

Report on estimation of the Aquatic Warbler population in Belarus, 2009

implemented as part of the following projects:

“International Cooperation for Aquatic Warbler Conservation – RSPB’s support for a charitable purpose”,

activity 4.1. Coordination of AW counts 2009 in most important breeding sites in Belarus. Estimation of Belarusian AW population.

“Restoring Peatlands and applying Concepts for Sustainable Management in Belarus – Climate Change Mitigation with Economic and Biodiversity Benefits“

activity 4.1 Collate and analyse data on indicator species (e.g. aquatic warbler and greater spotted eagle) from previously re-wetted sites to establish relationship between mire condition and biodiversity values.

compiled by

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Aims and objectives of the study

The main aim of the study was to conduct Aquatic Warbler counts at the most important Belarusian breeding sites that were more or less regularly being occupied. The following objectives were established:

- 1) estimate Aquatic Warbler breeding population in Belarus in 2009;
- 2) improve Aquatic Warbler monitoring scheme for Zvanets mire;
- 3) involve and train a large number of APB volunteers into Aquatic Warbler monitoring;
- 4) collect and systematize data of AW monitoring and incidental observations for the period 1996-2009.
- 5) establish relationship between conditions of previously re-wetted sites and their suitability for AW.

Methods

Taking into account the arrival of the bird in late spring, the counts were carried out between 8th of June and 1st of July 2009. The counts were carried out according to the international Aquatic Warbler monitoring scheme which was developed in frame of the LIFE-Nature Project (Poland and Germany). The counts started one hour before the sunset and lasted for maximum 2 hours – the period of the maximum singing activity of males. A monitoring route of up to 2 km length was covered during this time.

The counts were conducted by 1-5 persons. When 2 or more people took part, the distance between counters was 50 m. Before being mapped each vocalizing male was discussed by at least 2 counters. Such methodology allows receiving reliable data from volunteers possessing variable level of experience.

Depending on the size of the site and availability of volunteers the following methods were used:

- Transect counts (TR)
- Counts on sample plots (SP).
- Full counts (full)

Transect counts were executed at small and medium sites when the number of people was NOT sufficient to cover the whole area of the site.

Counts on sample plots took place at Zvanets mire.

Full counts were conducted at small and medium sites when the number of people was sufficient to cover the whole area of the site.

Results

In Belarus 25 confirmed Aquatic Warbler breeding sites are more or less regularly occupied. Beside this, Aquatic Warblers were registered during migration at 1 site (Fig. 1). Counts were planned to be conducted at the most important of them (Tab.1).



Fig.1: Location of the Aquatic Warbler breeding and migration sites in Belarus.

As the result 10 AW sites were covered in 2009. The figures for the sites that were not covered by this survey were delivered from recent years to estimate the whole country population (Tab.1). For instance, very detailed and reliable data were obtained in 2008 for Sporava and Dzikoe mires (together with Zvanets – 3 most important AW breeding sites in Belarus).

Table 1. Aquatic Warbler population estimation in 2009

	Name of site	Code	Year of counts	Coordinator	Type of count		Population on site	
							min	max
	Zvanets and vicinity							
1.	Dzivin – Habovichy	BY-06	2009	UM	full		1	3
2.	Dzivin – Luban	BY-07	2009	SL	full		0	0
3.	Dzivin – Rudzets	BY-08	2009	UM	full		10	12
4.	Zvanets mire	BY-19	2009	UM	SP		2896	5798
5.	Sporava mire	BY-16	2007	VF	full		617	1067
	Dzikoe and vicinity							
6.	Dzikoe mire	BY-04	2008	VF	full		158	216
7.	Glybokaye mire	BY-22	2006	NC	SP		2	5
8.	Lomauka river	BY-23	2006	NC	full		0	0
9.	Narau floodplain	BY-24	1996-2005	NC	full		2	10

