Report from the EU LIFE-Nature seminar on

Restoration of Meadow Bird Habitats

27-28 April 2009

Naturcenter Vestamager, Copenhagen, Denmark

Background

In order to share experiences on restoration and management of meadow bird habitats and to disseminate experiences gained in the EU-Life project “Restoration of Meadow Bird Habitats (REMAB)” a seminar was held on 27-28 April 2009 in Copenhagen, Denmark.

Seminar theme

The themes for the seminar were:

- Dissemination of the experiences gained in the REMAB project
- Good management practise for meadow bird habitats
- Improving hydrology for breeding waders
- Predation control
- Excursions to project sites

Participants

The seminar participants included:

- Colleagues from other projects in EU working on meadow bird habitat management
- Environmental authorities
- Researchers with expertise/interest in meadow birds and habitat management
- Agricultural advisors
- NGO’s and other interested parties

Programme

Seminar - Restoration of Meadow Bird Habitats (REMAB)

Nature centre Vest Amager, Copenhagen, Denmark
27-28 April 2009

27th April

09:30-10:00	Registration and Coffee
10:00-10:30	Welcome by Hans Henrik Christensen, Director of Danish Forest & Nature Agency and Jan Ejlsted, Director of Bird Life Denmark
10:30-11:15	Presentation of the project "Restoration of Meadow Bird Habitats" (Henning Fjord Aaser, Danish Forest & Nature Agency)

1. Session
Hydrology and meadow birds

11:15 - 12:00	Experiences with restoration of wet features for breeding waders in lowland grassland in UK. (Ph.D Sara Eglington, British Trust for Ornithology)
12:00 - 12:30	How much water needs a meadow bird habitat? - Experiences from the LIFE project "Rewetting of Lake Dümmer Lowlands" (Dipl.-Biol. Heinrich Belting, Naturschutzstation Dümmer).
12:30 - 13:15	Lunch
13:15 – 14:00	From wheat to waders - large scale management of wet grassland for waders (Mark Smart, Site manager Berney Marshes and Breydon water)

2. Session
Predation and meadow birds

14:00 - 14:45	Experiences with predator control on Öland -Sweden (Richard Ottvall, University of Lund)
14:45 - 15:30	Restoration of natural conditions and predator barriers within the marine Ramsar site Tautra-Svaet, Norway (Per Gustav Thingstad, Norwegian University of Science and Technology)
15:30 - 16:00	Coffee break
16:00 - 16:20	Investigations of fox population at the project site Vest Amager and introduction to the excursion at Vest Amager (Cand. Scient. Henrik Olesen & Sven Norup, Danish Forest & Nature Agency)

16:20 - 18:15	Visit to the project area Vest Amager (bicycle tour)
18:15 -	Seminar dinner at the Nature Centre Vest Amager Seminar Dinner Lecture: Meadow management in Greece (Yannis Kazoglou, Society for the Protection of Prespa)

28th April

09:00 - 11:00	Travel to the project site Nyord
11:00 - 12:45	Presentation of project activities at Nyord (predator control, grazing society, blue border zone, improved hydrology)
12:45 - 13:45	Lunch at the Old Inn
14:00 - 14:30	Experiences from the BALCOAST project (Martin Altemüller, Naturschutzbund Deutschland)
14:30 - 15:00	Breeding waders in the Baltic Region, lessons learned and future challenges (Dr. Preben Clausen, National Environmental Research Institute)
15:00 -15:15	Closure of seminar, Claus Jespersen Head of Danish Forest & Nature Agency, Regional office Storstrom
15:15 -17:15	Travel back to Copenhagen
17:15	Arrival at Copenhagen Airport terminal 3

