

The west Pomeranian Population of the Aquatic warbler: Habitat change and restoration potential

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Introduction

The Aquatic warbler (*Acrocephalus paludicola*) is a globally threatened species. Around 1900, it was one of the most widespread birds in the central European fen mires. The population has severely decreased as a consequence of wetland drainage. In recent years, it is stable in the Polesie region (Eastern Poland, Belarus, Ukraine), where about 80% of the world population is concentrated (AWCT 1999), but is decreasing sharply in Western Pomerania*. Genetic differences distinct from all other populations (Giessing 2002) suggest that these birds are the last survivors of a separate, large central European population. According to isotope analyses of Aquatic warbler feathers, the population has also most probably a different, more northerly wintering area than the others (Pain et al. 2003). Its conservation has high priority (reflected in a CMS MoU in 2003) but is hampered by insufficient knowledge of habitat requirements.

Projected outcomes of the PhD study are:

- A description of key habitat factors of the Aquatic warbler in Western Pomerania.
- A search area map of potential Aquatic warbler habitats in Western Pomerania.
- A set of management guidelines for currently unpopulated sites in Western Pomerania.

* The term „Western Pomerania“ approximates the Polish voivodship „Zachodniopomorskie“, adjacent German coastal, and German and Polish Odra valley areas.

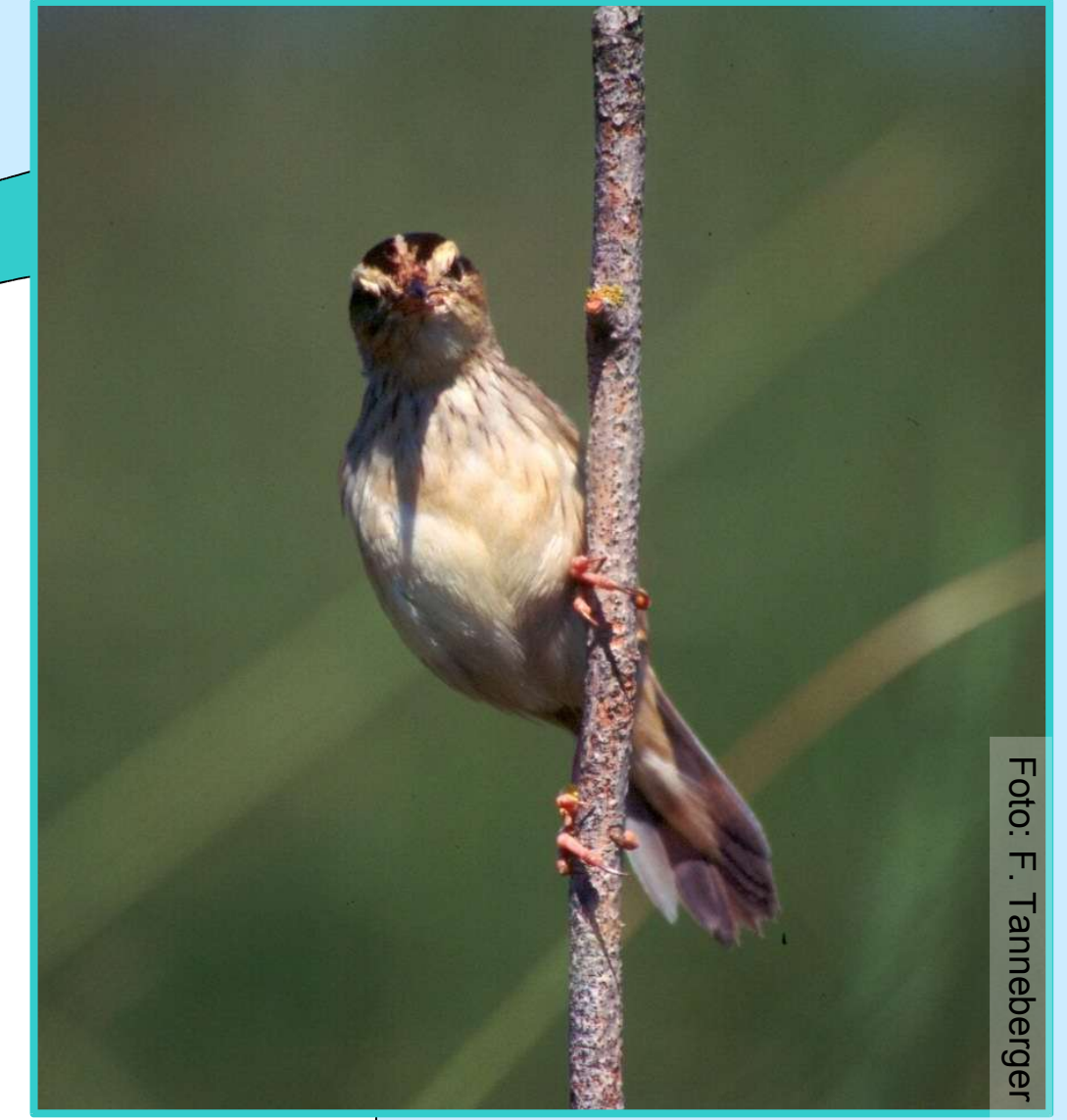


Foto: F. Tanneberger

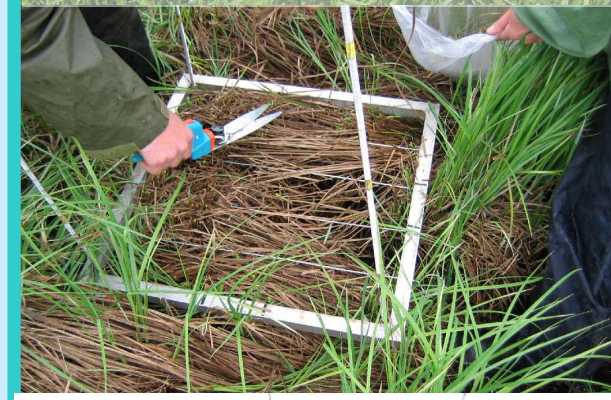
Methods

Study sites in Poland, Germany and Lithuania (= reference area with increasing population in similar habitat) include: **A) sites currently populated by Aquatic warbler, B) sites recently abandoned by Aquatic warbler and C) control sites which are visually suitable but lack Aquatic warbler.** In each study site, vegetation composition, structure and height, litter properties, water conditions, nutrient conditions, productivity, Aquatic warbler prey availability (dipnets, pitfall traps and photo ectors), landscape structure and land use are studied. In total 206 permanent study plots have been set up since 2004. Data are collected at the beginning of the breeding season, at the peak of the first and at the peak of the second brood for 2004-2006. Key habitat factors are analysed and validated using GLM/LRM (cooperation with Potsdam University).

In 2005 Aquatic warbler diet in Western Pomerania was studied using surrogate species (*Acrocephalus schoenobaenus* and *Emberiza schoeniclus*) and neck collar and faecal method. In 2006 foraging behaviour of Aquatic warbler was studied (both cooperation with Institute of Zoology, Academy of Sciences, Belarus and H. Flöck, Germany). Aquatic warbler song behaviour is analysed in cooperation with Poznan University, Poland.



