

**International Species Action Plan for  
the Aquatic Warbler *Acrocephalus paludicola***



photo: Gerold Dobler

**Prepared by:**



**On behalf of the European Commission**



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It has been updated in 2010 by the same authors to be used as International Species Action Plan under the CMS Memorandum of Understanding Concerning Conservation Measures for the Aquatic Warbler (*Acrocephalus paludicola*). The update only aimed to include additional identified range states of the species and to update population figures.

Recommended actions have not been updated.

In 2016 an additional update has been produced after discussions held at the 3<sup>rd</sup> Meeting of Signatories of the Aquatic Warbler MoU that took place in Vente (Lithuania) the 20-21 May 2015.

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*The Aquatic Warbler Conservation Team*

The Aquatic Warbler Conservation Team was officially founded in 1998 at Brodowin/Germany. The AWCT acts under the auspices of BirdLife International and is an informal association of researchers and conservationists working on the Aquatic Warbler, coming from all breeding range states and some stopover countries. Currently, colleagues from Russia, Belarus, Ukraine, Latvia, Lithuania, Poland, Hungary, Germany, United Kingdom, Belgium, France, Spain and Senegal are actively working in the Team. The chairman is Martin Flade, Germany.

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### *Milestones in the Production of the Plan*

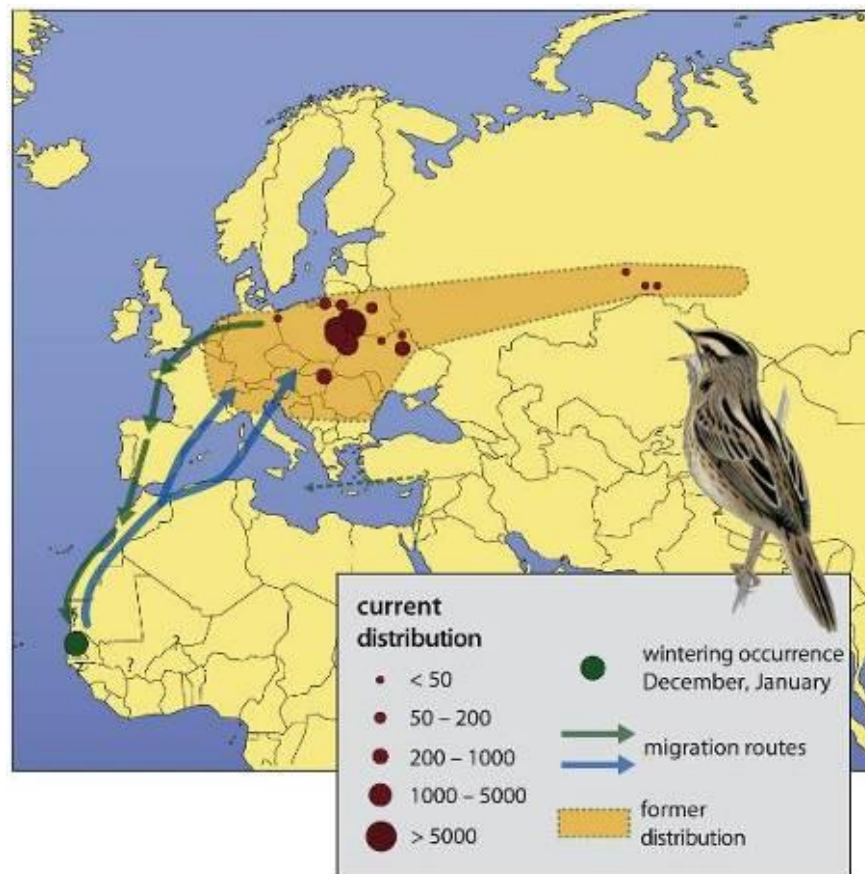
- First Aquatic Warbler workshop was held in 1993 at Ruda Milicka (Poland) helping the preparation of the first EU action plan (Heredia et al. 1996)
- Second Aquatic Warbler Workshop took place from 30 March to 1 April 1998 at Brodowin (Germany) and prepared update of the action plan
- Memorandum of Understanding Concerning Conservation Measures for the Aquatic Warbler (MoU) was concluded on April 30, 2003 in Minsk (Belarus), annexed to it was a revised version of the Aquatic Warbler Species Action Plan prepared in 1998
- First meeting of the Range States of the CMS Aquatic Warbler MoU took place on June 24-27, 2006 at Crieven (Germany) and prepared an unformal update of the 2003 action plan.
- The current revised draft action plan underwent the following consultations
- Draft 1.0 sent to all Contributors and published online: June, 2008
- Revision of implementation: July 2008
- Workshop: 10 September, 2008
- Draft 2.0 sent to all Contributors and published online in September 2008.
- Final draft prepared in November 2008.
- Final version of the action plan published on EU Commission website in 2009.
- Plan updated to include additional range states, to be accepted as new action plan under the CMS Aquatic Warbler MoU in May 2010
- Plan updated at the Third Meeting of Signatories of the Aquatic Warbler MoU (Lithuania 2015).