List of participants

Name	Title	Company / Organization	Email
Allan Gudio Nielsen	Ranger	Danish Bird Protection Foundation	allan.nielsen@dof.dk
Anna Bodil Hald	Senior researcher	National Environmental Research Institute, University of Aarhus	abh@dmu.dk
Antti Below	Conservation Biologist	Finnish Forest and Park Service	antti.below@metsa.fi
Berit Mogensen	Landscape engineer	Fredensborg Kommune	blmo@fredensborg.dk
Brian K Jensen	Ranger	Danish Forest and Nature Agency	brkje@sns.dk
Christian A. Jensen	Biologist	Agency for Spatial and Environmental Planning - MC Århus	chraj@aar.mim.dk
Claus Jespersen	Forester, Head of unit	Danish Forest and Nature Agency	storstroem@sns.dk
Claus Paludan	Biologist	Faaborg-Midtfyn Municipality	cpalu@faaborgmidtfyn.dk
Elise Frydensberg	Director	Danish Bird Protection Foundation	elise.frydensberg@dof.dk
Erich Wederkinch	Biologist	Odsherred Municipality	ertwe@odsherred.dk
Erik Mandrup Jacobsen	Biologist, Senior Consultant	Orbicon A/S	eri@orbicon.dk
Erling Krabbe	Head of Section, Senior Biologist	Danish Forest and Nature Agency, Ministry of Environment	ekr@sns.dk
Hans Henrik Christensen	Director	Danish Forest and Nature Agency	
Hans Kolling Andersen	Ranger	Danish Forest and Nature Agency	hka@sns.dk
Heinrich Belting	Dipl. Biologist	Naturschutzstation Dümmer	Heinrich.Belting@NLWKN-OL.Niedersachsen.de
Helle Hjorth	Agriculture technologist	Danish Bird Protection Foundatation	helle@hjorth-freelance.dk
Henning Fjord Aaser	Biologist	Danish Forest and Nature Agency	henfa@sns.dk
Henrik Knuth-Winterfeldt	Board member	Danish Bird Protection Foundation	hk-w@privat.dk
Henrik Olesen	PhD. Biologist		ho@newmail.dk
Ib Nord Nielsen	Ranger	Danish Forest and Nature Agency - Thy	inn@sns.dk
Inger Nielsen		Vestsjælland Municipality	inger.ml@nielsen.mail.dk
Jacob Jensen	Nature School Leader	Taarnby Municipality	jjn.ns.uk@taarnby.dk
Jakob Lausen	Coordinator	Halsnæs Minicipality	jacl@halsnaes.dk
Jan Ejlsted	Director	Danish Ornithological Society	
Jan Steinbring Jensen	Head of Section	Danish Forest and Nature Agency, Wadden Sea Dep.	jsj@sns.dk
Jannik Hansen	cand.scient.	NERI, Dept. Arctic Environment	jaha@dmu.dk
Jens Hjerrild Hansen	Ranger	Danish Forest and Nature Agency	jehha@sns.dk
Jens Overgaard Christensen	Draughtsman		jenschristensen@post.tele.dk
Jens Vinge	Forest and Landscape Engineer	Aalborg Municipality	jvi-teknik@aalborg.dk
Jes Aagaard	Ranger	Danish Forest and Nature Agency	jaa@sns.dk
Jørgen Peter Kjeldsen	Ornithologist	ornit.dk	jpk@ornit.dk
Karsten Gasseholm	Programme Director	Fortification of Copenhagen	kga@sns.dk
Kasper Nowac	Biologist	Faaborg-Midtfyn Municipality	kanow@faaborgmidtfyn.dk
Knud Larsen	Biologist	Slagelse Municipality	khlar@slagelse.dk
Lars Delfs Mortensen	Forest and Landscape	Aalborg Municipality	ldm-teknik@aalborg.dk

