbird counts have been carried out since February 1995. In this paper we present an initial analysis of part of the data. During the annual surveys a maximum of 132.000 waterbirds has been counted. Based on the actual counts, the total number of waterbirds present at all the wetlands in Niger during January-February is estimated to average 1.1 million. In total 108 species of waterbird (and 40 species of raptor) have been counted during the surveys, including half a dozen species new to Niger. We further discuss: - the complementary functions of river sites and isolated wetlands for waterbirds, both for palearctic and for afro-tropical species; - the influence of isolated wetland characteristics, and river characteristics, on what species are found where; - the importance of individual wetlands for waterbirds, and how this varies over time, because of the extremely variable local and regional rainfall patterns in the Sahel; - the constant changes throughout the year in numbers present at two river sites, even for waterbirds said to be resident species (this, too, is caused by variability in resource availability); - the great importance of all wetlands in Niger for the local people; - the importance of nutrient inputs from livestock manure and urine for primary and secondary productivity at isolated

wetlands; and - the likely positive effects on fish and waterbird density of these nutrient inputs by livestock.

abstract 123 **Poster presentation**

Water birds – fish stock relation on fishponds in the Czech Republic

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Increased nutrient input and changes in landscape management affected water bird communities in fishponds in the Czech Republic. These changes were reflected by changes in water birds communities. Since the end of the 19th century, an increase in breeding population sizes of many water bird species has been recorded in the Czech Republic. On the contrary, rapid decrease in numbers of many other water birds (ducks, grebes, ralliforms, Black-Headed Gull) has been recorded throughout the country since the end of 1970s. Many possible causes were discussed incl. massive mortality of water birds caused by botulism. Recently, the negative effect of increasing fish stocks in fishponds on water bird populations has been discussed which appeared in the period of decrease in breeding water bird numbers. An enormous grazing effect of fish recently seems to be the most important factor affecting benthic and plankton communities, the extent of littoral vegetation and consequently also many other limnological parameters, e.g. water transparency and chemistry.
An intensive waterfowl research started in 1990s. Negative correlation between fish stock density and diving duck density in post-breeding period was found. Remarkable relationships between water bird numbers and fish stock were found in females rearing young. Broods of diving ducks (Pochard, Tufted Duck and Goldeneye) and Little Grebe preferred fishponds with small fishes, higher water transparency and high invertebrate density. Individually marked duck females regularly moved their broods for considerable distance from the nest to rearing sites. Higher invertebrate density was found on rearing fishponds than on fishponds avoided by broods.

Oral presentation **abstract 124**

Sources and Sinks: Are there any in the Swiss population of Great Tits?

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The proximate control of reproductive performance in the Great Tit (*Parus major*) by local food supply has been investigated in detail. Prey abundance explains a large proportion of the variance in reproductive success and of the juveniles' post-fledging survival.
We tested whether these relationships result in spatial variance in the reproductive performance over a large scale by analysing 7300 nest-records collected from 1901-1999. The spatial patterns in production were strongly related to the topography and woodland structure. Lowland broods in deciduous forests bred early and produced an average clutch of 8 eggs, whereas broods in higher altitudes were delayed by about 3 weeks and clutches contained 6.5 eggs. We modelled the spatial patterns in reproduction taking into account that a tit's post-fledging survival strongly depends on the date of fledging. The model shows three regions where the long-term average breeding success was 4-6 independent chicks. The regions correspond to the areas whith mainly deciduous, oak-rich

woodlands. By contrast, broods on the northern alpine slope (where coniferous trees dominate) produced less than 2 independent juveniles. Given the high mortality in winter, recruitment in these regions would be insufficient. Since the total tit population of Switzerland was stable and produced an overall average of 3.2 independent young, the montane habitats along the northern alpine slope may be considered as a sink within the Swiss population of the Great Tit. These results support the hypotheses from the source-sink concept in population dynamics, although a proof would require evidence that birds really disperse from sources to sinks.

abstract 125 **Poster presentation**

Observations of the Great Black-backed Gull (*Larus marinus*) in Bulgaria

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Until now 59 Great Black-backed Gulls have been recorded on the territory of Bulgaria, mainly during the seasonal migrations and in winter. They prefer the seacoast, seldom they visit the inland reservoirs. The first autumn migrants reach the Black Sea after September 6th. A new wave of migration is observed in December due to the spell of cold weather in the northern wintering grounds. The birds leave for their breeding grounds in March and April. Non-breeding individuals remain at the Bulgarian reservoirs in the summer. The territory of Bulgaria is a part of the wintering habitat of the species. Great Black-backed Gulls from the easternmost breeding grounds of the species migrate and winter in our country.

abstract 126 **Poster presentation**

Expansion of the Paddyfield Warbler (*Acrocephalus agricola* Jerdon, 1845) in Europe during the second half of the 20th century

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Since 1962 there has been observed an obvious expansion of the Paddyfield Warbler throughout Europe. The expansion of its habitat has started from the territories situated to the East from the river Volga, where the density of the population had been very high. The settlement has been carried out gradually, by means of creating isolated nestings, sometimes at a distance of more than 1000 km from the main breeding habitat. Besides new nestings, at present the species is also forming new wintering grounds, which are far to the West from its natural winterings. A great number of male individuals take part in the settlement. They are the first to penetrate into the new territories - something this is characteristic also of other bird species,widening their habitats. It is supposed that a similar expansion took place also a hundred years ago. It is difficult to preview until when the ongoing expansion will continue. It is possible that the scale will grow, new nestings and winterings will appear. It is not unlikely, however, that during the following decades the expansion rate will decrease and the species will once again "hide" within its old breeding habitat.

abstract 127 **Poster presentation**

Length of stopover, fuel storage and a sex-bias in the occurrence of red knots in the Wadden Sea during southward migration

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During southward migration the Wadden Sea is the meeting place of Red Knots *Calidris canutus* of two subspecies that breed in either western Siberia (*C. c. canutus*) or north Greenland and north-east Canada (*C. c. islandica*), but the details of their co-occurrence have not been described. In 1995-1998 numbers of Red Knots inour study area in the western Dutch Wadden Sea usually built up in late July towards maxima of 10,000-20,000 individuals in August and early September. In each of these four years we attached tiny (1.3-1.8 g) radiotransmitters to a total of 95 molecularly sexed adults to determine the length of stay of different categories of birds. The 65 females (68%) predominated the samples, and among the females the majority (48 birds) was captured without traces of wing moult. In females, but not in males, birds caught in wing moult stayed significantly longer than non-moulting birds. Non-moulting females weighed up to 200 g and disappeared within three weeks after being marked. The timing of their disappearance corresponded with observed departures of flocks towards the southwest, and published departure times of canutus. The relationship between length of stay and mass at capture of these early departing non-moulting females suggests a daily mass gain of about 2.84 g/d. These birds had a mean bill length that was 1 mm (yet significantly) longer than those of the other female categories; a relatively long bill is a well known attribute of canutus. The much smaller sample of males with similar mass, moult and staging time characteristics did not show longer bill lengths and we are thus unable to unambiguously confirm the presence of canutus males in late July and early August; this bias remains to be functionally explained. Sex ratios were even in birds assignable to islandica.

abstract 128 **Poster presentation**

Short-term and long-term effects of interdependency between Grey Heron *(Ardea cenerea)* rookery and its environment.

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The colony of Grey Herons, which occupies a patch of an ancient oakland “Tulskie Zaseki” known in Tula region since 16-th century, started to develop in 1940.
Prerequisites for appearing of that settlement of herons were a specific combination of environmental condition in this region. Woods consists mainly of aged oaks mixed with linden became a very good nesting site for this large birds. Abundance of trees with thick and strong bough and multitude of materials for the nest constructing made it possible for herons to start a new colony. The necessary amount of food was guarantied by woodland location - not far from fishful ponds and river Upa which floods in spring.

In the beginning of our research work renewed in this region in 1997 "Tulskie Zaseki" were a woodland heterogeneous in age structure of its trees. Mature and aged oaks (about 250 years old) survived only in some difficult to access parts – mostly along several ravines and streams – and as small groups among younger trees which appeared after the cutting down.
Our research showed that influence of Grey Herons on the occupied patch of the wood manifest itself in the following aspects: 1) nesting trees, harmed by guano, loose many leaves and branches which also often are broken or bitten off by birds; 2) the reduce of species variety, number and height of bushes; 3) distribution of vegetation cover changes under nests which results in complete elimination of grasses directly under the nest.
Analyzing our own data received in 1997-2000 and results of previous research made by G.N. Lihachev (1940-1951) we found that long-term and short-term interactions exist between the colony and the occupied part of the wood. Heronry constantly change the appearance of the occupied biocoenosis. This changes feedback on the herons settlement being accumulated in time and making the part of the wood under the colony insufficient for further nesting. Giving no shelter heavy damaged tree crowns and occasional death of trees urge birds to build new nests somewhere near the previous ones. That is the reason why colony moves little by little from the location of its first appearance.

Oral presentation **abstract 129**

Annual cycles of forest-living and urban European Blackbirds: Phenotypic flexibility or genetic differences

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As an adaptive response to urban conditions European Blackbirds (*Turdus merula*) have developed different life patterns compared to their wild populations. Free-living urban Blackbirds (Munich) start their gonadal development approximately three weeks earlier than males from the forest (40 km apart). No difference was found in the time of gonadal regression. To test for possible genetic differences in the timing of gonadal development between urban and forest-living blackbirds, city and forest males were hand-raised and subsequently kept in the laboratory for two years under identical natural light conditions. In the first breeding season, males from the city grew their testes six days earlier than the forest males ($p<0.05$). In the 2nd breeding season the difference in the onset of testicular growth between city and forest adult males was reduced to three days and no longer significant. A comparison between field and laboratory data shows that free-living city males developed their testes 13 days earlier than the laboratory conspecifics. In the forest males, in contrast, the difference was only three days. These results suggest that the differences found in the onset of testicular growth between city and forest Blackbirds can mainly be attributed to phenotypic flexibility. Nevertheless, there might also be genetic differences in the control of testicular development as suggested by the performance of the birds during the first breeding season. Which external factors advance testicular development in the city males is not yet known. Since our experimental birds experienced high ambient temperature and were continuously provided with high quality food, it is unlikely that these factors are responsible for the earlier testicular development of the city birds. Other external factors such as social cues and/or artificial light in the urban environment might play a role.

abstract 130 **Poster presentation**

Cadmium enigma of Capercaillie

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Content of cadmium in kidney, liver, lungs, muscles, gizzard, heart and feathers of Capercaillie was studied in samples taken from protected areas (Berezinski biosphere reserve, Pripyatsky and Belovezha National Parks) with low level of heavy metal contamination. All samples were analyzed using atomic absorption spectro-photometry. Cd concentration in all samples of feathers was below the accuracy of determination. High concentrations were recorded in kidney (from 10.30 to 66.81 ppm d.w., 37.71+5.30 ppm d.w. for 12 samples) and liver (from 1.35 to 13.13 ppm d.w., 5.52+0.72 ppm d.w. for 20 samples) in spite of low concentrations of this element in feeding plants and crop content (0.22+0.01 ppm d.w. for 28 samples of pine needles, 0.27+0.02 ppm d.w. for 20 samples of bilberry shoots, 0.15+0.1 ppm d.w. for 5 samples of cottongrass floscules). Cd concentration in muscle tissue was also.

abstract 131 **Poster presentation**

Highways and ecology of jackdaws *(Corvus monedula L.)*

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Results of a longterm investigation of the breeding and population ecology of *Corvus monedula* in a colour-ringed colony near Jena, Germany are represented. The colony occupies a 900 m long highway bridge. During the investigation period (1949-57; 1973-2001) the number of breeding pairs each year (19-61) has changed with the number and quality of nest boxes in this highway bridge, the breeding success in the previous years and the number of breeding pairs of the local kestrels *(Falco tinnunculus)*. Whereas the clutch size was little variable in this period (4.6), the breeding success (0,4 - 3.0) varies in relation to the number of breeding pairs (intraspecific competition), the kind of nestboxes, food supply and, in recent years, to direct human disturbance. Birth place fidelity increased from 1981 (10.8 %) to 1991 (72,4 %) as a consequence of the colony`s isolation but has declined since 1996 because of the increasing number of new colonies in the vicinity.
The highway bridge will be reconstructed in the next few years and therefore diverse alternative nestboxes have been installed in the vicinity. The poster reports our initial experiences with such measures.

abstract 132 **Poster presentation**

The social interrelations in mixed tit flock in winter period

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Different tit species form mixed flocks outside the breeding season. Some aspects of this bird behavior on bird-tables were studied in winter period. The marked individuals of four bird species Great Tit *Parus major*, Blue Tit *P. caeruleus*, Marsh Tit *P. palustris* and Nuthatch *Sitta europaea* were observed, described and sketched.The complex of behavioral parameters was chosen which serves to keep the integrity of tit flock. Different positions of their body parts express state of birds as ritualisations in meetings or conflicts. The richest variety of their postures was recorded for Great Tit. Parameter "degree of aggressiveness" has been proposed. It includes a quantity of bird arrivals and antagonistic interactions on a bird-table. The social status of individuals was determined by means of the parameter mentioned. A complete hierarchical system has been fixed as follows: *S. europaea* > *P. major* > ad > *P. major* > juv > *P. major* + ad > >*P. caeruleus* > *P. palustris* > *P. major* + juv.
Different types of the bird behavior allowed them to take food without any conflicts. The daily dynamics of arrival activity of the species on a bird table have been studied. The peaks of activity in all four species were observed at different time. The activity increased at dawn, then decreased between midday and 1 p. m. in Great Tit and between 1 and 2 p. m. in others. Then the next rise and reduction to zero at twilight followed. Daily dynamics of aggressiveness were similar in all four species and differed mainly in meanings.The amount of successful attempts in taking food is less for dominant sex-age groups of Great Tits (males) than for subdominant ones (females). It is known that in Great Tits the width of their breast stripe is a marker of their status. It has been elucidated that the males with broader breast stripe are more aggressive but less successive on a bird-table than the males with a narrower one.