Vertical density



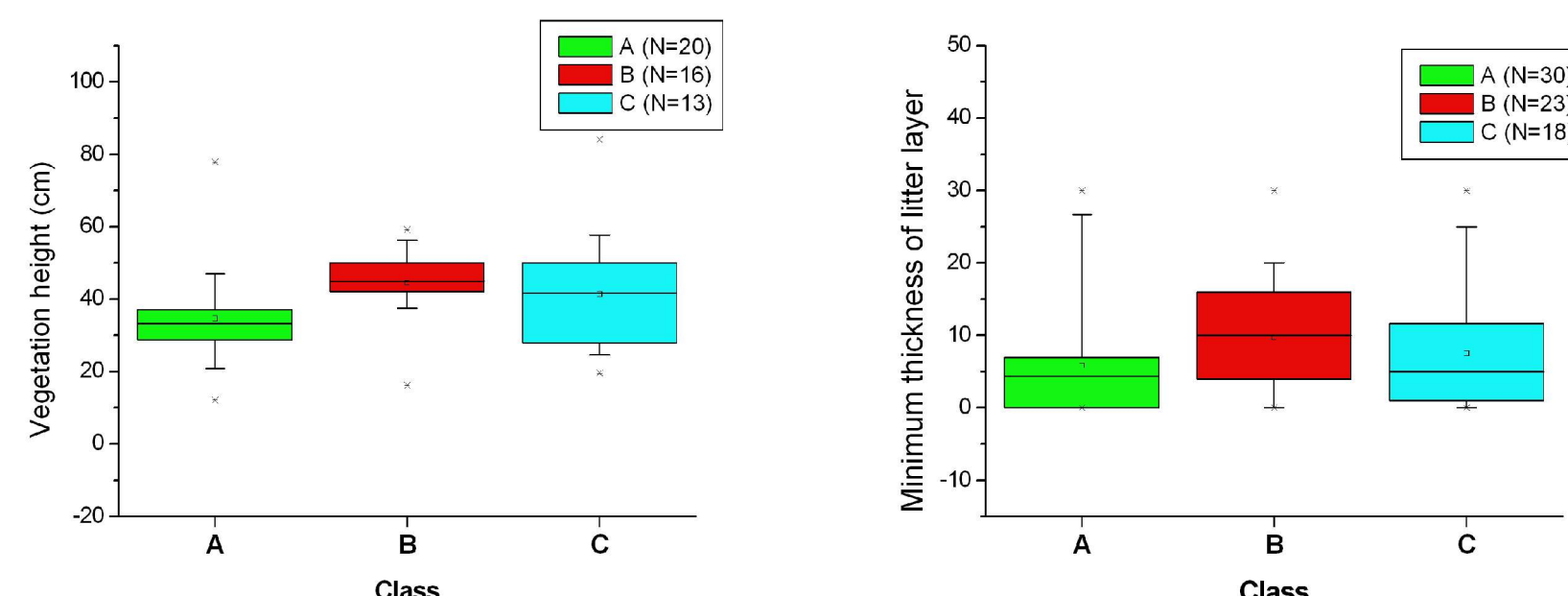
Neck collar & faeces



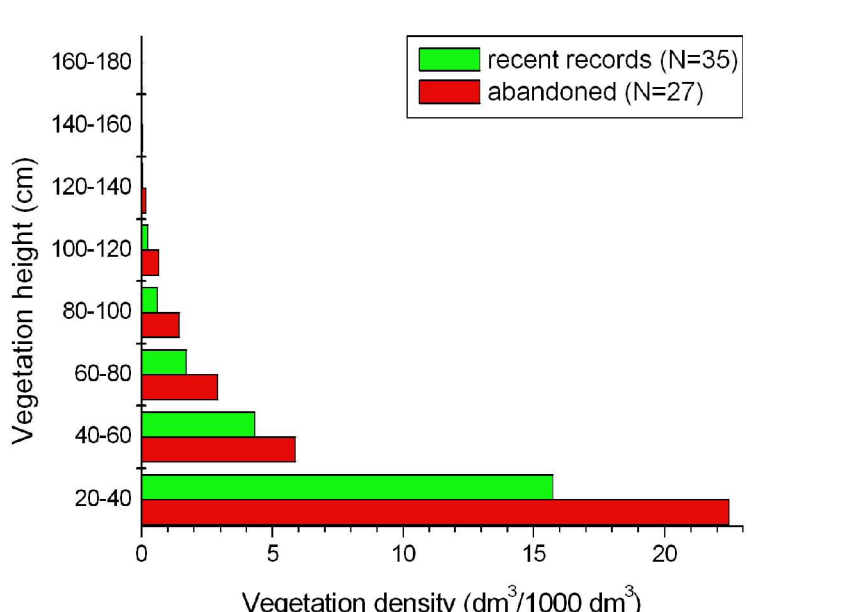
Ground photo ectors

Results – Key Habitat Factors

According to habitat modelling results, besides distance to nearest other Aquatic warbler and area size (i) vegetation height, (ii) thickness of litter layer, (ii) vegetation density and (iv) prey availability are the most distinguishing features:



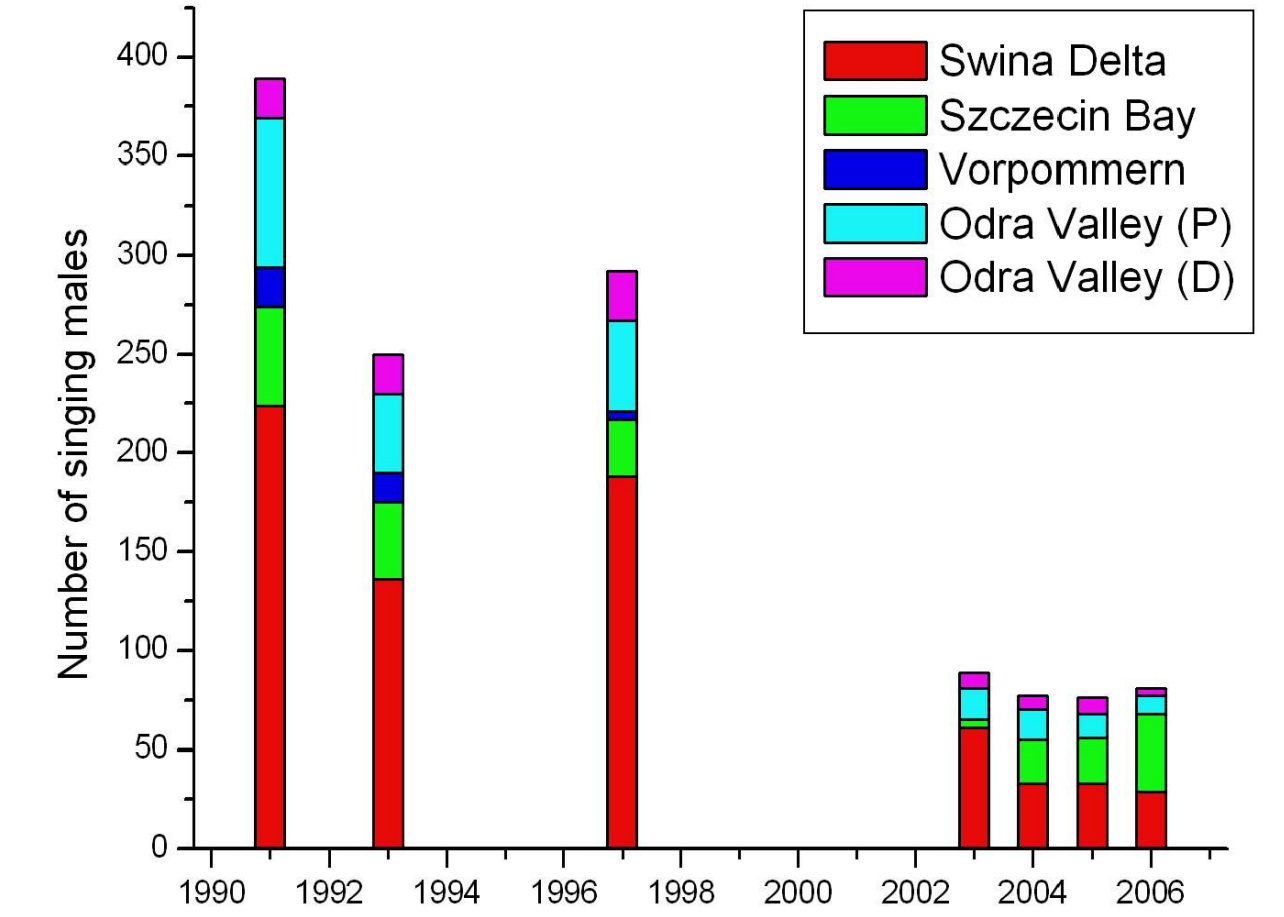
Above: Vegetation height (cm) and minimum thickness of litter layer (cm) in May 2005