	Engineer		
Lars Maagaard	Biologist	Randers Municipality	lars.maagaard@randers.dk
Lotte Rye Vind	Biologist	Fredensborg Municipality	lorv@fredensborg.dk
Mark Smart	Site Manager	RSPB	mark.smart@rspb.org.uk
Martin Altemüller	Dipl. Biologist	Naturschutzbund Deutschland	Martin.Altemueller@NABU-Wallnau.de
Mikkel Bornø Clausen	Ranger	Danish Forest and Nature Agency	mibor@sns.dk
Olaf Christiani	LIFE Desk Officer	Danish Forest and Nature Agency	ogc@sns.dk
Ole Thorup	Bilogist	Amphi consult	olethorup.fugleliv@gmail.com
Palle Graubæk		Danish Forest and Nature Agency	pal@sns.dk
Per Gustav Thingstad	Scientist	Norwegian University of Science and Technology	Per.Thingstad@vm.ntnu.no
Preben Clausen	Doctor	Danish National Research Institute	pc@dmu.dk
Richard Ottvall	PhD	Lund University	Richard.Ottvall@zooekol.lu.se
Sabine Anna Stosiek	Dipl. Biol.	Thisted Kommune, Teknisk Forvaltning	sas@thisted.dk
Sarah Eglington	PhD	British Trust for Ornithology	sarah.eglington@bto.org
Steffen Sørensen	Biologist	Odsherred Kommune	stesr@odsherred.dk
Stella Blichfeldt	Nature Interpretator	Danish Forest and Nature Agency	stb@sns.dk
Sten Asbirk	Biologist	Agency for Spatial and Environmental Planning	sta@blst.dk
Sven Norup	Ranger	Danish Forest and Nature Agency	snj@sns.dk
Søren F. Hansen	Biologist	Danish Bird Protection Foundation	soren.hansen@dof.dk
Tapio Aalto	Project coordinator	Southwest Finland Regional Environment Centre	tapio.aalto@ymparisto.fi
Thomas Borup Svendsen	Chief Forest Officer	Forest and Nature Agency	tbs@sns.dk
Thomas Vikstrøm	biologist	Danish Ornithological society	thomas.vikstroem@dof.dk
Torben Ebbensgaard	Biologist	Ministry of Environment, Mc Aalborg	toebb@aal.mim.dk
Yannis Kazoglou	Biologist	Society for the Protection of Prespa	y.kazoglou@spp.gr
Zsofia Horvath		Eötvös Lorand University, Budapest, Hungary	hhzsofia@gmail.com
Klaus Simonsen	Chairman	Nyord Hunting Society	KVS@moensbank.dk
Stefan Skov	Ranger	Vordingborg Municipality	stes@vordingborg.dk
Andreas Barkow	Dipl. Biologist	NABU	Andreas.barkow@nabu-naturschutzstation.de
Daniel Doer	Dipl. Biologist	NABU	daniel.doer@nabu-naturschutzstation.de

Presentation summary:

Welcome by Hans Henrik Christensen, Director of Danish Forest & Nature Agency and Jan Ejlsted, Director of Bird Life Denmark

Director Hans Henrik Christensen (HHC) welcomed the participants to the seminar on behalf of the Danish Ministry of Environment and the Danish Forest and Nature Agency. He also thanked the EU-life Nature Fund for their financial support to the seminar and the project "Restoration of Meadow Bird Habitats".

After a short presentation of the NATURE 2000 site Vest Amager, a site visited by more than 250.000 visitors per year, HHC thanked the Danish Ornithological Society and the Danish Bird Protection Foundation for their cooperation and especially their huge monitoring effort.

Director Jan Ejlsted (JE) mentioned creation of blue border zones as a good examples on efforts made in cooperation between the Danish Forest and Nature Agency and the Danish Bird Protection Foundation to improve conditions for meadow birds in Denmark.

Today management of meadow bird habitats is mainly based on "common sense". JE stated that we need more scientific research in order to be able to improve our management of meadow bird habitats.

According to JE the survival of meadow birds in Denmark is very much depended on EU initiatives as e.g. EU-directives and EU-funding.

Director Hans Henrik Christensen (Danish Forest & Nature Agency) welcomed the participants to the seminar.