	Shchara floodplain							
10.	Babrovitskaye lake	BY-02	2006	VD	full		0	0
11.	Shchara-2-Tuhovichy	BY-14	2006	VD	full		0	0
12.	Shchara-4-Petuhoushchyna	BY-15	1996-2005	AK	TR		10	100
13.	Shchara – Dabramysl	BY-21	2009	SL	TR		10	20
14.	Vyganauskae lake	BY-20	2006	VD	full		5	10
	Prypiats floodplain							
15.	Lielchytsy	BY-10	2009	PP	TR		0	0
16.	Prastyr	BY-12	2006	AA	TR		0	0
17.	Styr mouth	BY-11	2007(9)	MD	TR		2	2
18.	Yaselda mouth	BY-09	2006	AA	TR		0	0
19.	Zarelshcha	BY-25	2003	AA	TR		10	100
	Biarezina floodplain							
20.	Gayna mouth	BY-03	2009	SL	full		0	0
	Other sites							
21.	Almany	BY-01	2006	VD	estim		150	200
22.	Dzitva	BY-05	2006	SL	full		0	0
23.	Servach	BY-13	2009	OP	full/TR		25	30
24.	Stary Zadzen	BY-17	2006	VF	estim		20	40
25.	Svislach river	BY-18	2009	DV	full		41	47
	Total estimate						3959	7609
26.	<i>Gnezdnoe</i>	<i>migrat</i>	<i>2007</i>	<i>VY</i>	<i>TR</i>		<i>4</i>	<i>4</i>
	AA – Andrej Abramchuk AK – Alexander Kozulin DV – Dmitry Vinchevski GG – Georgy Gulinski MD – Marina Dmitrenok MF – Martin Flade NC – Nikolaj Cherkas OP – Oleg Pareyko PP – Pavel Pinchuk SL – Semion Levy UM – Uladzimir Malashevich VD – Valery Dombovski VF – Viktar Fenchuk VY – Valery Yurko pot – potential migrat – migratory n/conf – not confirmed estim – estimation from 2006							

Aquatic Warbler monitoring scheme and estimation of Aquatic Warble population at the largest Aquatic Warbler breeding site in Belarus: Zvanets mire

The total area of IBA “Zvanets” is 16230ha, hereof 10460ha area is protected as National biological reserve (zakaznik) “Zvanets”.

Analysis of satellite images with subsequent field checks during Aquatic Warbler census allowed to roughly allocate the area suitable for AW – about 6300 ha in total. The area of 5700ha (57 km²) was covered by a 1 x 1 km grid. 19 sample squares (every third) were regularly chosen basing on the grid (Fig.2). The number of squares to be surveyed was limited by the availability of people who could take part in the counts. 5 sample plots were not sampled for technical reasons.