Above: Vegetation density and differences in prey availability in June 2005

Group	U-Test results for A>B
Coleoptera	$p=0.013$
Diptera	$p=0.001$
Hymenoptera	$p=0.036$
Orthoptera	$p=0.019$
Prey items total	$p=0.001$

The West-Pomeranian Population 1991-2006



Results – Diet and Foraging Behaviour

Diet approximation is still in progress.

Flight distances observed at 9 nests have a median of 60 m (mean of 48.55 m), which is more than distances reported from other breeding sites:

Reference and method	Distance
Wawrzyniak & Sohns 1977 (range)	30-60 m
Dyrcz & Zdunek 1996 (mean)	31.7 m
Schulze-Hagen et al. (mean)	18 m
Kozulin, A. pers. comm. (mean)	25 m
this study (mean)	48.55 m

Females collect food in preferential areas (moister areas, mowing edges).

Vegetation height at nesting sites is min. 75 cm, max. 125 cm in late June.



Nesting site in Oder NP

Nest in Rozwarowo

Nesting site on K. Kepa

Preliminary Conclusions and Outlook

Aquatic warbler 'favourable conditions' in Western Pomerania include:

- Mean thickness of litter layer 0-15 cm
- Cover of lower (<30 cm) herb layer 5-20% in early Jun
- Vegetation height 60-80 cm in early June
- Sufficient food supply (to be quantified)

Management recommendations for Western Pomerania (Tanneberger et al. 2005):

Mowing: Sites should be mown (or possibly grazed) after breeding season to prevent the vegetation from becoming too dense and/or from becoming overgrown with *Phragmites communis* and bushes.

Water level: A level allowing the species successfully to breed (e.g. moister areas throughout breeding season available for foraging) must be secured.

Burning: cheap alternative to mowing/grazing, providing also for the removal of biomass; traditionally applied in several breedings sites.