Presentation of the project "Restoration of Meadow Bird Habitats" (*Henning Fjord Aaser, Danish Forest & Nature Agency*)

The overall objective of the EU-Life project "Restoration of Meadow Bird Habitats (REMAB)" is to restore and improve habitats for Southern Dunlin (*Calidris alpina schinzii)* and Ruff (*Philomachus pugnax)* at four key breeding sites in Denmark.

Secondly the objective is to restore a favourable conservation status for associated habitat types and habitats (1330 Atlantic salt meadows, 3140 Hard oligo-mesotrophic waters with benthic vegetation of *Chara spp.*) and habitats of *Botaurus stellaris*, *Chlidonias niger* and *Porzana porzana*.

The project involves 4 Danish Forest and Nature Agency Regional Offices and The Danish Bird Protection Foundation. The total budget of the project are 1.400.000 €.

The meadow birds are among the most threatened bird species in Denmark. Many species of meadow birds have suffered from serious decline since the 1970'ties primarily due to lost of suitable breeding sites. Only one fourth of the breeding sites for *Calidris alpine schinzii* remain, and for *Philomachus pugnax* only one seventh of the breeding sites remain in Denmark.

The REMAB project aims to stop the decline in number of breeding pairs of the two species at the four project sites.

The main actions of the project are activities to restore suitable water levels for meadow birds, to clear trees, scrubs and reeds and to ensure a proper grazing regime.

Hydrology will be restored to counteract previous draining efforts by establishment of weirs and other efforts to ensure a suitable water level for meadow birds. Areas overgrown with trees, bushes or reed will be cleared by machinery. Furthermore the future proper management will be facilitated by establishment of a Grazing Society at one site and development of a management plan at another site.

The project is implemented following a participatory approach through cooperation with landowners.

The key benefits from the project will be:

- Improved hydrology on 1900 ha meadow bird habitats incl. 920 ha Atlantic salt meadows.
- Clearing of trees on 220 ha wet grassland and reeds on 18 ha Atlantic salt meadow
- Enhancement of breeding and feeding habitat of *Botaurus stellaris* and *Chlidonias niger*.
- Improved management on 900 ha of meadow bird habitat by establishment of a Grazing society and by the development of a management plan.
- Significantly reduction of predation by foxes on meadow birds at two project sites by establishment of 25 artificial fox dens and a fox secure bridge.
- Enhanced possibility to experience meadow birds for visitors by establishment of 5 km of path and a bird observation platform.

- Water quality at 975 ha of 3140 Hard oligo-mesotrophic waters with benthic vegetation of *Chara ssp*. will be improved.

Bad weather conditions, change of personnel, reconstruction of the Danish public sector in 2007 and negotiations with private landowners have caused delay in some project actions, but no major problems and drawbacks have yet been encountered in the project.

Session 1
Hydrology and meadow birds

Experiences with restoration of wet features for breeding waders in lowland grassland in UK. (*Ph.D Sarah Eglington, British Trust for Ornithology*)

Sarah Eglington (SE) presented the results from her research in the Broads (East England).

As in the rest of Europe extensive draining, conversion to arable land and intensive management of grassland has reduced the abundance and quality of meadow bird habitats in England.

SE stated that the key issue in re-creating wet grassland from arable land is water. High soil water-table or the presence of surface water is crucial factors to attract breeding waders. Establishment of footdrains (1-3 m wide shallow channels) coupled with appropriate water control offer an important tool in order to provide suitable nesting and foraging habitats for breeding waders.
The vegetation characteristics of the site are also important in order to improve habitats for breeding waders. Heterogeneous vegetation structure is preferable as different wader species prefer different sward heights, and low intensity grazing is generally the best way to produce this structure.

Sarah Eglinton presenting results from the Broads in East England

SE's research showed that adult lapwing (*Vanellus vanellus*) appear to prefer fields with foot drain densities of approx. 300 m^2/ha and that an increase in the amount of shallow water flashes increased the density of birds.