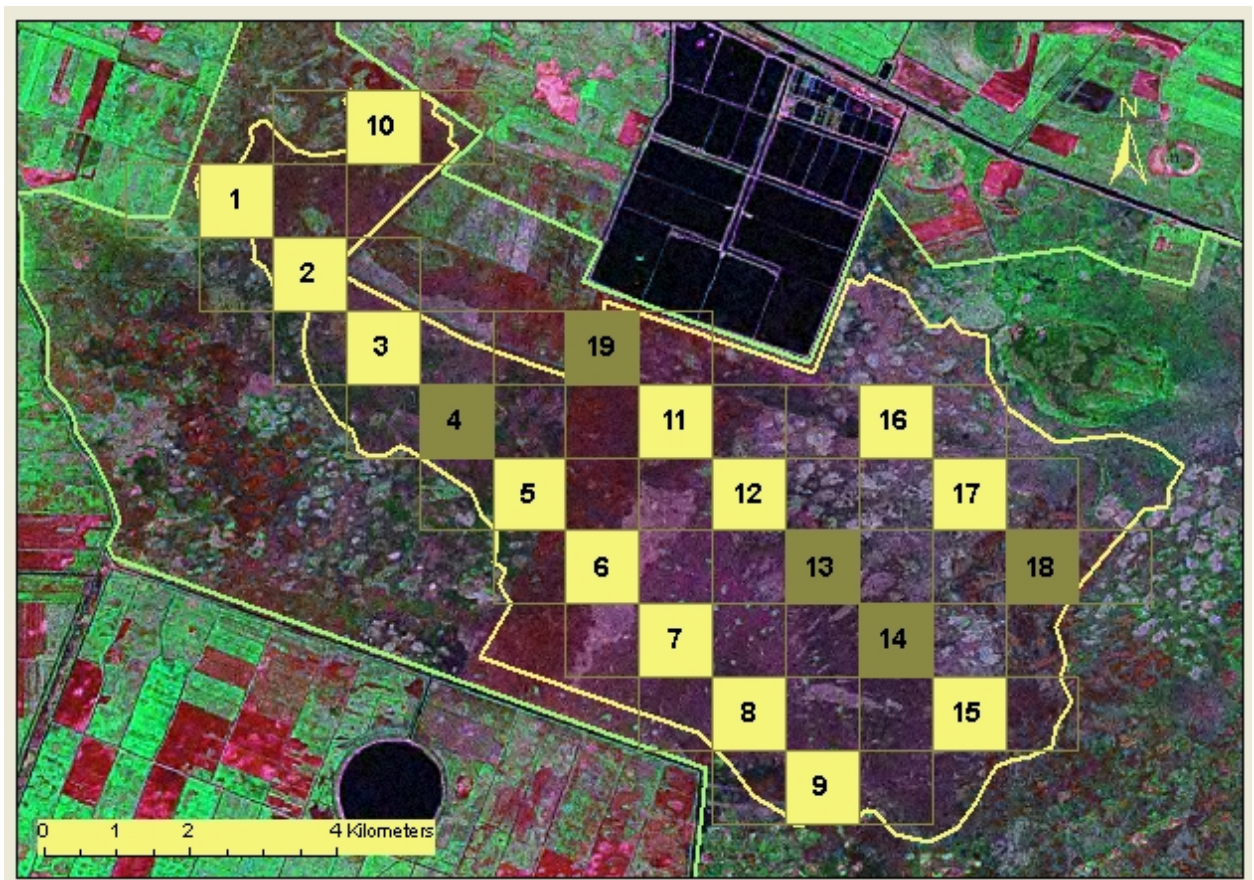


Fig.2: Zvanets mire. Location of **sample squares**. (*Aquatic Warbler breeding area – yellow, counted sample squares – yellow, not counted sample squares – brown, boundaries of IBA “Zvanets” – green*)

Within each sample square one sample plot with an area of 1,000m x 100m (150m, 200m) was chosen (Fig.3). The length of the sample plots corresponded to the length of the sample squares; the width of the sample plots varied from 100 to 200m depending on number of counters. The southern border of each sample plot (guiding line) was running parallel to the southern side of the sample square at a 250m distance from it.