Historical breeding site

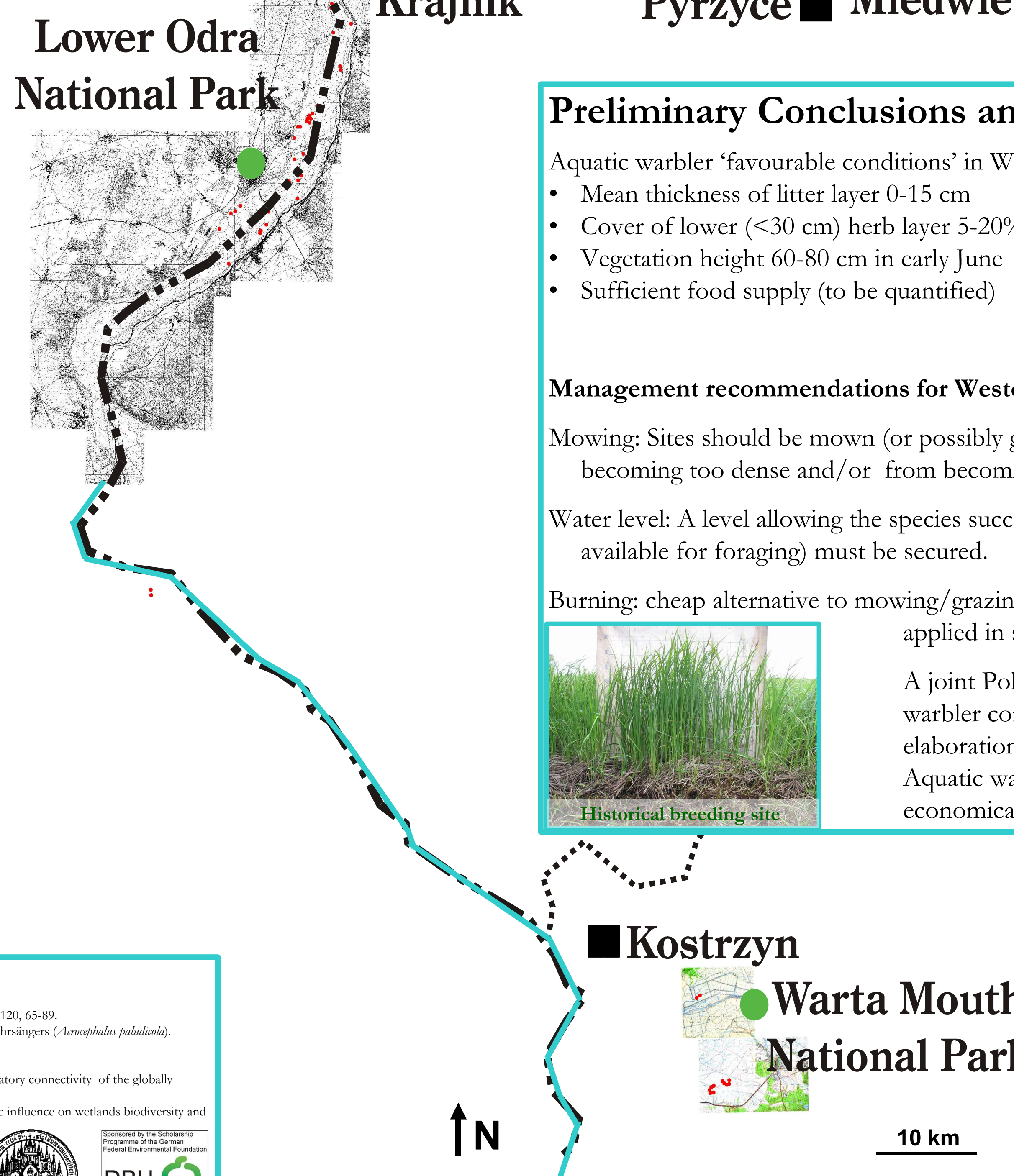
A joint Polish-German EU LIFE Nature project (2005-2010) on Aquatic warbler conservation has recently started. Main objectives are the elaboration of management plans, experimental management for Aquatic warbler conservation (including burning) and the identification of economically attractive alternatives for biomass use.

Selected References

- Aquatic Warbler Conservation Team (AWCT), 1999 - World population, trends and conservation status of the Aquatic Warbler *Acrocephalus paludicola*. Vogelwelt, 120, 65-89.
- Giessing B., 2002 - Viele Väter für eine Brut - vorteilhaft oder unvorteilhaft für das Weibchen? Zum Paarungssystem und zur Populationsgenetik des Seggenrohrsängers (*Acrocephalus paludicola*). Unpublished Ph.D. Thesis. Köln University.
- Leisler B., 1981 - Die ökologische Einnischung der mitteleuropäischen Rohrsegler (*Acrocephalus Sylvainae*). I. Habitatrennung. Die Vogelwarte, 31, 45-74.
- Pain D., Green R.E., Giessing B., Kozulin A., Polada A., Ottosson U., Flade M. & G. Hillon, 2004 - Using stable isotopes to investigate wintering areas and migratory connectivity of the globally threatened Aquatic Warbler *Acrocephalus paludicola*. *Oecologia*, 138, 168-174.
- Tanneberger, F., Flade, M. & H. Joosten, 2005 - An Introduction to Aquatic Warbler conservation in Western Pomerania. In: Kotowski, W. (ed.) - Anthropogenic influence on wetlands biodiversity and sustainable management of wetlands. 3rd part of WETHYDRO monographs. Warsaw: Agricultural Press, Warsaw, p. 97-106.

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Legend

- Odra river
- study site
- past breeding site
- 1-5 sM in 2006
- 6-20 sM in 2006
- > 20 sM in 2006

Kostrzyn
Warta Mouth
National Park

10 km