The results also showed that chicks spent more time in fields with higher densities of foot drains. Foraging rates were highest in fields with high foot drain density. Research showed that this was due to higher invertebrate density and availability, suggesting that prey was not only more plentiful but also more accessible within these fields. Early in the season chick condition varied very little, but later in the season, chicks in fields with high foot drain densities were heavier on average than those in fields with low foot drain density. Wader productivity increased with footdrain densities exceeding 200 m^2 per hectare.

In the Broads survival rates of both nests and chicks were higher where lapwing bred at high densities, presumably due to effective deterrence of predators by group mobbing. It is therefore likely that features such as foot drains, around which breeding waders tend to concentrate, will have beneficial effects on breeding success beyond the provision of habitat, due to a reduction in predation.

How much water needs a meadow bird habitat? - Experiences from the LIFE project "Rewetting of Lake Dümmer Lowlands" (*Dipl.-Biol. Heinrich Belting, Naturschutzstation Dümmer*).

The Lake Dümmer lowlands (covers 2500 hectares) are located in Niedersachsen, Germany. Draining of the lowlands during the 1950'ties caused severe decline in numbers of breeding meadow birds in the area. In 1987 a LIFE project was initiated at Lake Dümmer in order to rewet the lowlands. Due to the LIFE project a mosaic of not flooded, short term flooded and long term flooded meadows have now been established.

140 local farmers are involved in the management of the meadows. The start date for grazing and hay harvest is scheduled from year to year in order to protect the breeding meadow birds. It is not allowed to use fertilizers on the meadows, but small amounts of potassium fertilizer are added as this according to Dr. Hermann Hoetker could be essential in order to improve living conditions for Black-tailed godwit on peat soil.

The LIFE project at Lake Dümmer lowlands has been successfull. White stork (*Ciconia ciconia*), Shoveler (*Anas clypeata*), Garganey (*Anas querquedula*), Spotted crake (*Porzana porzana*), Corncrake (*Crex crex*), Ruff (*Philomachus pugnax*), Redshank (*Tringa totanus*), Short-eared owl (*Asio flammeus*), Bluethroat (*Luscinia luscinia*) and Sedge warbler (*Acrocephalus schoenobaenus*) have all returned to the project area. The Lake Dümmer is today the only inland breeding site for Ruff in Germany. Additionally has the number of Yellow wagtail (*Motacilla flava*) has increased from a few individuals to 400, and the population of Black-tailed godwit (*Limosa limosa*) has doubled due to the project.

Intensive monitoring programmes at the site have shown that hatching success for Black-tailed godwit are highest in long term flooded areas due to a lower predation rate from especially Water vole (*Arvicola terrestris*) in these areas. Food availability for Black-tailed godwit chicks is however biggest on medium flooded areas and not sufficient at the long-term flooded areas. Therefore fletching success was highest on medium flooded areas. A mosaic of areas with different "wetness" is therefore necessary to ensure breeding success for Black-tailed godwit.

The monitoring has also shown that black-tail godwit chicks eats approx. 7000 insects pr. day and the average hatching date for Black-tailed godwit has been postponed 4 weeks from primo to ultimo May since 2000 at Lake Dümmer lowlands.

Heinrich Belting presenting the Lake Dümmer LIFE-Project.

From wheat to waders - large scale management of wet grassland for waders (*Mark Smart, Site manager Berney Marshes and Breydon Water*)

Berney Marshes and Breydon Water is located west from Norwich in U.K. The site covers 480 ha and is owned by The Royal Society for the Protection of Birds (RSPB).

Prior to 1994 all marshes at the site was individually embanked. A diesel pump was used to pump water into the central parts of the site and thereby improving conditions for meadow birds. But it was only possible to manage 15 out of 49 marshes by using this method.

After 1994 all marshes are connected. Foot drains (small shallow ditches) have been established and water is pumped in and circulated by small wind powered water mills. This has increased the amount of open water surface (flashes) in the marshes.

The number of breeding meadow birds have also increased considerably since 1994 as a consequence of the improved hydrology in the area combined with predator control projects.

Foxes are the main predator at the site, and predator control projects have shown that predator control is necessary to maintain high numbers of breeding lapwings and to ensure sufficient reproduction rates for lapwings.