abstract 133 **Poster presentation**

Ruddy Shelducks in Moscow: History and current status of urban population

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Moscow has been housing a population of Ruddy Shelducks (*Tadorna ferruginea*) for more than 50 years. Since 1948, a few free-living pairs have been nesting in the Moscow Zoo. Two or three dozens of fledglings left the Zoo in autumn, but only 2–6 young birds returned there in spring. In the 1950s, a few individuals stayed in Moscow for winter. In the winter of 1956/1957, 10 free-living Ruddy Shelducks wintered in the Zoo; their number reached 30 individuals in the subsequent 5 years. In 1956, the birds nested outside the Zoo for the first time. Population began to increase in numbers and reached 50–60 individuals in 1978–1986, 83 individuals in 1987, and declined to 50 birds by 1997. However, winter census of 1997/1998 revealed a 2-fold increase in their numbers. About 140 Ruddy Shelducks were observed in the Moscow Zoo in the winter of 1998/99, 190 in 1999/2000, and 220 in 2000/2001. This is the total numbers of the Moscow population, because Ruddy Shelducks were found nowhere else in the city in winter. About 1/3 of Ruddy Shelducks leave the Zoo in spring searching for nesting sites. In March and early April they visit numerous city ponds, even if they are still covered with ice. In 1998–2000, Ruddy Shelducks were observed at about 15 Moscow ponds, but were never registered on the Moskva-River or any other city river. Ruddy Shelducks usually nest in the attics and roof spaces of multistory apartment buildings, sometimes far from the water bodies. Clutches are initiated in mid-April and first broods appear in late May. A pond may be used by two or even three family groups, which always results in conflicts. Amalgamated broods numbering 20 or even more ducklings are common to these habitats. The young birds fledge in late July or early August. They leave their brood sites soon after that or stay at the ponds up to mid-autumn. In November all Ruddy Shelducks gather in the Zoo. At least 43 ducklings survived to fledging in 1997, 49 in 1998, 66 in 1999 and 68 in 2000. Despite the fact that no measures were ever taken for introduction of the species in the city, the maintenance and protection of population, it is steadily increasing in numbers.

abstract 134 **Poster presentation**

Seasonal and diurnal variations in booming activity of Bitterns *Botaurus stellaris* in the Camargue, France

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The Bittern *Botaurus stellaris* is a EC priority species with a vulnerable conservation status. This secretive bird lives in marshes densely covered with common reed *Phragmites australis* and is therefore difficult to observe. As a result, most population surveys are based on the detection of booming males. Because the probability of detecting a male is highly dependent on the occurrence of booming, we estimated the diurnal and seasonal patterns of booming activity at eight sites in the Camargue, south of France. At each site, twice monthly from early March through early July 2000, booms were recorded over two periods of six hours, one centred on sunset, the other centred on sunrise. Each period was divided into 72 sampling units of five minutes each. The first booming male was heard on 14 March, which is late in comparison with other regions. The number of bitterns heard withi

abstract 135 **Poster presentation**

Analysis of ringing recoveries of Sedge Warblers *Acrocephalus schoenobaenus* ringed or recovered in the Czech and Slovak Republics

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In total, 1655 ringing recoveries of 1492 Sedge Warblers ringed or recovered in the Czech and Slovak Republics were analysed in respect of breeding site fidelity, natal philopatry, post-breeding dispersal, movements and age. Out of 131 recoveries of adult birds from the breeding season, 95% came from the same locality showing a considerable breeding site fidelity. Out of 9 recoveries of birds ringed in nests and subsequently recovered during following breeding seasons, 8 settled on their birthplaces, only 1 male was found 26 km away from its native locality. After fledging some juveniles dispersed in directions different from the migration directions. On their migration to winter quarters Sedge Warblers head initially between south-west and south-east. The highest concentration of recoveries is situated in the Pannonian Lowland. Birds from the Baltic region and Fennoscandia often migrate through the territory of the Czech and Slovak Republics. The oldest bird reached the age of nearly 9 years.

abstract 136 **Poster presentation**

Food caching and feeding frequency in urban Kestrels *Falco tinnunculus*

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Caching of surplus food both during breeding season and out of this period has been recorded in a wide range of raptors. In Kestrels inhabiting open landscape, whole or partly eaten prey is often cached (hiding) by hunting birds or by incubating females — in most cases on the ground. Despite recent wide Kestrel's occurence in most of European cities food storing has been rarely observed in such habitats. Continuous video camera observations of the Kestrel's nest situated on a building within the centre of Warsaw (Poland) showed presence of a surplus prey (mainly untouched sparrows and voles) stored in the nest and its close vicinity. During the first three weeks of the nestling period, chicks were fed stored prey, and the frequency of feedings was higher than the frequency of prey deliveries. Among other six Kestrels' nests visited in the first week after hatching, surplus food inside the nest niche was found in four of them. In two cases (one of them was open nest) the storage was placed outside the nest, but in its close vicinity. Number of prey cached varied between 2 and 5 items. Among them sparrows *Passer domesticus* composed almost 80%, while voles *Microtus* spp. were significantly less numerous (about 20%). Headless or injured prey were scarce.
Caching of food by urban Kestrels and it subsequent exploitation can significantly increase the frequency and regularity of feedings during the early stage of the nestling period. It may become a strong factor influencing chicks' survival.

abstract 137 **Poster presentation**

Feeding activity of urban Peregrine *Falco peregrinus* in Warsaw

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A regular occurrence of the Peregrine Falcon in Warsaw has been recorded since middle of XIX century. After the last war a pair nested probably in the destroyed city centre, and Peregrines were also observed regularly in other parts of the city. The species disappeared from the city in 1950-ties. It also vanished in Poland and other countries as a result of environment contamination by DDT pesticides.
In 1996 and 1997 two reintroduction of young falcons were undertaken in the centre of Warsaw. A pair of Peregrines has been observed in the town since 1998. In 2000 a video camera was placed inside the falcons' nest. During the whole nesting period in total 860 hours of observations were made. It was found that similar to observations by other authors feeding frequency changed during the nestling period. Number of feedings increased during first two weeks of chicks' life than decreased. In consequtive weeks male's participation in feeding efforts increased from 0% to 37% (18% in whole period). The most interesting facts observed in Warsaw were night feedings — eyasses were fed even in midnight.

Oral presentation **abstract 138**

Does the pattern of winter distribution of Robins migrating in autumn through the Baltic basin reflect the history of the species?

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In the study, 578 ringing recoveries of Robins (*Erithacus rubecula*) ringed at 9 stations (or groups of neighbouring stations) situated around the Baltic Sea: Bukowo, Hel, Mierzeja Wiślana (Poland); Rybachy and Neringa treated jointly (Courish Spit, Russia and Lithuania); Finnish Bay coast, Finnish Islands, Bothnian Bay coast (Finland); Ottenby, Falsterbo (Sweden), were analysed. The recoveries came from birds ringed on autumn migration in years 1946-1997 and recovered elsewhere during wintering. Gravity centres of wintering of Robins ringed at each locality formed two distinct groups – the centres for birds ringed at 3 Polish stations and at Falsterbo fell around 42º02N, 01º01E (mean coordinate), while for birds ringed at the remaining 5 stations – remarkably more eastwards – at 43º01N, 06º17E. The most striking is the contrast of migrants' wintering preferences between Polish stations and Rybachy, which are localised along the coast, only ca 200 km apart. Different localisation of gravity centres reflects different proportions in which separate wintering populations of Robins (heading to Western, Mediterranean, Apennine and Balkan winter-quarters) are represented on autumn passage in ringing localities. This reflects the history of re-colonisation of Europe by populations which expanded from different ice-age refuges and met in the Baltic basin, which is still retained in their genetic heritage.

abstract 139 **Poster presentation**

Geographical variation in male coloration and song structure of yellow hammer (*Emberiza citrinella*) and pine bunting (*E. leucephalos*) in hybridization aspect.

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The extent of the secondary contact zone of yellow and pine buntings is about of 3000 km (from Ural mountains to Baykal lake). Proportion of phenotypic hybrids is from 3 to 50% in different populations of sympatry zone (Panov, 1989). Phenotypic diversity of the hybrids can be described as the result of the two quantitative characters combination: 1) the proportion of chestnut-brown color on throat and eyebrows; 2) the extent of white/yellow coloration on head. The hybrids with white or whitish head are encountered within sympatry zone only, whereas the yellow hammer males with chestnut-brown mustaches are encountered even in Center Europe. We have shown that the proportion of "mustached" males declines with increase of distance from the hybrid zone. Nevertheless, hybridization in the secondary contact zone is restricted: the great proportion is formed here by phenotypic pure individuals of both species. The analysis of vocalizations leads to the same conclusion. In the contact zone there is the obvious convergence in song structure of both bunting species. At the same time there are the distinct differences in songs of the two species by several characteristics that result in the clear discrimination in statistical analysis.

abstract 140 **Poster presentation**

Predators of Blackcaps (*Sylvia atricapilla*) nests in South-Western Germany

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Predation is the main cause of nest losses in songbirds. In order to explain habitat selection, nest site selection and cutch size, predation and the type of predators recently moved into the focus. Among

many attempts to determine the predators of songbirds nests, video observations on breeding birds provide the best oppotunities. Even though rather expensive, only with this method one can exclude errors occuring with artificial or otherwise manipulated nests. In the last four years more than 100 nests of the Blackcap *Sylvia atricapilla* were observed by video. The blackcap was chosen because of its abundance and relative robusticity against disurbance at the nest. Nests were searched at the Western Lake of Constance, mainly in deciduous forsests during the breeding seasons 1998, 1999, 2000 and 2001. The main predator of Blackcaps nests is the Eurasian Jay *Garrulus glandiarius*, responsible for more than 50% of nest failures. The other predators were Stone Marten *Martes foina*, Stoat *Mustela erminea*, Weasel *M. nivalis*, Dormouse *Muscardinus avellanarius*, Tawny Owl *Strix aluco*, Common Craw *Corvus corone*, and Wildboar *Sus scrofa*. Other causes of nest failure were strong rainfall, hail and fleeing game shaking the nestbush in a way that eggs fell out of the nest. The results strongly imply that Jay searches nests systematically and uses his spacial memory, as Jays hardly take the nest contains at once, but return several times, maybe on subsequent days to take each young seperately. The other predators are discussed to find the nests by chance.

abstract 141 **Poster presentation**

Phylloscopus genus as a model for studying the different stages of microevolution

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Phylloscopus warblers constitute an insteresting group for the study of microevolutionary processes, in particular the Chiffchaff *Phylloscopus [collybita]* whose breeding zone spreads from the Canary Islands to E Siberia. This area encompasses most of Europe from S Andalusia to the Urals and E Thrace, Asia Minor, the Caucasus mountains and N Iran, C Asia, and most of Siberia from the Urals to the Verkhoyansk mountains. Many speciation centres have been recorded, i.e. the Canary Islands; the W Pyrenees; a stretch of land from E Poland to Rumania and Ukraine; the western foothills of the Urals; N Turkey; and the Caucasus. The first two have been well investigated and are thoroughly studied, the others are only superficially known from small samples and have been poorly prospected in the field. The speciation centres in C Europe and countries from the CIS need to be thoroughly studied, in particular their biogeographies, ecologies, behaviours, bioacoustics, the degrees of reproductive isolations and the phylogenetic relations inferred by molecular analyses on large samples of birds. For these studies, we set up a network of scientific institutes throughout the CIS to perform field work and related research, and am now looking for funding in order to enable this network to function.

abstract 142 **Poster presentation**

Birds significance in the season feeding of the Fox (*Vulpus vulpus*) in the islands of the Black Sea Reserve

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The Black Sea Reserve consist of five mainland plots and about 20 islands of the different sizes. The most largest of them are Tendra (1289 ha) and Dolgyj (480 ha) islands which separate accordingly Tendra and Yagorlitsky Bays from Black Sea. Foxes (*Vulpus vulpus*) are inhabitant of this islands. Density of fox's island population are about 6-7 individuals on 1 sq.km.
Waterbirds predominate in fox feeding (46.8 % of the annual ration). They are ducks and swans

(*Anatidae*), coots (*Fulica atra*), gulls (*Laridae*), waders (*Charadriidae*) and migrated Passeriformes.
Small mammals have the second meaning in the foods. Their fate in ration is seasonal stable - annual average 25.5%. In spring nesting birds and its eggs are consist about 50.0% in predators feeding. Fox influence on successful colonial birds breeding in the small islands (Orlov, Babin, Smaleny). In the summer fate of birds in foods of *V. vulpes* are decreased to 28.6%. In this season foxes eat the migrated insects and sea invertebraters (21.7%), reptilies (7.1%). The bird significance in fox's food increase in autumnal and winter season to 60.0 %.
In winters the bays are cover by ice. Birds concentrate on small parts of free water. In this period foxes prefer to hunt on waterbirds in ice. The predators from islands and mainland come to this bird's accumulations. In winter numerous of foxes increase in the reserve islands and bays to 4-5 individuals on 1 km on the inventory route. In exstremally winter foxes food dead birds.
Thus, birds are important in food of numerous predator of region. Predation of foxes determines the birds' nesting and wintering success in islands and bays.

abstract 143 **Poster presentation**

Migrant Waders on Lake Systems in Kalmykia republic (Southern European Russia)

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In April-May and July-September of 1998-2000 all water bodies of the Kalmykia republic were surveyed to estimate the importance of Lake Systems of Southern European Russia for waders migrating by the Asia-African flyway. 35 species of waders were met in 39 count points in surveyed area which included Sarpa lake system, Manych hollow wetland system, different chains of steppe saline lakes and numerous water bodies along the Cernozemelski channel. The total number of simultaneously gathered waders could be estimated at least as 50-70 thousands of individuals. This fact supports the supposition that steppe water bodies of the Southern European Russia are the important stopover areas for migrants. Ruff *Philomachus pugnax,* Dunlin *Calidris alpina,* Little Stint *Calidris minuta* and Black-tailed Godwit *Limosa limosa* predominated in all seasons of fieldwork presenting about 80% of all counted individuals. The most numerous and diverse wader concentrations were formed on the Sarpa lake where up to 20 thousand of simultaneously gathered individuals of 22 species were recorded. It is the place of biggest local concentration of migrant waders in Southern European Russia. In the Manych hollow, despite of the huge area with extent mudflats number of birds was unexpectedly low and exceeded not more than twice its maximal number on the Sarpa lake. Sarpa and Lysy Liman lakes are the most important stopover areas for 6 Red Book and globally rare species of waders registered in the surveyed area. The distribution and availability of the food – *Chironomidae* larvae - may explain particularities of species distribution.