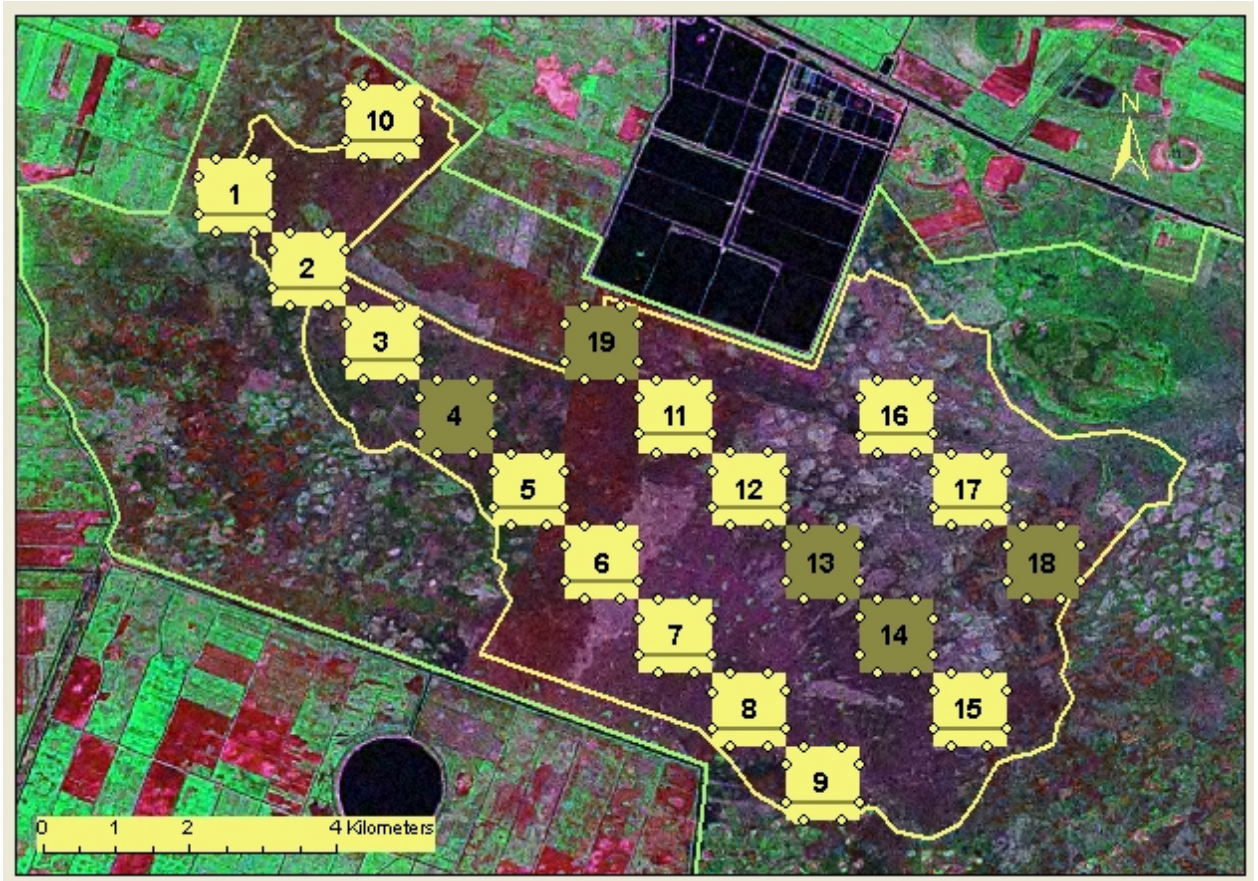


Fig.3: Zvanets mire. Location of **sample plots**. (*Aquatic Warbler breeding area – yellow, counted sample squares – yellow, not counted sample squares – brown, guiding lines of sample plots – brown, boundaries of IBA “Zvanets” – green*)

Each sample plot was counted by 3-5 persons. Counters were moving in latitude direction in 50m distances from each other. Those on the edges were equipped with GPS navigators: using latitude degrees as a reference and saving their factual tracks. A person on the southern edge was going along the guiding line. The factual area covered by counts was calculated basing on GPS tracks. Only males that were singing inside of this area were used for further calculations. Aquatic Warblers outside of sample plots were registered just for reference.

The results are present below (Tab.2).

Table 2. Estimation of Aquatic Warbler breeding population at Zvanets using bootstrapping.

	Sample plot	Density, males/km²	Number, males	LCI,* males	UCI,* males
	1	22			
	2	5			
	3	39			
	5	45			
	6	72			
	7	119			
	8	58			
	9	84			
	10	46			
	11	101			
	12	27			
	15	172			
	16	80			
	17	32			
Mean normal		64		42	87
Mean bootstrap* (n=10000)		64		46	92
Median		52			
SD		44			
SE		12			
Area, km²		63			
Population estimate normal			4062	2669	5475
Population estimate bootstrapping*			4062	2896	5798

* Bootstrapping was implemented by Johannes Kamp, RSPB

The area that was not covered by this survey and could potentially be suitable for the species is at about 6 km². It is located in the western and north-eastern parts of the mire (Annex, Fig.14). The western part of the mire is highly fragmented and mostly overgrown with shrubs. The area potentially suitable for AW in the West is not more than 4,5 km² there. A relatively big fragment of open fen mire (1,5 km²) is located in the north-eastern part of Zvanets.

Relationship between conditions of previously re-wetted sites and their suitability for Aquatic Warbler.