Research at the site has also shown that the number of red shanks is positively correlated to the number wet features (flashes and foot drains) in the marshes.

Mark Smart presenting management of Berney Marshes & Breydon Water

2. Session
Predation and meadow birds

Experiences with predator control on Öland - Sweden (*Richard Ottvall, University of Lund*)

The meadows at Öland cover more than 100 km^2 and have been grazed continuously for more than 1000 years. The meadows at Öland are housing 60% of the Southern dunlin 50% of black tailed godwit population in Sweden.

In spite of well managed grazing of the meadows the Southern dunlin population has decreased from 120 pairs to 60-70 during the last 20 years. Other meadow birds at e.g. lapwing have also been reduced in numbers on the island.

Predation was identified as on of the problems for the meadow birds. An experiment with predator control was initiated at four different areas on the island. The predation control covers species like raven (*Corvus corax*), hooded crow (*Corvus corone cornix*), magpie (*Pica pica*), jackdaw (*Corvus monedula*) and mammals like badger, fox and martens. At the test areas on the east coast of the island breeding success enhanced due to the predation control. But on the test areas on the west coast the breeding success was lowered. Another surprising result was that 85% of the nests were predated during night in 2008 even though foxes are nearly absent due to an outbreak of fox mange in 2006-07.

In 2008 80-90% of the crow population was caught but in 2009 the population on the east coast was at the same level as before the control was initiated. On the west coast was the population still much smaller than before the control.

The results with predation control on Öland seems to indicate that the significance of predation from crows was overestimated but predation from badgers and foxes is of significant importance.

Richard Ottval presenting results with predation control on Öland.

Restoration of natural conditions and predator barriers within the marine Ramsar site Tautra-Svaet, Norway (*Per Gustav Thingstad, Norwegian University of Science and Technology*)

In 1976-1978 a ½ km long dam was build to connect the Norwegian island Tautra to the main land. Heavy current in the sound between the island and the main land prevented mammalian predators to enter the island. After the dam was build, predators entered the island and the hydrology changed dramatically, which caused a serious decline in the abundance of mollusc epifauna in the sound.

The decline in food abundance and the increased predation on nesting females caused a serious decline in numbers of Common eider (Somateria mollissima) in the area, and the ratio between numbers of male and female birds changed from 1:1 to 4:1 as a consequence of the predation on nesting females on Tautra.

In 2003 a bridge replaced 350 m of the dam and a gate was established on the bridge to prevent mammalian predators from entering the island. The bridge improved the hydrology in the sound and the mollusc epifauna responded positive immediately. As a result the number of common eider is today at the same level as before the establishment of the dam.

It is still too early to conclude on the effect of the gate on the number of predator on Tautra. The number of nesting common eider has increased but not significantly. An explanation is that mammalian predators like fox, badger, martens, stoat and domestic cats and dogs are still present on the island. The gate has been modified several times and latest in 2006. The gate is now more efficient and the breeding birds at Tautra are much better protected today. But still some challenges remain in order to make the gate 100% efficient.

Per Gustav Thingstadt presenting the predator barrier at Tautra in Norway

Investigations of fox population at the project site Vest Amager and introduction to the excursion at Vest Amager (*Cand. Scient. Henrik Olesen & Sven Norup, Danish Forest & Nature Agency*)

Henrik Olesen presenting results from Vest Amager.

77% of all Lapwing nests were predated on Vest Amager in 1991. Crows were under suspicion, but a massive crow control did not have any effect on the breeding success for lapwings.

Placing data loggers within the nests showed that 80% of the nests were predated during night and 90% of these where predated by mammalian predators primarily foxes.

Fencing certain areas with one electrical weir increased hatching success significantly, but a three row weir fence was needed to eliminate predation from mammals in these areas.

Predation from crows is only a problem during day time and it is only a minor problem at Vest Amager. But an efficient fox control seems to be crucial in order to improve breeding success for meadow birds at Vest Amager.