Oral presentation **abstract 144**

Short term physiological and long term fitness consequences of ectoparasitic bot flies (*Protocalliphora spp.*) on nestling Blue Tits (*Parus caeruleus*)

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Haematophagous bot flies (*Protocalliphora spp*) are ectoparasites commonly found in altricial bird nests. Blue Tit (*Parus caeruleus*) nestlings in our Corsican study population are exposed to the highest levels of blow fly infestation reported in Europe, with 90-100% of the nests infested and intensities up to 100 larvae per nest. Chicks from infested nests experience energy loss directly from larval blood feeding and indirectly from anti-parasite activities. As a consequence, their growth rate, pre-fledging body size (tarsus length and mass), and hematocrit levels are greatly reduced compared to non-parasitized

Because body mass is closely correlated with developmental state and thermoregulatory capacity in nestling birds, and hematocrit reflects the capacity of the oxygen transport system, *Protocalliphora* may retard the development of metabolic capacity. But the detrimental effects of ectoparasites on chick metabolic performance should also depend on the capacity for parents to compensate through increased provisioning. We measured daily caterpillar frass production during the nesting period as an index of intra- and inter-annual variation in food availability, and combined this with experimental manipulations of parasite load, to evaluate the inter-related effects of parasitism and food availability on hematocrit, mass, and metabolic performances of developing nestlings.

Our results show that parasitized chicks having reduced mass and low hematocrit exhibit a low metabolic capacity. Analyses indicate that mass and hematocrit are simultaneously involved in this response. High caterpillars abundance offsets parasite impact. However, we found little evidence that parasites affect subsequent recruitment, suggesting a rapid recovery when conditions permit.

Oral presentation **abstract 145**

Impact of temperature factor on the annual cycle of passerines in temperate latitudes of Europe.

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Timing of spring arrival, breeding, dispersal and autumn departure in passerines varies widely on the inter-annual basis, as shown by the analysis of long-term monitoring data (44 years) from the Courish Spit on the Baltic Sea. A comparison of the timing of arrival in short- and long-distance migrants with mean monthly air temperatures showed a significant correlation in many species. High temperature in April and May in the areas of migration stimulates both long- and short-distance migrants to arrive early and subsequently to breed early in the Baltic area. An analysis of annual fluctuations of mean dates of breeding and of juvenile dispersal in 19 species revealed a trend towards later breeding in the 1970s and 1990s compared to the 1960s and 1980s. We compared the timing of breeding and of juvenile dispersal in 36 species with the monthly average temperatures in spring and summer. Early arriving species showed a significant negative correlation with average March and April temperatures, as did late arriving migrants with temperatures in April and May Timing of breeding to a large extent governs timing of juvenile dispersal in birds: early breeding results in juveniles leaving their natal sites early. This, in its turn, causes earlier autumn migration in a number of species. Thus, spring air temperature is an important factor which strongly influences the timing of the main phases of the annual cycle, i.e. their avian calendar.

abstract 146 **Poster presentation**

Some data about number of raptors in the middle stream of Oka river

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Our research was carried out in 1995-2000. The total studied area was 183 km^2, the total length of studied riversides is 150 km.
12 species of birds of prey were noted, 10 of them are nesting. During research 68 nest sites of raptors were found. The dominating species are *Milvus migrans* and *Buteo buteo* - 42,6% and 22,1% correspondingly. The second group consists of *Pernis apivorus* (10,3%) and *Circus aeruginosus* (7,4%). The lesser numerous group includes *Aquila clanga* (5,9%), *Accipiter nisus, A.gentilis* and *Aquila pomarina* - 2,9% each, and *Haliaeetus albicilla* and *Falco subbuteo* - 1,5% each.
The number of all species is determined by existence of nesting and hunting biotops and intensity of human disturbance.

Oral presentation **abstract 147**

Perspectives of subalpine populations of Whinchat *Saxicola rubetra*: Do they undergo the same destiny of disappearance as in the lowlands?

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Man-made habitats may change rapidly and the question arises whether animals are able to adapt to the rapidly changing environment. Populations of the Whinchat (*Saxicola rubetra*) have been declining over the last twenty years in north-western and central Europe, and the Whinchat is now a species of European conservation concern. In Switzerland, it was widely dispersed throughout the country until the early 1970s. Nowadays, it is absent from the lowlands, and its last strongholds in Switzerland are in the mountain regions of the Alps and the Jura. Its decline is mainly due to an intensification of meadow management, i.e. mowing earlier in the season, shorter intervals between repeated cutting, new techniques such as silage, and irrigation, especially in drier regions. The demands of a higher mechanisation led to an enlargement of allotment size, especially on grounds favourable for agriculture.
Due to a strong pressure on agriculture to intensify also in the alpine region, subalpine populations might suffer the same declines as the lowland populations. We analyse habitat change and effects of an intensification of meadow management on populations of the Whinchat over the last 13 years in the inner-alpine valley of the Engadine in Switzerland. We examine the effects of a quickly changing farmland on the population size and dynamics of a small passerine bird. Whinchats on intensively farmed meadows have a low reproductive output (local 'sinks'). However, their breeding density increased over the years as they seem to attract birds from the surroundings with a higher breeding success (local 'sources'). From our results we develop conclusions for conservation strategies of meadow breeders in the subalpine environment.

Oral presentation **abstract 148**

Delayed start of first breeding in the Pied Flycatcher: removal experiments in Germany and Russia

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According to calculations, the annual rate of non-breeding males in the Pied Flycatcher (*Ficedula hypoleuca*) in a study area in Lower Saxony, Germany, must have been 83% in yearlings (Sternberg, 1989). In order to detect the non-breeders in the population of the Moscow Region (MR) and to determine their age and colour type, we arranged new plots (10 ha, 100 nest-boxes). The results were to be compared with those of old plots of same size in Lower Saxony (LS). The breeding populations of these study areas were similar in age structure but different in recruitment rate (9 % and 0.5%, respectively). During 2-3 weeks of the pre-nesting period, we removed all just arrived males from the plot daily and kept them in an aviary. The number of removed males exceeded the number of males located on a control plot four times in both regions, indicating an equal ratio of non-breeders in the studied populations. At the same time, the number of removed males was about four times higher in LS than in MR (169 and 178 vs 44) due to the lower occupation rate of the new plots in the MR population. In the removed birds, the portion of yearlings was almost equal in both regions (56.6% in LS and 52,3% in MR). After release, similar portions of birds bred in the plots in the current season (27.9% in LS and 28.6% in MR). In LS, a further portion of released males (24.6%) was breeding here in subsequent seasons. Assuming 50% mean annual mortality of adult birds, the breeding birds in the LS study area must represent nearly all survivers. In both populations, the current season breeders of the released birds were significantly older than non-breeders. The results suggest that high portions of non-breeders and in consequence a delay in the start of first breeding may occur both at high and low population densities.

abstract 149 **Poster presentation**

Forest structure and fragmentation in relation to corticosterone levels in the Eurasian treecreeper (*Certhia familiaris* L.)

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The effects of habitat structure and forest fragmentation on physiological stress (levels of corticosterone) were studied in old-growth forest species, the Eurasian treecreeper (*Certhia familiaris* L.). The study was conducted in central Finland where fragmentation due to forestry has increased rapidly during the last decades. We applied the geographic information system and the more detailed vegetation analysis made in the field to assess landscape characteristics around the nest sites. Blood samples from 9-day-old nestlings were obtained in the field and plasma levels of corticosterone were subsequently analysed by the radioimmunoassay. There was a strong association between corticosterone levels of chicks and forest structure as measured by the mean circumference of trunks

(negative) and the number of trunks (positive) near by a nest. Our results suggest that stress due to habitat structure was higher in younger forests both in first and second broods and, in general, corticosterone levels were lower in second broods probably due to the higher food abundance. Stress hormone levels correlated also negatively with the size of nesting forest patch and positively with the proportion of pines. There was a negative association between levels of corticosterone and food density. In addition, one plausible cause of stress might be the scattered distribution of food resources in the territories. According to our results, this novel method in the landscape ecology proved to be practical assessing the relationships between physiological stress and habitat structure.

Oral presentation **abstract 150**

Recent shifts of wintering areas of certain waterfowl populations in Europe and their reasons

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Important changes in numbers and distribution of wintering waterfowl populations were recorded in Europe in recent decades. In Lithuania the number of wintering waterfowl species has increased from 17 in 1930s to 42 in 1990s. Up to 10.000 wintering waterbirds were registered in Lithuania in 1930s and about 200.000 - in late 1990s. The increase in numbers of wintering waterfowl was recently recorded also in Ukraine, Poland and Belarus. A particularly marked increase was observed in wintering Mallard population, with up to 700.000 ducks counted in these countries in late 1990s. The analysis of long-term ringing data indicate that the main wintering sites of Mallards of Lithuanian origin during the last 20 years have shifted 350 km north-eastwards and of Mute Swans - 450 km eastwards. At present the Eastern Baltic population of Mallard and Mute Swan includes mostly resident or partly migratory birds. Certain wintering populations of seaducks have changed their main wintering grounds from the North Sea to the Baltic Sea. During the last winters inshore marine waters of the Eastern Baltic supported up to 3,5 millions of wildfowl. Recent shifts of wintering grounds of certain waterfowl populations were primarily caused by human activities affecting waterfowl habitats (new permanently ice-free reservoirs, influx of thermally polluted waters into many rivers, etc.) and by the climate amelioration in Europe.

Oral presentation **abstract 151**

Food supplementation reveals a balance among water, energy and thermoregulation in Hoopoe larks from the Arabian Desert

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In deserts, where rainfall and concomitant food supply are scarce and unpredictable, birds encounter years during which breeding is apparently not possible and survival, the only contribution to fitness in these years, may be a considerable challenge. To investigate whether and how time budgets of desert birds are constrained by ambient temperature (Ta), lack of drinking water, and low food availability, we provided food and water to Hoopoe larks in the Arabian Desert during years in which no larks raised young. We recorded the behavior of birds continuously from sunrise to sunset on control and

experimental days. We predicted that if birds optimize time spent foraging and thermoregulating based on a combination of physiological state variables, including body temperature, hydration state and level of energy reserves, an increased food and water intake on experimental days would decrease foraging time, increase time spent on thermoregulation, and decrease the Ta at which birds start thermoregulating. Our data support these predictions. The optimal pattern of time allocated to various behaviors shifts when the physiological state of an animal alters.

Oral presentation **abstract 152**

All that glitters is not gold: fragments of rich habitat function like "ecological trap" for Great Tits *Parus major*

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Majority of avian studies suggest that reproductive success of passerines is higher in deciduous than in coniferous forests. We studied Great Tits breeding in different habitats in Estonia, in a patchy deciduous woodland and in large pine forests, during five years. The density of breeders as estimated on the basis of nestbox occupation was higher in deciduous than in coniferous habitat. Pairs breeding in patchy deciduous habitat started their first clutches earlier and produced more eggs with a larger volume than did pairs breeding in coniferous forest. Unexpectedly, the production of the young proved to be significantly lower and fledglings' weight smaller in deciduous compared with coniferous habitat. In 1999, when both first and second broods were taken into account, also the total number of fledglings per season was larger for pairs breeding in pine forest. Food abundance was somewhat higher in deciduous habitat, but this difference decreased as the season advanced. We suggest that fragments of deciduous habitat allure tits in early spring, signalling that food abundance is much higher there than in coniferous forest. However, the restricted size of these small habitat patches may result in increased competition for food and possibly also stronger intra- and interspecies interference. As a consequence, the final reproductive output turns out to be higher in large coniferous forests than in small deciduous habitat patches. Thus small rich woodland patches may function, under certain circumstances, like "ecological traps" for some passerines.