Former pastures and hayfields could be occupied by AW under the following conditions:

1. Hydrological regime is close to the natural.
 - drainage canals are overgrown and do not actively take water out of the site;
 - water level during breeding season is close to the ground level (from -10 to +10 cm);
 - spring floods occurs;
2. Land use still takes place.
 - regular mowing preventing overgrowing with bushes and reed, an increase in vegetation density, and the accumulation of a thick litter layer.

Shchra-Dabramysl is the only known former meliorated site in Belarus that became suitable for AW. Conditions of the site correspond to those listed above.

Location.

It is located in Shchara river floodplain 4 km SE village Dabramysl, Ivatsevichy district, Brest region. Coordinates: 52°47'20.18"N 25°46'4.54"E. The total area of the site is 229,1 ha.

Landscape ecological description (prepared by Annett Thiele, APB).

Current situation: slightly acid shallow peat bearing mesotrophic sedge reed with unsteady water level.

Former peatland type: shallow overflow mire beginning percolation mire with sedges and Phragmites fed by the river Shara.

Water level class: 4+5+

Water level to surface: -20 to +20 cm

Table 3. Species list.

Species	Cover scale	
	index	coverage, %
<i>Phalaris arundinacea</i>	1	few individuals
<i>Carex nigra</i>	2	0-1
<i>Carex vesicaria</i>	1	few individuals
<i>Carex riparia</i>	8	50-75
<i>Carex acutiformis</i>	7	25-50
<i>Alisma plantago-aquatica</i>	1	few individuals
<i>Scutellaria galericulata</i>	1	few individuals
<i>Epilobium angustifolium</i>	1	few individuals
<i>Glyceria fluitans</i>	2	0-1
<i>Lysimachia vulgaris</i>	1	few individuals
<i>Ranunculus lingua</i>	1	few individuals
<i>Filipendula ulmaria</i>	1	few individuals
<i>Poa palustris</i>	1	few individuals
<i>Poa pratensis</i>	1	few individuals
<i>Comarum palustre</i>	1	few individuals
<i>Achillea salicifolia</i>	1	few individuals

<i>Iris pseudacorus</i>	1	few individuals
<i>Gallium mollugo</i>	1	few individuals
<i>Carex pseudocyperus</i>	1	few individuals
<i>Calamagrostis epigeios</i>	1	few individuals
<i>Lemna minor</i>	1	few individuals

Table 4. Peat coring.

peat depth	peat type	decomposition degree
0-10		H9
10-15	radicell peat, sand, clay	H7
15-20	radicell peat, sand	H5
20-35	Phragmites peat	H5
35-50	Phragmites peat, wood parts	H4
50-55	radicell peat with sand	H6
55-65	sand	

Table 5. pH sampling.

depth, cm	pH
10	5,43
25	5,30
50	5,32

Draining system.

The abovementioned part of Shchara floodplain was drained in 1985 with agricultural purpose. Complete renewal of drainage system was scheduled for the year 2000. The adjacently located zakaznik “Vyganashchanskae” lobbied for the cleaning of canals being NOT implemented. As a result the drainage system does not work properly at present and hydrological conditions are mainly determined by the river.

Land use

The agricultural enterprise “Brest-travy” currently uses this site as a hayfield. The site is normally mown with machinery as well as by hand ones per season in the period between June and August (more often in the beginning of July). This year mowing took place in the beginning of July and covered only a minor part of the site. The terms are determined by accessibility of the site due to water level. More or less regularly mowing still takes place at only 102,5 ha of the total area. Only this part of the site is suitable for AW. The rest of the land is abandoned and overgrown with shrubs.

AW.

According to this year monitoring data the site holds 10-20 singing males (Tab.1).

It should be underlined that AW population in Belarus is declining. Small suboptimal sites located in flood plains are less competitive in comparison to large open fen mires that are still in satisfying condition. The recent AW monitoring data show that several small, visually suitable sites that had not been drained are not occupied by Aquatics. Probably, we can hardly expect large scale occupation of rewetted sites under conditions of the species depression.

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