The excursion to Vest Amager

Sven Norup (site manager at Vest Amager) presenting an artificial fox den

Seminar Dinner Lecture: Meadow management in Greece (*Yannis Kazoglou, Society for the Protection of Prespa*)

The Prespa lakes situated on the border between Macedonia, Albania and Greece, are among the oldest lakes in the world.

Major land reclamation works in the 1930-40's and 1960-70's has cost direct loss of wetland habitats. And abandonment of traditional management activities e.g. reed cutting, grazing in the littoral zone and fishing in shallow waters have changed many wet meadows into massive reed beds in the Prespa area.

Due to these changes *Plegadis falcinellus* and *Platalea leucorodia* stopped breeding in 1970 and 1992 resp. and the populations of fish (litho-phytophilous spp) decreased.

In 2002 a LIFE-Nature project "Conservation of priority bird species in Lake Mikri Prespa" was initiated. The main objectives of the project were to reconstruct a sluice between the 2 Prespa Lakes (for effective control of water level fluctuation) and to restore 70 ha of wet meadows and adjacent blue border zones.

The project also involved actions to improve reed bed management and bird, water and vegetation monitoring. Public awareness, protection and surveillance were also raised during the project as well as compilation of a comprehensive management plan for 2007-2012.

Yannis Kazoglou presented results from the Life-project in Prespa (Greece)

Day 2

Søren Ferdinand Hansen from the Danish Bird Protection Foundation presents REMAB activities at the project site Nyord

Experiences from the BALCOAST project (*Martin Altemüller, Naturschutzbund Deutschland*)

The LIFE Project BalCoast has assembled around 20 partners from 5 countries (Germany, Denmark, Sweden, Estonia and Lithuania) around the Baltic Sea in order to improve Baltic coastal habitats.

Up to 90% of the coastal lagoon habitats have disappeared in the western part of the Baltic region and 75% in the eastern part. Many habitats have been overgrown with reed, trees and bushes like *Rosa rugosa*. Others have been drained, cultivated or claimed for urbanisation.

The main tool to improve many habitats is grazing. Vegetation will be kept in a favourable/appropriate state using hardy cattle as Galloway and Highland cattle and Konik horses. Especially winter grazing or grazing in early spring and late autumn have apparently quite positive impacts on site vegetation and structure.

Other actions in the project aim to improve hydrology by blocking ditches, drainages and reducing unnatural lagoon discharge. Water bodies will be improved by dredging accumulated mud and

removing of dense reed beds. Many habitats are invaded by unnatural overgrowth of bushes and trees including alien invasive species (e.g. *Rosa rugosa*) which displace natural plants and animals; this tendency will be stopped and reversed by mowing and grazing.

The project also runs an orphanage for Green toad (*Bufo viridis*) and Natterjack (*Bufo calamita*) and small artificial islands (platforms) is build to create suitable nesting sites for Common tern (*Sterna hirundo*).

Martin Altemüller presenting the BALCOAST project

Breeding waders in the Baltic Region, lessons learned and future challenges (*Dr. Preben Clausen, Danish National Environmental Research Institute*)

Investigations in Tønder Marsken in the south western part of Jutland have shown that up to 70% of a lapwing generation will return to their own hatching site to breed.

The breeding and fletching success for lapwings depends on well grazed/mowed meadows with wet areas. Another crucial factor is predation. Hatching is only successfully in 14% of the lapwing nest in Tønder Marsken today. During the latest outbreak of fox mange 56% of the nests hatched.

The investigation in Tønder Marsken also showed that lapwings are able to protect each other as hatching success was higher in areas with high density of lapwing nests compared to areas with a low nest density.

In the future we need to gain more knowledge about how we optimize management (grazing/mowing) and hydrological conditions for meadow birds. And we need better tools and a higher effort in order to reduce predation.

Preben Clausen – Talked about future challenges and lessons learned

Claus Jespersen (Head of DFNA regional office Storstrom) giving closing remarks