Oral presentation **abstract 153**

Dispersal, fitness and optimal clutch size

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Estimates of optimal clutch size rely on brood size manipulations and measurements of the subsequent fitness consequences for both the brood and the clutch. Estimates of fitness rely on local recruitment and are therefore potentially affected by dispersal in birds that do not live in completely isolated populations. In this paper we analyze the effects of dispersal on the estimate of optimal clutch size in a fragmented population of Great tits (*Parus major)*.
We recorded clutch size and manipulated brood size in a fragmented population. By ringing all nestlings and capturing all breeding birds we were able to estimate the fitness consequences of the

brood size manipulations in terms of recruitment (first breeding in the study area of young from first and subsequent clutches) and parental survival.
We calculated fitness consequences of the brood size experiments in relation to the distance at which the recruitment took place. Females dispersed further than males and especially within the females dispersal was negatively related to body mass. There was a positive relation between brood size manipulation and dispersal for the offspring, not for the parents. Since brood size manipulation affected nestling body mass this effect may be explained by nestling mass. Potential mechanisms and the consequences of this finding for current ideas of optimal clutch size in Great tits are discussed.

abstract 154 **Poster presentation**

Fat score and temporal pattern of diurnal movements of Robins (*Erithacus rubecula*) at stopovers sites during autumn migration

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Diurnal pattern of captures of Robins (*Erithacus rubecula*) in standard mist-nets was studied at the Rybachy trapping station (Courish Spit on the Baltic Sea) both on the day of arrival of migrants and during stopover. Fat birds moved less intensively than lean ones. Lean individuals were active in the morning and before noon, whereas temporal activity pattern of fat Robins was bimodal with maxima at sunrise and sunset. On the day of arrival, however, a small morning peak of activity was recorded also in lean birds. During the midday and evening peak of activity, some Robins (especially fat ones) moved to more open habitats (reed stands).
A decrease in daytime activity of nocturnal migrants with large fuel stores was shown to occur in caged birds (Dolnik 1975, Brensing 1989, Berthold 1993, 1996) and in the field during Sahara crossing (Biebach 1990). In fat birds, motivation to forage seems to be low. They aim to conserve the existing stores (minimize energy expenditure) until the onset of the next migratory flight.
The evening maximum of activity recorded in fat birds, referring to movements to open habitats is probably a special form of migratory behaviour, apparently connected with choosing a site for the migratory departure. This activity was not recorded in caged birds. It may however be masked by high nocturnal activity (Zugunruhe) in caged individuals, or may be completely suppressed in cages.

Oral presentation **abstract 155**

Prudent Great Tit parents

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Data from automated weighing of ten nests of Great Tits, *Parus major*, show that the food delivered per brood and the body mass of the females were strongly related. Females whose nestlings received more food also maintained a higher body mass throughout the nestling rearing period. High body mass may reflect good foraging conditions and high protein reserves that may be used when needed (e.g. in case of bad weather, reduced food supply or disturbance by a predator). This result is consistent with the suggestion that parental body mass may be indicative of the quality of parenting in birds. Our data give reason for expecting that female body mass at egg laying or the rate of increase of body mass just before egg laying may serve as a clue for individual optimization of clutch size, as it was proposed by Drent and Daan 20 years ago. The huge variation in food acquisition between broods and the positive

relationship between food delivered per nestling, female body mass and brood size supports the differential food acquisition hypothesis of van Noordwijk and de Jong. The presented results are based on repeated measures ANOVA of the body mass profiles and combined food delivery rate of the parents. We found a significant difference between the body mass profiles of the two sexes during the first week but not on the second week of the nestling period.

abstract 156 **Poster presentation**

Orientation of Passerine species on spring migration at Eilat, Israel

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Directional preferences of 14 Passerine species migrating through Eilat, Israel, were studied in spring 1999. A new field method by Busse (1995) was applied. Eilat is located on the Eastern Palearctic Flyway and a large number of birds migrate through the region in spring and autumn. Results of the directional preferences of the studied species showed consistency with the directions suggested by earlier studies and data. In addition, our study was able to elucidate the previously unknown relative preference of several species to the east revealing the relative proportion of Asiatic versus European populations of conspecifics that migrate through Eilat and that to date were inseparable.

abstract 157 **Poster presentation**

Impact of body condition on the timing of nocturnal migratory departure in juvenile Reed Warblers *Acrocephalus scirpaceus* during southward migration

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The time of nocturnal migratory departure during autumn migration may vary considerably in many long-distance migrants (Bolshakov, Bulyuk 1999). The aim of this study was to test for the impact of body condition (moult status, body mass and fuel load) on departure time in juvenile Reed Warblers during their first autumn migration.
The data on departure time and body condition at departure were collected in 1997-2000 on the Courish Spit on the Baltic Sea by retrapping of ringed birds in high mist nets (Bolshakov et al. 2000).
Out of 28 Reed Warblers retrapped during take-off that had been ringed at the study site, 11 were in active moult, the others were completing moult or had completed it. Individuals in active moult were captured between 28.07 – 10.09. Body mass and fuel stores of moulting birds were significantly lower than in conspecifics with completed moult. Nearly all moulting Reed Warblers were departing in the second half of the night, mainly 2-3 hours before sunrise. Nocturnal movements of these birds are suggested to refer to post-fledging movements rather than to autumn migration.
Juveniles with completed moult were captured between 14.08 – 16.10. Their departure time varied between 45 and 660 min (median 165 min) after sunset. The bulk of birds (65.5%) took off during first four hours after sunset. Departure time was significantly negatively correlated with body mass ($r = -0.654$, $n=17$; $p<0.01$). Individuals that departed in the first half of the night were on the average significantly heavier that those departed in the second half (14.4 ± 0.92 g, $n=11$ and 11.8 ± 1.39 g, $n=6$, respectively; $p<0.01$). This difference was related to fuel stores and was independent of structural size of the birds.
Birds that departed in the first half of the night had considerably increased their body mass at daytime

stopovers (for 1.8 g on the average). On the contrary, birds that departed in the second half of the night decreased their mass (for 0.33 g on the average). Minimum stopover length of both groups showed no significant difference (6,3 days and 7 days, respectively).

abstract 158 **Poster presentation**

On the starting of mass bird banding in the Far East of Russia.

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In spite of more then hundred-year World history of bird banding activity, mass banding of forest birds (mainly Passeriformes) in the south of Russian Far East started only in 1998. To the present time in territory of Primorye, Khabarovsk regions and island of Sakhalin about 30000 birds of more than 100 species were ringed, for many of them data on terms, intensity of spring and autumn migrations is obtained, some physiological characteristics were studied - moulting, age-sexual peculiarities of the feathering color etc. The special interest is taken in study of migrations of such widely distributed palearctic species, as Rustic Bunting, Yellow-breasted Bunting, Arctic Warbler, Red-flanked Bluetail and series of others. For example, the Rustic Bunting, one of the most numerous on the autumn migration in Khabarovsk and Primorye Regions is also a mass species in Japan in autumn, but at the same time is uncommon on Sakhalin. In different times of the flight the birds with strongly differing size and weight characteristics were marked, probably, these were individuals from different parts of the area of a species. From about 4000 banded Rustic Buntings no long-range returns were obtained till now. While 3 out of 1115 ringed on Sakhalin Black-faced Buntings of island subspecies were repeatedly caught in Japan during the first year. There arises a series of questions - where do continental Rustic Buntings fly? Where does such number of Rustic Bunting come from to Japan? Where do birds from different parts of the area migrate?
The general problem of study of migrations of birds using banding in the East of Asia – is the difficulty of obtaining information on returns (recoveries) from stopover places and wintering grounds. Russian Far East is only a part of East Asian flow of birds. The most of our species spend winter in South-East Asia and during migrations fly through China. Ambiguity of the approaches to maintenance of biodiversity in the countries Asian-Pacific Region (APR) and diverse level of ecological education of the population are known. In China, for example, Passeriformes till now in mass are objects to poaching, and consequently the problem of obtaining returns of rings will hardly be solved in near future. In Japan, on the contrary, the care of birds during migrations and wintering is carried out both at a state level, and citizen level, and the system of information exchange is well developed both inside the country, and between all banding organizations in APR. The NPO Amur-Ussuri Centre for Avian Biodiversity is coordinating all nowadays activity connected with a studying of bird migrations by mass banding method in the Russian Far East.

Oral presentation **abstract 159**

Maternal condition, egg testosterone and offspring fitness in lesser black backed gulls

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Egg formation is entirely under female control and it has been shown that mothers in good condition produce high quality eggs, resulting in chicks with high survival probabilities. Besides nutrients, eggs also contain maternally derived hormones. Androgens, in particular testosterone, have well known effects on offspring growth and development. However, high levels of testosterone are also thought to be immune-suppressive. We studied the androgen concentrations in eggs of lesser black-backed gulls (*Larus fuscus*). To investigate if the allocation of androgens into egg yolk depends on the condition of the female, we enhanced the body condition of one group of females by supplemental feeding. Eggs produced by fed females had lower androgen levels than eggs produced by control females. The eggs of fed and control females were subsequently cross-fostered singly into nests of unmanipulated parents, so that offspring growth and survival could be measured independent of parental quality. Hatchlings from fed eggs were heavier than hatchlings from control eggs. Moreover, hatchlings from first eggs laid by fed females showed a higher T-cell mediated immune response. The results suggest that females in good condition laid better eggs with less androgens. Thus depending on their body condition females may evaluate the costs and benefits of yolk hormones differently.

abstract 160 **Poster presentation**

Habitat selection and seasonal abundance dynamics in woodpeckers in the north-eastern Ukraine

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Habitat selection and seasonal dynamics of the numbers of 6 woodpecker species were studied from 1988 to 2000 in all types of woodlands in the north-eastern Ukraine with use of line transect census techniques throughout a year. The Great Spotted Woodpecker (GSW) in the breeding season prefers middle-aged and maturing fresh oak and pine forests (18-32 ind./sq.km), in the lowest density is found in young pine forests (0.8), avoids dry woodlands. In winter the most abundant GSW is in flood-plain oak forests (15-20), less abundant in pine-woods and watershed oak forests (5-6). The Middle Spotted (MSW) and Lesser Spotted Woodpeckers (LSW) are the most abundant (9 and 6, respectively) in various deciduous and mixed forests, however, avoid pure oak and maple stands, as well as pine-woods. The Grey-headed Woodpecker (GHW) selects only deciduous forests (2–7), especially with asp or white poplar dominance. The Syrian Woodpecker (SW) once appeared as breeding species in mid-1980s, now inhabits various anthropogenic woodlands, preferably in low-storied urban and rural residential dwellings. The Wryneck (WN) uses wide range of woodland habitats, with distinct preference of high vertical tree stand diversity oak forests (7–16). Correlation in habitat selection has been found in pairs MSW and LSW (r=+0,90), GSW and LSW (r=+0,69) in the breeding season. During 1990s increase in the numbers of SW, GHW and LSW has been noted, while the number of WN decreased up to 50%.

abstract 161 **Poster presentation**

Ornithological significance of lagoon of Daghestan.

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Along with a sharp raising of the level of the Caspian sea in the central arid part of its coast, from the Manas river estuary to the Uch-Kosinskaya channel, there formed an ecologically new (for this region) stable complex with sporadically dispersed lagoons. The complex includes four big lagoons the total length of which is 42 km**.** The total area of the lagoons 650-1050 km^2. Their age varies within 10-15-20 years. The lagoons stretching meridionally along the sea coast are located just on the intersection of main fly lines of migrating birds flying along the western coast of the Caspian sea from the boreal-arctic, northern-eastern and eastern Siberian regions of Russia, the Urals, Northern Kazakhstan and norhtern Caspian-Volga regions.
The observations revealed that the species composition, density and structure of bird population of the lagoon complex depend both on the extent of development of helobious plant biocenosis in the bays themselves and on the availability of various biotope within the adjacent territories: semi-desert, steppe, meadow, and forest (shelter belts). So, for three years of the research (1995/00) the species composition of birds fixed by us within the lagoon complex was 272 species comprising 19 orders and 51 families (The list of species according to L.S. Stepanyan, 1990). Out of them: 41 species are entered in Red Book of Russia.
However, one should mention that in a number of areas of the lagoon complex an active poaching and some negative elements of anthropressing take place. In this connection an urgent necessity arises to create two watchfully guarded natural territories of an international significance (IBAs) in two most ornithology-intensive areals of the lagoon complex with the introduction of an appropriate nature-oriented regime there.

abstract 162 **Poster presentation**

Specific features of forming lagoon ornithological complex of Daghestan and its interralation with succession processes

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An ecologically new (for this region) stable complex of sporadically dispersed lagoons has formed along with the sharp transgression of the Caspian sea in its central coastal arid part of Daghestan. The aqua-complex includes four lagoons the total length of which is 42 km. Their age varies within 10-15-22 years. The lagoons stretching meridionally along the sea coast are located just on the intersection of main flyways of transpalearctic migrating birds flying along the western coast of the Caspian sea from the boreal-arctic, northern-eastern and eastern Siberian regions of Russia, the Urals, Northern Kazakhstan and norhtern Caspian-Volga regions. Part of the lagoon complex is located in the «bottleneck». In this connection not only hydrophil, but also land migrants (the number of some species runs up to 100-150 thousand zooids per migration season) fly over these lagoons. At the peak of migration activity, the overfly intensity is 19,6 thousand individuals for four hours of observation. Shoal water (0,2-0,5-1,3 m), desalination (0,9-3 $^{o}/_{oo}$) of the lagoons' water and excessive sun radiation of the research area significantly stimulate succession processes. Adequately to the enriching of the lagoons' biocenosis stage-by-stage forming of ornithocomplexes is happening. At the moment lagoons are an «ecological oasis» with optimal conditions of recreation, wintering, abundant trophic base and new centres of the birth of hydrophil avifauna with a still increasing number of nest stations. All these things condition gathering hundreds and thousands of zooids of water and near-water birds in the season of migrations and hibernacles.
Under the research period (1995/00) within the lagoon complex, 272 species of birds were registered, comprising 19 orders and 51 families (according to Stepanyan, 1990) that is 76,8% of the total ornitho-fauna variety of the republic (according to the author's estimation - 354 species). Out of them: 31 species - sedentary, 10 - supposedly nesting, 45 - coming by chance, 12 - invasion, 241 -overflying, 41 - wintering, 41 - aestivating. 41 species among them are entered in the endangered-species list (Red Book) of Russia. The richest in species are the following orders: PASSERIFORMBS (100 species),

CHARADRIIFOR (60), ANSERIFORMES (29) and FALCONIFORMES (24). It is worthy of note that despite geographical homogeneity of the Caspian region, the areas of the western coast have more «European appearance» according to the composition of nesting and overflying birds while the influence of Asian fauna is expressed much more in the eastern coast of the Caspian sea (see Appendix).
The ranging showed belonging two most ornithologically-intensive areas of the lagoon complex to territories meeting the criteria of the Ramsar wetlands of international importance. The project developed by the author regarding the organization of two severely guarded natural territories in the lagoons of Daghestan are pending by the Russian representation of Wetlands Internatiol.

abstract 163 **Poster presentation**

Diet of breeding Montagu's Harrier (*Circus pygargus*) in Western Belarus

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The study was conducted during breeding seasons in the years 1993-1995 on arable farmland in Grodna region (W. Belarus). Harrier pellets and prey remains were collected regularly from May to August-September from 14 pairs in 1993 (457 preys), 12 pairs in 1994 (576 preys) and 33 pairs in 1995 (1842 preys). For identification of prey we used also direct observations of food passes and checking the contents of nestling's crops in situ (Vintchevski 1996). *Microtus spp*.(53,4 %) with other small rodents (totally 62,4 %) were the most important prey by numbers, followed by the birds (especially ground-nested Passerines) and birds' eggs (totally 24,6 %) (N=2875). Large insects (*Tettigonia/Decticus spp*. (6,2 %), *Coleoptera* and *Odonata* (totally 1 %)) and *Lacerta spp*. (5,5 %) were preyed less frequently, but also during every breeding season. *Lepus spp*., *Rattus spp*., *Talpa europaea*, *Sciurus vulgaris* and *Rana spp*.(each <0,1% by numbers) were preyed by harriers occasionally and were found not every year. Changes in diet composition during breeding periods, and differences between seasons and semicolonies of Montagu's Harrier will be discussed.

Oral presentation **abstract 164**

Energy budgets of entire family units during peak demand of the brood: A comparison between sea and land birds.

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The reproductive period has been considered to be one of the energetically most demanding phases of the avian annual cycle. During this period, adults of many seabird species have to travel long distances to obtain sufficient food (which is energetically expensive), whereas adults of most land bird species are able to forage closer to the nest. To obtain insight in the differences in the reproductive energetics between these two groups, energy budgets were constructed from literature data in 13 species of sea birds, and 8 species of land birds. Parents that feed their chicks need to collect sufficient food to cover their own expenses (DEE_{par}, kJ d^{-1}), plus that of the brood. The latter component increases as a function of the chick's age to achieve a maximum level of daily metabolisable energy intake of the brood (Peak-DME_{brood}, kJ d^{-1}). In species with biparental care, during this specific period, the total amount of energy metabolised by the entire family unit (MEI_{family}, kJ d^{-1}) equals two times DEE_{par} plus

Peak-DME_{brood}.This amount of energy has to be obtained by the parents at a total working level of two times DEE_{par}. Thus, parental foraging efficiency (FE_{par}, kJ energy obtained per kJ energy spent) can be calculated as $MEI_{family}/(2 \cdot DEE_{par})$. In 13 seabird species, DEE_{par} values were on average 56.7% (SD = 35.8) above the allometrically predicted level (significantly different from zero), but only by 3.7% (SD = 26.2) in the 8 land bird species. For these sea bird species average FE_{par} levels were 1.32 (SD = 0.14), which was significantly lower than the average FE_{par} value of 2.40 (SD = 0.64) calculated for these land bird species. Clearly, after correction for body mass, sea birds exhibit higher parental work levels than land birds, which must be a consequence of their lower foraging efficiencies during chick rearing.

Oral presentation **abstract 165**

The costs of egg production and incubation in Great Tits

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The costs of egg production and incubation may have a crucial effect on avian reproductive decisions, such as clutch size and the timing of reproduction. We carried out a brood size enlargement experiment on the Great Tit (*Parus major*), in which the birds had to lay and incubate extra eggs (*full costs*), only incubate extra eggs (*free eggs*) or did not pay any extra cost (*free chicks*) in obtaining a larger brood. We used female fitness (half the recruits produced plus female survival) as a fitness measure because it is the female who pays the costs of egg production and incubation, and because clutch size is under female control. Female fitness decreased with increasing costs (fitness of *free chicks* females higher than of *free eggs* females higher than of *full costs* females). These fitness differences were due to differences in female survival rather than in the number of recruits produced. This is the first time that the costs of egg production and incubation have been estimated using such a complete fitness measure, including, as our measure does, the local survival to the following year of both the female and her offspring. Our results emphasise that reproductive decisions cannot be understood without taking egg production and incubation costs into account.

abstract 166 **Poster presentation**

Peculiarities of urbanization the Magpie in middle Volga

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The intensive Magpie urbanization began in Middle Volga region in 80-s. Sporadic nests were found in 1974at Kazan cemetteries and Magpie flocks might be seen near the meat factory. Nowadays Magpie populates different types of wood-shrubberies and its breeding area is expanding. The nesting area of Magpie is maximal (1sq.km) in natural biotopes and it descreases to 0.1 sq.km on the urbanized territories. Magpie roves to the breeding places- flood-lands, cemeteries and large parks - before the nesting phase. Here Magpies feed on natural food (small rodents, fish, invertebrates, vegetation) and anthropogenic food as well.They gather the latter at the settlement suburbs. Magpie ruins the nests of Starlings, Blue Pigeons, Rooks, riverian birds and feeds nestligs. The highest density of Magpies population is regitered in summer in central gardens (34.1 ind/sq.km), lakes, flood-lands (15.9 ind/sq.km), wood-meadows (9.8 ind/sg. km). The light rivalry from the Hooded Crow and Hen-harrier (the number of the latter declined rapidly last years) promotes the Magpies population. The reedbeds of the ponds facilitate feeding,mostly riverian birds eggs and nestlings. The Magpie's

carnivorism is higher after the time when nestlings depart their homes, during the trophic movements. About 50% of small sparrows nests found in 1992 in Kazanka river flood-land had been ruined. Near the villages Magpie's successful in Starlings and Blue Pigeons eggs stealing. Magpie does its day migrations lonely and by the more wide front than ther birds.The nights they spend at the suburd forests, cemeteries, flood-lands and in daytime fly tje town for feed.

abstract 167 **Poster presentation**

Determination of site fidelity patterns in adult pied flycatchers (*Ficedula hypoleuca*)

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Site fidelity of previously breeding individuals in nestbox population in Curonian Spit (55.05 N; 20.44 E) of the Baltic has been examined from data collected during 1984-95. Fidelity to the tagging area (or homing rate) is estimated as ratio of local survival rate to true survival rate. The true annual survival rate is obtained from age distribution of the birds that was previously ringed as nestlings. The mean adult local survival rate is estimated on Jolly-Seber capture-recapture methodology (model A). The average fidelity rate is calculated to be 0.56. Correspondingly 44% of survivors choose a new breeding area each season. There are substantial differences between fidelity rate in males (0.67) and females (0.50). This results argued against a widespread opinion that all adult birds return to their breeding places.

Oral presentation **abstract 168**

Host-parasite interactions in natural holes: marsh tits and blow flies

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Infestation of marsh tits *Parus palustris* broods by bloodsucking larvae of *Protocalliphora falcozi* Séguy 1928 (Calliphoridae, Diptera) was studied over an eight year period in a population breeding in natural holes, in the primaeval forest (Bialowieca National Park, E Poland). Overall 54% of 222 marsh tit nests were parasitized. Prevalence (27-88%) significantly changed across years. This variation did not depend on timing of marsh tit breeding season, winter, or spring temperatures. Frequency of infestation did not depend on forest type or hole attributes. Infestation intensity was rather low (median 8, max. 75 flies/nest, 85% of nests with <3 flies/young). Higher intensities tended to coincide with higher prevalences. Larger broods contained significantly more blow flies, per nestling load did not depend on brood size. No effect of infestation on nestlings was recorded - their mortality did not increase, nor fledging was delayed. In response to the presence of blow flies parents apparently attempted to increase their feeding rate. There was a clear reproduction cost: 60-63% of females and 68-69% of males having only 0-8 blow flies but only 34% of females and 44% of males with more than 8 flies/brood survived till the next spring. It is suggested that low clutch size of marsh tit could have evolved, inter alia, to reduce the fitness costs of ectoparasites.

abstract 169 **Poster presentation**

Dependence of the breeding territory size of the blackbirds (*Turdus merula*) on age and breeding density

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The size of the breeding territory within individually ringed urban population of the European Blackbirds in two parks in Szczecin (NW Poland) was studied within period of four breeding seasons (1997-2000). In the one park the size of territories showed a significant decreasing in following years (ANOVA*; df=3, 134; F=5,72; p<0,001*) according to breeding density increasing from 9,5 pair/10 ha in 1997 to 21,5 pair/10 ha in 2000. In the second park changes of the territory size were unimportant (ANOVA; *df=3, 80*); *F=1,96; p.<0,1268*) but breeding density within the same time changed less drastically from 10,6 in 1997 to 13,1 pair/10 ha. The time of territory acquisition had a very important impact on its size. The earliest established territories were the biggest ones and the most late established ones were the smallest (ANOVA; *df=2, 128; F=7,95; p<0,0006*). The difference in the size of territories between young and older males was stated. The size of the territory of young males was smaller but only at the start of the breeding season (territory acquisition between pentade 11- 20) (ANOVA; *df=1, 62; F=9,9298; p.<0,0025*). After 20 pentade there were no differences in the size of the territory size (ANOVA; *df=1, 25; F=0,0222; p.<0,8828*). There was increasing of the territory size between the first (second year of the male life) and the second (third year) breeding season of the males in the same park (*n=11; p<0,03*). After third and fourth year the increasing was not important (*n=21; p<0,054*) and after fifth and sixth as well (*n=7; p<0,5477*).

abstract 170 **Poster presentation**

Seasonal cavity-nesters' population dynamics in a small city

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Studies on cavity-nesters' seasonal migrations between urban landscapes are of a special interest for ecologists, as these species may serve as a convenient model to perform monitoring observations.
The study was carried out in a small industrial city of central Russia. The main objective was to analyze changes of avifauna quantity in town districts with different degrees of anthropogenic pressure.
Data on cavity-nesters' quantity dynamics for 12 years being summed up, remarkable seasonally related numbers fluctuations were revealed. That was most probably due to bird migrations between urban habitats, and to interchanges of the urban populations and the populations of natural habitats.
Annually, *Passer montanus* numbers increased in the nest period and in January, and declined in August and September. The latter was accounted for large flocks of this species moving in the beginning of autumn to waste lands, migrating to suburban biotopes.
The most stable level of *Parus major* numbers in the reproduction period every year was marked in one-storeyed districts because of sufficient amount of nest sites. The high level of this species' numbers in the city in winter time was caused by good foraging conditions (food of anthropogenic origin; feeding of birds by man). On the whole, the quantity level was discovered to be unstable for this species in town, due to constant bird migrations between urban and suburban biotopes.

Thus, unlike large cities where bird populations are closer tied with urbanized territories, and where avifauna quantity is rather stable, its seasonal changes being dependent on breeding success and winter mortality, in a small city, surrounded by natural landscapes, distinctive bird quantity fluctuations take place, caused both by bird migrations between urban habitats and by interchanges of the urban and suburban populations.

abstract 171 **Poster presentation**

Biological hurdles for Bittern *Botaurus stellaris* in waterbodies of Minsk, Belarus

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The biology of *Botaurus stellaris* was studied in Minsk, Belarus in 1998-2000. Three breeding sites were found: large emergent stands of tall vegetation (more than 1 ha) in Svisloch river and in north-west part of Chizhovka reservoir, as well as shallow technical reservoir overgrown by reed in industrial zone "Shabany". According to counts, 4 booming males were recorded in 1998, 3 - in 1999 and only 1 in 2000 (in Chizhovka reservoir). Bitterns arrive in Minsk in third decade of March. The building of nests and laying of eggs was registered in first half of May. Two nests (one in 1999 and one in 2000) were found in technical reservoir near Minsk sewage disposal plant in small (5x8m) stands of bur reed. Third nest was found in 2000 in extensive stands of bur reed situated in 40 m from riverbed. The water level near the nests was 0.2-0.4 m in the beginning of incubation. By the end of incubation water level decreased, and technical reservoir became almost dry. 5 eggs were found in each of three nests. Successful breeding was recorded in 1999 in technical reservoir (3 fledglings leave the nest). Two other nests were ravaged by mammals.

Oral presentation **abstract 172**

The avian annual cycle in the environment of global climate warming

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The paper considers the impact of global warming on the expression of the avian annual cycle: the timing and characteristics of migration (spring arrival, take-off, migratory flight *en route*, flight cessation, controlling mechanisms), breeding, staging, and wintering. In the control of bird migration, climate change can act through an endogeneous programme–readiness for flight–by changing its periods because of changed environmental conditions. It can also affect the take-off process through certain shifts in time, result alterations in staging areas and the formation of bird accumulations therein, influence the number of migration waves and periods of their occurrence, migratory distances, and the species that are characteristic of a migratory course. The article presents the material that confirms the impact of global climate change on different breeding bird species and populations included and not included into the Red Data Book of Lithuania, changes in their ranges and a population state, which result changed bird numbers on migration. The list of the bird species shifting their ranges northeastwards or eastwards in the Baltic region being influenced by global warming is presented. It has been established that the impact of global climate change upon birds of terrestrial and wetland complexes is more evident than upon waterfowl is. Recent climate warming is changing a migratory-resident state of birds, increasing numbers of residents and those of birds wintering in breeding areas, cutting migration distances, making winter quarters come nearer, sharpening competition for food resources and altering their diversity, changing migration routes as well as their

characteristics and timing, hastening spring arrival, changing temporal communities on migration routes, shifting bird breeding ranges, etc.

abstract 173 **Poster presentation**

Post-fire succession of breeding bird communities in regenerating *Pinus brutia* woodland

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Fire is a common phenomenon in Mediterranean ecosystems. We studied breeding bird communities in plots at different successional stages after fire in *Pinus brutia* woodland. A total of 13 plots were selected in homogeneous areas, ranging from 1 to more than 40 years after fire. A number of vegetation variables were measured together with the number of breeding territories established in the plots. Bird species responded as expected from their individual habitat preferences (open-country species appear in early stages, woodland species later). A lag in the adaptation of the bird community is possibly operating: woodland species are still present around remaining isolated trees immediately after fire but these later disappear as the succession progresses. In a multiple regression analysis using a variety of habitat characteristics as independent variables, species diversity, number of species and the total densities of breeding birds are all explained best by vegetation height. All three variables decrease from the 0-2 to the 2-5 year class but gradually increase afterwards, perhaps levelling out or dropping as the trees mature. This pattern can be explained by the gradual increase in tree and bush height along the succession, allowing a greater number of species to co-exist as the forest matures.

Oral presentation **abstract 174**

Do nocturnally migrating birds flying in reverse directions behave differently from birds flying in expected directions? - An analysis of radar data from Israel

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In general, flight directions of nocturnal migrants at a given site can be explained by the relative location of the starting and goal areas, and by the modifying influences of weather and topography. Under particular circumstances major proportions of migrants may fly in opposite directions (Richardson 1978, Oikos 30: 224-272). Apart from these special cases, birds flying in seasonally unexpected directions are almost always present in addition to normal migration. Our question is whether these flights have to be interpreted as a response to particular conditions or may simply be the result of limited orientation accuracy (varying with the availability of orientational cues)? - The directions of 23'000 birds tracked by radar at two different sites in Israel in autumn 1991 and spring 1992, were highly concentrated. Nevertheless, independently of the season and site, approximately 5 % of reverse movements were detected. The special situation in the South of Israel is characterised by relatively small variation in weather conditions, and by the trade wind system, with north-easterly winds below the wind shear (at 1500 to 2000 m a.s.l.) and more southerly or westerly winds above. This situation allowed us to test the behaviour of migrants under varying wind conditions but equal conditions with respect to other orientational cues.

Oral presentation **abstract 175**

Adapting primary moult to migration: flight costs and feather quality in the Black Tern *Chlidonias niger*

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Primary moult and long-distance migrations entail high energetic costs, which birds usually try to minimise by keeping the two processes separated. Post-breeding migration and primary moult largely overlap in the Black Tern, and two moult patterns associated with different body masses are observed. Early in the season there is a high proportion of heavy birds (average mass 65.5±4.4 g), which moult 2-4 primaries at a low growth rate; later on, there are mainly lean birds (63.0±4.7 g), which moult 1-3 primaries at a high growth rate. Despite differences in the individual growth rate, the timing of primary shedding is similar in the two groups. Suspension or migration with old primaries involves a minority of individuals with low body masses (62.5±5.7 g and 62.1±4.3 g respectively). Heavy-moulting birds have higher flight costs than weak-moulting birds, which result in a higher risk of starvation, because their wing loading is higher and their large moult gap requires a longer time to be filled. It is suggested that the higher risks afforded by heavy birds are rewarded by the production of better quality feathers, which will enhance the survival in the period between the two migration flights. This may be extremely important in this species, which strongly depends upon flight performances during its whole life cycle.

abstract 176 **Poster presentation**

Numbers of *Acrocephalus arundinaceus* in different habitats in Belarus

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Studies were carried out in 1994-1999 in suitable for *Acrocephalus arundinaceus* breeding sites, mainly in southern Belarus. The density of singing males is for 10 hectares.
The densities were as follows: maximal in former peat fields: 5.30 - 17.86; in fish-farms: 4.26 - 6.64; in drainage channels: 1.33 - 5.60. In secondary swamping areas of Chernobyl nuclear accident zone - 2.80 - 4.85 (the density increased because of enlarging of overgrown by bur reed and mace reed). In large reservoirs the density ranged from 3.46 to 2.29 (the density decreased due to burning of reed), in Pripyat floodplain - 0.65 and in Yaselda floodplain - from 0.29 to 3.00 (mean 1.57).
The majority of nests (90.7%) was located in reed stands, 5.1% - in willow bushes among reed beds, 3.7% - in mace reed growth, 0.5% - in reed growth with admixture of bottle-brush (n=214).
No significant positive correlation was found between the total number of males and the number of polygamous males in the plots. Thus, there were 13.6% of polygamous males in reservoir (the density 3,46), 20.0% - in fish-farm (the density 4.26), 25.0% - in secondary swamped areas (the density 2.80).

abstract 177 **Poster presentation**

Development of visually-guided behavior, retinal photoreceptors and Wulst neurons in Pied flycatcher nestlings

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The study was focused at the maturation of the peripheral (retinal photoreceptors) and central (neurons of Wulst area) parts of the visual system in pied flycatcher (*Ficedula hypoleuca*) nestlings correlated with the development of feeding behavior in early ontogeny. The marker of the functional maturity of photoreceptors – brightly-colored oil droplets which developed in most cones simultaneously with the development of outer segments and ribbon synapses and can be observed in the total retinal preparations – was used to study the pattern of retinal development. Photoreceptors of the temporal fovea mature first, then, with the delay of 1-2 days, photoreceptors of the central fovea follow; the last to mature are peripheral regions. The appearance of the first maturing photoreceptors in the temporal fovea coincides with the onset of the feeding reaction in response to luminosity change. The accelerated maturation of temporal fovea photoreceptors in both eyes may be due to the necessity of the long period of learning the binocularly-controlled locomotor acts involved into the food-acquisition behavior. The fact that the basal distance between the temporal regions of both nestlings' eyes is established rather early (4.5 days) supports this suggestion. The early fixation of binocular distance may be basic for the maturing mechanisms of precise estimation of spatial characteristics of objects; probably this fixation defines the pattern of skull growth in bifoveal birds. The parallel structural changes in the maturational processes in retina and Wulst area were revealed, that correlate with the key points in the development of the early visually-guided behavior. When the first functionally mature photoreceptors appear in the temporal fovea in the mass of non-differentiated cells of the other parts of retina, the first projection neurons can be revealed in the Wulst. The patterned vision appears simultaneously with the development of functionally mature photoreceptors in a large area of the retina, encompassing the central and temporal foveae.
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abstract 178 **Poster presentation**

Migrating phenology and biotops of the Curlews (*Numenius sp.*) in the Black Sea Biosphere Reserve

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There are three species of *Numenius* met in migration in the Black Sea Reserve: *Numenius arquata*, *N. phaeopus*, *N. tenuirostris*. The usual species which can be found for the whole period of wintering is *N. arquata*. *N. phaeopus* recorded non-regular in warm winters.
The mean long time date of the beginning spring migration of the *N. arquata* are 3.03 _+ .2 (CV=31.8%, n=16 years). More early migration date is 14.02.95; more late - 17.03.85.
N. phaeopus began his migration 19.03 _+ .2 (CV=46.3%, n=16 years).Peaks of spring migration of this species was observed 15.03 _+ .1 -16.04 _+ .4 (CV=45.3% and 31.8%). In 90s the migration period is more longer. Birds can be observed before middle of May.

Autumn migration of N.arquata began in end of July. Mean date is 27.07 _+ .3 (CV=50.7%, n=14 years). Peak was from 15.08 _+ .3 to 27.09 _+ .3 (CV=75.2% and 41.2% n=15 years). *N. phaeopus* migration started in autumn later - 14.08 _+ .3 (CV=49.4%). Migration peak observed in September. The last meeting dates are 10 and 26 October.
N.tenuirostris are recorded in territory of the Black Sea Reserve from end of July to end of September (Ardamatskaya, Rudenko, 1986; Lugovoj, 1998; our data).
During migration *N.arquata* occupate different biotops (n=268 observers): shallow lakes (38.4%), coastal of shallow lakes (16.8%), salt desert seaside steppe (12.3%), shallow parts of bays (7.5%), sea coast (5.9%).
N.phaeopus (n=103 observers) prefer lakes (25.2%), shallow parts of bays (24.3%), salt desert seaside steppe (15.5%), sea and bays coasts (5.8%).
N.tenuirostris mostly was met in shallow lakes, its saltmarshes coasts and saltmarshes parts of steppe.
Total counts numbers in the Black Sea Reserve of *migrated N.arquata* (with peak in September) are about 200-500 individuals and 40-100 individuals of N.phaeopus (in different years). Really numbers of migrated individuals are higher. Maximum individuals in the winter periods are recognized as 30-80.

abstract 179 **Poster presentation**

Habitat use of the Whiskered tern at breeding in Ukrainian Danube Delta

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The Habitat use of the Whiskered tern *(Chlidonial hybrida)* at breeding Ukrainian part of the Danube delta was studied during the tree field seasons in 1998, 1999 and 2000 from May to August. Floodplain mezothrofic wetlands with well-developed vascular floating and submerged aquatic vegetation amongst mosaic reed-beds *(Phragmites australis)* play the most important role for breeding of whiskered tern in the Danube Delta as well as in the other large river deltas. From 60 to 70 per cent of the Ukrainian group of the Whiskered terns breed in two Ramsar floodplain lakes Kartal and Kugurlui. The communities of the water lily *(Nymphaea alba)* are the main substrate for breeding whiskered terns in the Danube Delta. The less optimal are communities of the fennel pondweed *(Potamogeton pectinatus)*, Yellow water lily *(Nyphar lutea)*, reed mace *(Typha sp.)* and colonies of other bird species in optimal habitat. The species occupied other substrates following the Ideal Free model of habitat selection (Bernstain *et al*. 1991).
In these wetlands, whiskered tern preferred littoral zone with water depth from 1 to 2m. As for relationship with other species, whiskered tern tended to nest separately from other gulls and terns, although its colonies provide protection for other opportunistic species like coot *(Fulica atra*) and Slavonic grebe *(Podiceps nigricollis)*.
Among the tested factors (water depth, substrate, spacing of the colonies of other species), we didn't reveal any factor plausibly affecting colony size of whiskered tern The most likely factor affecting colony size of whiskered tern in the Kartal and Kugurlui lakes is availability of necessary food amount in the lakes and adjacent areas.

Oral presentation **abstract 180**

Changed species composition of Lake Victoria's lakefly swarms launches migrant warblers

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Periodical swarming of lakeflies, a collective noun for several species of chaoborid and chironomid midges, is common around Lake Victoria. After their larval life in the lake, the pupae rise to the surface synchronically, usually at a night close to new moon. They emerge as short-living adults, forming huge clouds above the water in which the females should deposit their eggs. However, inshore blowing afternoon breezes frequently bring the swarms ashore, where insectivorous birds may exploit this superabundant food source during a few days. During the 1960s, Sedge Warblers (*Acrocephalus schoenobaenus*), wintering at the northern lakeshore (Uganda), showed weight fluctuations that probably reflected local lakefly abundance. Between 1986 and 1990, Willow Warblers (*Phylloscopus trochilus*) and Garden Warblers (*Sylvia borin*) migrating along the southern lakeshore (Tanzania) were relatively abundant and heavy shortly after new moon, when their chances of meeting swarms were high. Human perturbation caused a severe reduction of the lake's biodiversity during the 1980s. However, in contrast to many species that became extinct or declined in abundance (like the formerly dominating chaoborids), the chironomids increased strongly. The average energy content of adult chironomids is more than ten times that of chaoborids. Assuming a searching time of almost zero for birds exploiting a swarm, the shift to chironomid swarms is expected to increase the intake rate an allow for a faster premigratory weight increase. In this paper we relate body weights of Willow Warblers on northward passage (March 1987) and Garden Warblers on southward passage (January-February 1988) to the number of days passed since lakeflies swarmed at the catching site in Mwanza, Tanzania. Both species met only swarms consisting of chironomids. Only birds caught during the occurrence of swarms reached weights needed to fly as far as the Nile delta (Willow Warbler) or the Bangweulu swamps in Zambia (Garden Warbler).

Oral presentation **abstract 181**

Garden birds: a neglected component of the population?

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The BTO Garden BirdWatch scheme involves some 16 000 people recording how many birds use their gardens each week of the year. In 1999 and 2000, 5-6000 of them submitted details of how many nests of each species occurred in their gardens or on their houses. A follow-up survey allowed the data submitted to be corrected for the fact that people with no nests on their properties were less likely to have submitted data. There were marked differences in numbers of nests between regions of Britain and types of house. From averages for each region and house-type, the total number of nests on domestic properties can be calculated (because the total number of houses of each type in each region is known). Rough corrections can be applied to these figures, to allow for species that build more than one nest per year. For some species, the resultant population estimates are substantially greater than previous estimates of the numbers breeding in urban and suburban habitats. Even allowing for the likely bias that GBW participants are likely to have more “bird-friendly” gardens than average, it

appears that we have previously overlooked substantial numbers of birds because we have neglected urban and suburban areas.

abstract 182 **Poster presentation**

Estimation of fat reserve and flight range of Little Stint Calidris minuta

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A great part of Palearctic waders spend the winter on the western coastline of Africa, and use two different routes on migration. *A part* of them migrate along the eastern coastal district of the Atlantic Ocean, while the others migrate on a more eastern route across the Mediterranean area. The Little Stints use mainly the Mediterranean Flyway in spring.
We caught 799 Little Stint using mist-nets at night in the lagoons of the Cap Bon Peninsula, Tunisia during the spring migration in 1996-97. Wing length (to the nearest 1 mm) and body mass (to the nearest 0.1 g) were measured, and the fat mass was estimated according to the method of Piersma & Brederode (1990). We could not separate the sexes, but for the flight range calculations we divided the birds into three categories according to the wing length distribution. We used the method of Castro & Myers (1988) for calculating flight ranges.
Between the years we did not found difference in the wing length of the birds, but the body mass and the fat mass was significantly different. The fat mass of the birds was on average 3-4 g (range: 0 - 9.5 g) in the study period. The flight range estimates show that at the study site the Little stints accumulated enough fat to cover the distance to the shores of North Europe through the Mediterranean See and the suboptimal habitats of Continental Europe in a single flight. The flight range estimations gave long distances (2869-3709 km), the shorter ones are enough to reach the Baltic area, the longer ones to reach the north coastline of Russia.

abstract 183 **Poster presentation**

Long-term changes in the abundance, survival and productivity of Acrocephalus species in Hungary

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The BirdLife Hungary started intensive study of Acrocephalus species from 1974 through the network of ringing stations and amateur ringers, and joined the Acroproject proposed by EURING in 1981. These species suffered major population declines in different parts of Europe and they are especially vulnerable because their breeding and wintering habitat is become more fragmented in the last decades. This study was carried out in the Ócsa Landscape Protection Area, in the middle of Hungary, 20-km south from Budapest. The area is a post-glacial pit bog with different habitats: reeds, elderberry bush, alder forest. Birds were captured in mist-nets on a constant-effort basis between 1983-2000. Sedge warbler *Acrocephalus schoenobaenus*, Reed warbler *A.scirpaceus*, Marsh warbler *A. palustris*, Moustached *warbler A. melanopogon*, Great reed warbler *A. arundinaceus* were investigated in this study. More than 20000 individuals were ringed of these species during the study period. Capture numbers and the ratio of adult and young birds in the breeding period were used to calculate abundance and productivity indices. Ringing-recapture data were used to estimate annual adult survival. The MARK software was used in modelling survival. The choice between models was based on the Akaike information criterion (AIC).

The critical years with low survival and/or productivity were identified for each species. The changes in the indices and survival were compared between species with respect to their different migration strategies and wintering areas. The future directions of the study will be to try to find the environmental changes responsible for the changes in population trends.

abstract 184 **Poster presentation**

On current estimation of a number of ferruginous duck (Aytha nyroca) in Ukraine

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The ferruginous duck *(Aytha nyroca)* is listed in Ukrainian Red Data Book as a threatened species. This is fairly rare species on breeding, passage and sometimes wintering in the Ukrainian Danube Delta, and in past this species occasionally occurred on wintering in the other regions of the South. In the last 19'th century and the 50's-60's of the 20'th century it was very common and broadly distributed species. In the 50's its population in the Western Ukraine reached 4000 pairs. However, the core of the Ukrainian population inhabited coastal wetlands of the Azov and Black Seas. "The birds of the Western Palearctic" published in 1998 estimated Ukrainian population up to 3500-5000 pairs, which doesn't seem to be precise.
During the last few years the species is common in the south of Odessa region, especially in the Danube Delta wetlands. High figures reported from the censuses (up to 1000 individuals in pre-hunting season) may be a result of counting the birds from Romanian Danube Delta. In pre-hunting period the species also occurs in small numbers (maximum 10 individuals) in the down part of the Tiligul Liman and upper parts of the Grigorievsky Liman (Odessa Region).
We should point out that ferruginous ducks often get shot (accidentally) by hunters. At breeding the species occurs in small numbers in the Dnister delta and possibly in the Dnipper Delta as well as in some other wetlands, where their number is only 2-3 pairs. For example in 1998-200 we registered 1-2 breeding pairs in the down part of the Kutalnik Liman.
According to our counts the current Ukrainian population of the ferruginous duck is only about 500-700 pairs reaching in favorable years 1000 pairs. The decline is mainly resulted from change and transformation of breeding habitats, hunting pressure, competition with the their species and disturbance during the breeding season. The latter forces the species to extend the breeding season abandoning the breeding sites at the beginning of the hunting period. Hence the hunting season (i.e. season for duck hunting) needs to be postponed to the beginning of September and the network of the protected areas should be extended (including designation of the new Ramsar sites). Also we need to start implementation of the National Action Plans for the globally threatened species on legislative level, promote ecological and environmental education of the broad public and raise public awareness through publishing various leaflets and books.

abstract 185 **Poster presentation**

A cost of early reproduction: the role of mortality before and during egg-laying in Great Tits.

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In seasonal environments it is crucial for reproducing birds to match offspring requirements with the period of highest food abundance. With increasing spring temperatures over the last decades the peak of

insect abundance has advanced. We should therefore expect a concomitant advancement in the timing of reproduction in insectivorous birds. In contrast to this expectation laying date of a Great Tit population in the Netherlands has not advanced over a 23-year-period while selection for early laying has intensified (Visser et al., 1998). A possible explanation for this mistiming of reproduction is that the Great Tits are currently more severely resource constrained during egg production, which prevents the advancement of laying dates. If egg-laying is constrained by energetic demands, it is likely that there are detrimental effects on females attempting to lay earlier. In their calculations on the selection for early laying, Visser et al. (1998) did not include such mortality of females tempting to produce early during the pre-laying period because the laying date of an individual which did not reproduce cannot be measured. As this mortality may be an important cost of early reproduction, we calculated the genetic correlation between the daughter's early spring mortality (disappearance between early spring and breeding season) and the mother's laying date. Next, we determined whether there is still selection for early reproduction when this estimate of the cost of early reproduction is included.

abstract 186 **Poster presentation**

Inbreeding and experience affect adaptive response to climate change

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Recent papers have described a variety of effects of global climate change on avian life histories. Examples include effects of changes in sea-surface temperatures on reproductive success of seabirds and of increasing severity of the El Niño Southern Oscillation on annual survival of migratory birds. One of the most widely documented effects is an advance in egg-laying dates of breeding bird species in response to changing climate at north temperate latitudes. One study has shown that changes in the timing of egg-laying are due to adjustments made by individuals rather than microevolution within populations. Whether adjustments in the timing of life history events in response to climatic change are adaptive often is unclear. Here we show that in two populations of red-cockaded woodpeckers (*Picoides borealis*) earlier egg-laying in response to changing climate represents adaptive adjustments by individual birds, which only some individuals are able to make. Specifically, inexperienced females, females who change mates and inbred birds do not adjust egg-laying date to variation in climate as others do.

abstract 187 **Poster presentation**

Age at induction of primary moult can explain deferred pre-breeding migration in first-year waders

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Large numbers of waders delay their first migration to the breeding grounds to their second year of life. The percentage of over-summering birds is larger in long- than in short-distance migrant populations and this leads to assume the risk of migration as a key explanatory factor, despite there being no evidence for higher mortality of first-year birds during migration. Low foraging proficiency of immature birds has been also advocated as a possible factor driving selection to defer migration,

because low food intake rates would prevent first-year birds migrating with the same timing and speed of adults, so depressing their breeding success. The advantages of reaching breeding localities for site prospecting have been also advocated but there is no evidence that sexually immature individuals do reach the breeding grounds.
I investigated timing of primary moult in first-year waders. Data on Grey Plover *Pluvialis squatarola*, Pacific Golden Plover *Pluvialis fulva* and Bristle-thighed Curlew *Numenius tahitiensis* revealed that the onset of primary moult concurred with migrant departures. The moult of first-year Grey Plovers started in South Africa about two months earlier than in Britain, i.e. timing of primary moult is associated with the geographical location of wintering site. I suggest that the induction of the post-breeding moult occurs during the pre-migratory period both in first-year and adult birds, triggered by increasing levels of thyroxine (T4). In adults the moult is delayed by the action of gonadal steroids, while moult cannot be inhibited in those first-year birds whose gonads are still inactive. Because moult is induced later in the season in birds wintering at northern latitudes, a greater proportion of them will have reached gonadal maturation. There might be therefore a calendar effect, connected to the age of birds at the time of preparing migration. Deferred migration might therefore be mainly caused by physiological constraints.

abstract 188 **Poster presentation**

Towards a behaviour-based model of wigeon population dynamics

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Most conflicts regarding the management and application of policy concerning wildfowl populations in Europe arises from an inability to reliably predict the response of these birds to human activities. Traditional population models suffer from the difficulties in deriving the density-dependent functions that are so critical to making such predictions and the uncertainty over whether any density-dependent function will remain the same under the new circumstances. Behaviour-based population dynamics models recently developed for waders and geese may provide a major step forward in overcoming these problems. We are developing such a model for the North-western European population of Wigeon (*Anas penelope*). This model will be derived from an existing Brent Goose (*Branta bernicla*) model, although incorporating particular features of *Anas* species such as differential migration and winter pairing. Twenty-one important breeding, moulting, staging or wintering areas have been identified as key sites for Wigeon, and will constitute the model world. Two types of food patches are considered to be available to the ducks, intertidal *Zostera* beds and saltmarshes-wet grassland, some sites encompassing both types of habitats. Model birds are assumed to choose food patches within sites on the basis of food intake optimisation, and are free to move between sites during the non-breeding season under the constraints of finding a mate and preparing for subsequent migration and breeding episodes. An extensive literature survey has already provided valuable information to parameterise the environmental conditions and the foraging and social behaviour of the birds in wintering and staging areas. Published studies in Northern Europe will be used to parameterise the breeding season. Further international co-operation is necessary for the model to incorporate site-specific constraints to Wigeon across the annual cycle, and to identify relevant environmental management scenarios to simulate.

abstract 189 **Poster presentation**

Wintering ducks coexist by means of both bill lamellar density and body length differences

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Differences in foraging depths and prey sizes, due to different body lengths and bill lamellar densities, have long been considered as the mean by which dabbling ducks (*Anas* spp.) can segregate along foraging niche axes, and thus coexist. There seemed to be an inconsistency between North American and European studies during the breeding period, as ducks avoided interspecific competition only through differences in prey size in the former area and foraging depth in the latest one, until a recent unified theory showed that differences in pond shapes between the two continents were responsible for the observed patterns. However, long-length-bodied species are also able to forage at shallow depths, and species with fine lamellae can retain both small and large prey items in their bills. While wintering in western France, we observed that Mallard (*A. platyrhynchos*, a species with long length but coarse lamellae) switched from shallow to deep foraging across weeks, while Teal (*A. crecca*) remained in shallow areas throughout the season. The analysis of gut contents revealed that Mallard consumed relatively large seeds throughout the winter, while Teal switched from a Mallard-type diet in early winter to much smaller seeds afterwards. Laboratory experiments have shown that granivorous ducks have higher food intake rates on smaller seeds and in shallower areas. Both species thus started by using the most beneficial type of resources first, and apparently relied on divergent strategies to cope with competition throughout the winter. These results underline the fact that coexisting species with ecomorphological differences may not always use clearly separated niches, but are likely to share the same preferences and experience actual competition, leading to a dynamic community structure.

abstract 190 **Poster presentation**

The value of coastal salt marshes for breeding Redshank (*Tringa totanus*)

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In Europe, coastal habitats are of importance for some 75 bird species; Among breeding birds, salt marshes are of particular importance to redshank. We studied habitat preference and numerical trends of breeding redshank in a salt marsh reserve where management aimed at restoring natural salt marshes from man made salt marshes. The latter are a typical feature of the Wadden Sea, and at present extend over some 20,000 ha. During the last two decades, increasing areas of these artificial salt marshes have become nature reserves.
One of the first established reserves is a brackish 460 ha salt marsh in the Ems Dollard estuary, the Netherlands. In order to restore natural salt marsh, management practices were modified: th upkeep of the artificial drainage system was discontinued and cattle grazing was gradually reduced to low or moderate stocking levels. The vegetation in the reserve showed a dual response to these measures: (1)

the climax vegetation of *Phragmites australis* increased in response to diminished grazing, and (2) bare soil and secondary pioneer vegetation increased due to the combined effect of soil waterlogging and grazing (Esselink 2000).
In order to study habitat preference, two salt marsh sections (46.8 and 32.2 ha) were surveyed intensively with the mapping method supplemented with nest searching, 9 and 10 years after the reserve had been established. The date of first arrival in a breeding territory was used as a relative measure of habitat preference. During both surveys, a density of 4 bp/ha was established. Redshank showed a preference for territories accommodating stands of *Elymus repens* (70% of the territories).
The analysis of numerical trends of breeding redshank was based on results of almost annual surveys of breeding birds during a 20 years period in three marsh sections (131 ha) of the reserve. Despite the fact that the area with an *Elymus repens* dominated vegetation was fairly constant over time, redshank densities decreased annually by 5% on average. For several reasons, we think that the decline primarily reflects changed conditions inside the salt marsh reserve. Habitats that were not suitable for redshank to breed, increased over time (see above). In addition, we hypothise that increased exploitation of the salt marsh by staging barnacle geese during the study period, means that sufficient cover for breeding is reached at a later date, which may lead redshank to leave the reserve for alternative breeding areas.

Oral presentation **abstract 191**

Skipping: differential use of migratory stop-over sites by Bewick's swans in spring and autumn

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We satellite tracked 13 and 5 Bewick's Swans *Cygnus columbianus bewickii* in spring and autumn, respectively, in order to compare spring and autumn migration patterns. During migration Bewick's Swans rely almost exclusively on aquatic plants for refuelling. In spring, Bewick's Swans had major stop-over sites in the Baltic and the White Sea, whereas in autumn they skipped the White Sea and only stopped in the Baltics. Maximum non-refuelling flights recorded were 1,200 km in spring and 2,100 km in autumn. We used dynamic programming to predict optimal migration behaviour, taking into account physiological costs, intake rates (as measured at different sites) and foraging constraints (timing of ice break-up and tidal water regimes). The results show that under the modelled spring conditions the feeding grounds in the preceding site (Estonia) are probably depleted to such an extent that swans fare better by stopping in the White Sea. In autumn, however, it is optimal to skip the White Sea because of much higher fuel accumulation rates in the preceding site (Pechora Delta).The Pechora Delta has very extensive aquatic food stocks which allow foraging for 20 h d^{-1}, whereas the White Sea is characterized by less extensive food stocks and a tidal regime, restricting total daily foraging time to 9 h d^{-1}. Wind profiles of weather stations along the migration route show that wind assistance may even help some birds to cover the distance between breeding and wintering range in one non-stop journey of about 3,000 km.

abstract 192 **Poster presentation**

Habitat switching in Bewick's Swans not explained by maximization of average long-term net energy intake rate

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Upon arrival in the Netherlands in autumn, Bewick's Swans *Cygnus columbianus bewickii* first feed on pondweed tubers in shallow lakes and then switch to crop leftovers on sugarbeet fields. We hypothesized that, everything else being equal, swans should choose the habitat in which they can achieve the highest daily net energy intake or gain ($G = q.GEI - DEE$). We estimated daily gross energy intake rates (*GEI*) by comparing tuber biomass densities before and after swan grazing, and measuring the dropping production rate while feeding on beets. The metabolizability (q) of tubers and beets was measured in digestion trials. We used the time-energy budget method to determine the daily energy expenditure (*DEE*), using heart rate (that had been calibrated against oxygen consumption) as a measure of energy expenditure. The costs of flight were estimated using aerodynamical theory and wind-tunnel measurements on flying Teal *Anas crecca*. The swans postponed the habitat switch until the average daily G for lake feeding was much lower than the G for field feeding, so they did not appear to simply maximize the average long-term gain. One of the explanations is that the swans showed risk-averse behaviour which is expected for birds arriving lean after a migratory journey. The energy gain of beet feeding was very variable from day to day, due to rapid depletion of the beet fields by swans and geese, and the necessity to fly and search for new fields.

abstract 193 **Poster presentation**

Differences in tuber giving-up densities by Bewick's swans with water depth explained by tuber harvestability

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Bewick's Swans *Cygnus columbianus bewickii* feeding on belowground tubers of fennel pondweed show a threefold difference in mean giving-up density between shallow (40 cm) and deep (60 cm) water. We measured intake rate and foraging costs by means of heart rate in order to examine whether this difference could be explained by differences in tuber harvestability. The swans trample pits with their feet after which they submerge their heads to sieve out the tubers.The feeding mode in deep water (up-ending) was 34% more expensive than that in shallow water (neck-down). Moreover, in deep water swans trample longer than in shallow water. Although trampling is the most costly part of foraging, this did not further contribute to higher foraging costs in deep water because the swans fully compensated for these costs by simultaneously extending the duration of the feeding phase. Tubers are situated 5-30 cm in the sediment. We assumed that all tubers are within reach in shallow water. By equating the gain rate achieved in shallow with that in deep water, we calculated that the swans could only reach 46% of the tuber biomass in deep water. Measurements of the tuber biomass distribution with sediment depth show that this is equivalent to the tuber biomass in the upper 20 cm of the sediment. This means that in deep water the swans cannot reach the tubers deeper than 20 cm, or a total depth of 80 cm, in close agreement with previous estimates. We conclude that the observed difference in giving-up densities between shallow and deep water is largely explained by the fraction of the tuber biomass that is beyond reach in deep water.

abstract 194 **Poster presentation**

Territoriality of Cape sugarbirds (Promerops cafer) and its role in mating and reproductive success

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Cape sugarbirds (*Promerops cafer*) are South African endemics, found in the Western and Eastern Cape provinces of South Africa, and they feed almost exclusively on the nectar of *Protea* inflorescences. Breeding male sugarbirds are territorial and defend resources for themselves, their mates and their offspring. Sugarbirds, however, leave their breeding territories, moving over distances of tens of kilometers, in search of food and return to the same breeding sites each year, thus experiencing an annual cycle of movement from one food source to another. Territory size and quality may play a role in mate choice and thus affect the breeding success of individuals. Male territory size and quality, as well as breeding success, were determined over two breeding seasons for a population in the Helderberg Nature Reserve in the Western Cape Province. Total energy availability from nectar and arthropods did not constrain male Cape sugarbird mating success (the number of eggs laid by the female of the pair) or reproductive success (the number of successful fledglings). Sugarbird reproductive success was significantly greater for males defending large territories and it was found that the number of spoonbract *Protea* influenced nectar energy availability for adult sugarbirds, thus constraining male mating and reproductive success. Males moved or increased the size of their previous territories between seasons to improve breeding success, but no changes in territory size were observed during the breeding season. Cape sugarbirds are sexually dimorphic with respect to tail length and wing ornament size, but ornament size did not influence the size or quality of male territories, and appeared not to influence intrasexual competition between males for territories or mates. Rather, female Cape sugarbirds appear to base their mate choice directly on male territory quality.

abstract 195 **Poster presentation**

Polygyny and breeding activities in Thickbilled Weavers A*mblyospiza albifrons*

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Although the Thickbilled Weaver *Amblyospiza albifrons* has a wide distribution in Africa, it has been poorly studied. It is sexually dimorphic, and breeds in reeds. The male builds the nest and the female incubates the eggs and feeds the chicks. There is uncertainty about the mating system of this species: some authors consider it mainly monogamous while others consider it polygamous. Evidence is given here of polygyny; it may at times appear to be monogamous due to having a low rate of polygyny. Male activities and female incubation bouts were recorded in one colony at the National Botanical Gardens in Pretoria, South Africa. The Thickbilled Weaver has expanded its range to Gauteng in the 1960s, and has been breeding in the Botanical Gardens since at least 1989. In the 1997-98 season, breeding began in August 1997 and continued until at least January 1998. The colony initially consisted of one male, and later in the season a second male joined the colony. Male 1 mated with six females successively, while Male 2 mated with one, or possibly two, females. The maximum number

of nests of one male with active contents at one time was three. Seven clutches consisted of three eggs, and one of four eggs. Eight females were observed with complete clutches and the combined incubation attentiveness during the day was 73%. Incubation bouts of complete clutches averaged 33 minutes in the nest and 13 minutes out. The most frequent activities of males in the colonies were nest-building and perching. The two males often built nests at the same time, giving rise to similar proportions of time spent on this; no synchrony of other activities was observed. On two occasions a male was seen to feed nestlings, a previously unrecorded observation in this species.

abstract 196 **Poster presentation**

Which season is breeding season? For seabirds in the Western Cape all the answers are right

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At 35 degrees south, the Western Cape, South Africa, has a typical mediterranean climate; seasonality is pronounced, with hot dry summers and cool wet winters. The coefficients of variation between years in all climatic variables are small by African standards, and similar to those operating in Europe. In contrast, the sea adjacent to the Western Cape experiences the interaction between the warm Agulhas Current and the cold Benguela Upwelling System, and is noted for its intra- and inter-annual variability.
15 species of seabirds breed on the offshore islands in the region; nine of these are endemic to South Africa and Namibia, and have large proportions of their global populations in the Western Cape. These 15 species display a variety of annual cycle patterns, especially in relation to fitting the breeding season into the year. Some species have annual cycles that vary little in timing between years; among these are species for which the breeding seasons peaks in spring, in summer, in autumn and in winter. Other species show flexible annual cycles, and breed at varying seasons each year, if they breed at all. The poster tabulates these results and seeks to provide hypotheses to explain them.

abstract 197 **Poster presentation**

A preliminary investigation into the effects of migration mortalities on the Spotted Ground Thrush (*Zoothera guttata*) in South Africa

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The Spotted Ground Thrush *Zoothera guttata* is a threatened African endemic, found exclusively in coastal, lowland or montane indigenous forest. Of the five known subspecies in Africa, the South African population is considered the largest (est. 400-800 pairs), its current distribution ranging from East London (Eastern Cape) in the south to St Lucia (Kwazulu-Natal) in the north. The thrushes undergo a partial, post-breeding migration northwards along the east-coast of South Africa from their core breeding areas in the north-eastern lowlands of the Eastern Cape to coastal forests in Kwazulu-Natal. Like most passerines, migration takes place at night, which has resulted in fatalities especially in the large cities. This study, based on data from museum skins and published sources, examined the

frequency and occurrence of migration mortalities to determine if they have any significant impact on the size of the population and overall abundance. Of the 23 recorded cases since 1954, 12 (52%) were killed flying into buildings (all in Durban CBD), two (9%) were killed by cats in gardens, two (9%) were killed flying into windows of houses, one (4%) bird was killed flying into the window of a car while the cause of death of the remaining six birds could not be determined and were labelled "accidentally killed". Eighteen (78%) of the birds killed were adults, four (17%) were juveniles with one bird unaged; eight (36%) were females, six were males and nine unsexed. The results provide no conclusive evidence that migration mortalities are an important population-limiting factor but they may alter the age and/or sex ratio, which could influence breeding productivity. Mortalities do affect overall abundance, although this study showed this reduction to be negligible (<0,5%). These accidental deaths, nevertheless, represent a hurdle within the thrush's annual cycle. Further migration and population studies, coupled with awareness programmes, are needed and could yield larger numbers of mortalities than the present study indicated. Age and sex composition of migratory individuals also needs to be clarified.

abstract 198 **Poster presentation**

The new items of information about nesting of an eagle owl (*Bubo bubo* L.) in Ukraine.

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The eagle owl for east of Ukraine was known as rare migratory and wintering bird and his irregular breeding here recently was only supposed. In 1999 we managed in detail to get acquainted with biology of this interesting bird in territory of Lugansk area.
As a result of detailed study of the basic part nesting habitats of an eagle owl, 40 constant nested territories are revealed, on which is marked nasting of 20 pairs, for 15 the single birds are marked and in 5 cases pairs are found, it is obvious for any reasons unsuccessfully nested this year.
The majority of nested sites are located in off little use for the man in clay and chalky ravines of steppe, basically, northeast part of area. The nestss settled down on ground, on slopes, ravines frequently under terrace or bush.
Almost all inhabited nests were surveyed after nestlings had flew out, therefore egg laying are met only in two cases (2 and 3 eggs). In other nests was 3 nestlings (6), till 2 nestlings (9) and one nestling (1 nest). In 2 nests quantity (not less than one) precisely is not established.
Non-fertilized egg is found only in one nest with two nestlings. To look after success of duplication it was possible in 3 cases - all nestlings (2, 2 and 3) successfully have lived up to a start.
A feed of an eagle owl were studied in passing at inspection of nests and sites and has a wide spectrum of fine and average animals and birds.
The total number of birds for territory of Lugansk area is possible to estimated approximately in 50 pairs, including sites, where a bird for the different reasons nesting not each year.

abstract 199 **Poster presentation**

Quantification and qualification of bird migration with a scanning and tracking radar

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In spring and autumn, large numbers of passerines migrate in broad fronts over the German Plain. This broad-front migration takes place both during day and night and may reach great altitudes. Most

studies however are based on visual observations, restricting knowledge to daylight situations and low altitudes.
We propose a method to quantitatively and qualitatively study migration with a scanning and tracking radar. Thus also bird movements at night or at great altitudes can be investigated. Scanning yields a large sample of flight altitudes, directions and speeds. The tracking methods give insight in the nature of detected objects.
Scanning the air in a vertical plane yields detailed simultaneous information on flight altitudes and distances of all objects (radar echoes) within the scan. For assessment of a flux of radar echoes however, flight directions have to be checked and corrected for. By scanning in a horizontal plane flight speeds and directions of several objects are determined. Moreover, from the tilt and beam width of the radar antenna during the horizontal scans flight altitudes are roughly calculated. Thus, correction for flight directions can be differentiated to altitude. The integrated scanning methods allow a quantitative analysis of echo numbers, speeds and directions with respect to altitude.
The translation of a flux of radar echoes into a true migration traffic rate demands identification of radar echoes. These are therefore individually tracked, so that detailed flight paths can be recorded and the bird species can roughly be estimated from the wing beat frequencies, which are reflected in the radar signal.
As an example, we present the results of radar measurements in two nights in autumn 2000 and spring 2001. During both nights a clear shift in flight direction with altitude was observed. This shift corresponded with the altitude, but not with the magnitude, of the shift in wind directions. Moreover, especially in autumn the variation in flight directions at low altitudes was far greater than higher up.
The mechanisms behind these phenomena are not yet fully understood. Thus we state that the methods described here not only facilitate comparison to visual methods but also may lead to new insights.

abstract 200 **Poster presentation**

Increasing meadowbird chick survival in agricultural grasslands.

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Dutch farmland harbours large numbers of breeding waders, among which 50% of the European population of Black-tailed Godwits. To help stop declines, farmers are paid for applying meadowbird-friendly management tools. To evaluate the value of such measures, we investigated habitat use, brood movements and chick survival in Black-tailed Godwit families in 10 agricultural grassland areas.

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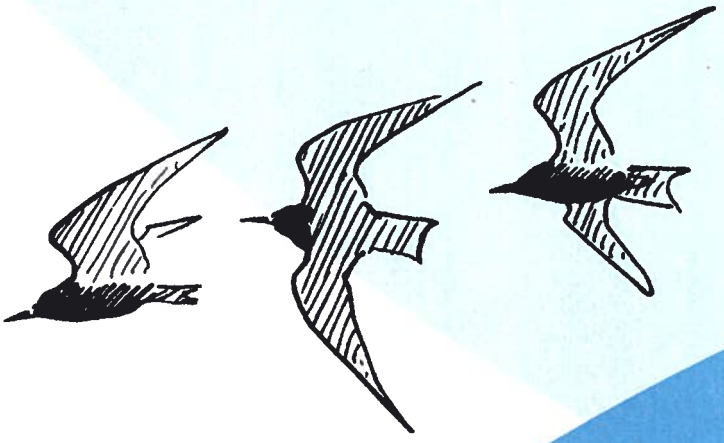

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