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*Geographical scope of the action plan*

The scope of this action plan covers the whole range of the species, significant parts of which fall in Europe and the European Union. However, due to the fact that the majority of its breeding population is found in neighbouring to the EU countries and that important parts of the lifecycle of the species take place on the African continent, it has been logical to base this action plan on the entire species range, thus revising and updating both the EU and the CMS action plans for the species and merging them into one document.



**Table 1 Range states for which this Action Plan is relevant (countries in bold indicate EU Member States)**

Breeding	Migration	Wintering
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<i>Belarus</i> <i>Germany</i> <i>Hungary*</i> <i>Latvia**</i> <i>Lithuania</i> <i>Poland</i> <i>Russia***</i> <i>Ukraine</i>  <i>*not breeding since 2011</i> <i>**no breeding record since 2004</i> <i>***no breeding record since 2000</i>	<i>The Netherlands</i> <i>United Kingdom</i> <i>Belgium</i> <i>Luxembourg</i> <i>Switzerland</i> <i>France</i> <i>Spain</i> <i>Portugal</i> <i>Slovakia</i> <i>Bulgaria</i> <i>Morocco</i>	<i>Senegal</i> <i>Mauritania</i> <i>Mali</i> <i>Ghana</i>
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## 0 - EXECUTIVE SUMMARY

The Aquatic Warbler *Acrocephalus paludicola* is the rarest migratory songbird of Europe, and the only globally threatened passerine bird found in mainland Europe. The species is listed as Vulnerable in the IUCN Red List of Globally Threatened Species, because of its rapid decline in the past and the current very limited area of occupancy of <1,500 km<sup>2</sup>. At European level, it is classified as SPEC 1, vulnerable, and is considered to have an Unfavourable conservation status in the EU. It is also included into Annex I of the EU Wild Birds Directive, in Appendix II of the Bern Convention and in Appendix I of the Bonn Convention.

Once widespread and numerous in fen mires and wet meadows throughout Europe, the Aquatic Warbler has disappeared from most of its former range. Nowadays, its world population of only 10,200-13,800 vocalising males is confined to fewer than 40 regularly occupied breeding sites in only five countries, covering together only c. 1,000 km<sup>2</sup>, with four sites supporting over 80% of the global population.

Since 2005 the Aquatic Warbler has been breeding in Belarus, Germany, Hungary, Lithuania, Poland and Ukraine (formerly in Russia and Latvia), with major populations in Belarus, Ukraine and Poland. The breeding distribution is fragmented because of habitat constraints.

The species became extinct in Western Europe during the 20<sup>th</sup> century and has declined dramatically in central Europe. It formerly bred in France, Belgium, Netherlands, former West Germany, former Czechoslovakia, former Yugoslavia, Austria and Italy.

Two small geographically and probably genetically isolated subpopulations of the Aquatic Warbler exist in Germany/northwest Poland and West Siberia (Russia). These populations are most likely facing extinction in the near future.

Outside the current breeding range, the Aquatic Warbler is regularly being recorded on migration, in 11 countries mainly in the west and southwest of Europe as well as in Morocco. The species winters in West Africa south of the Sahara.

The Djoudj area around the Djoudj National Park in the Senegal Delta is known as an important wintering ground since 2007. Another major wintering site for the AW constitutes the Inner Niger Delta (IND), due to flooding regime and vegetation features, and according to the recent records of 13 ringed AW individuals. Smaller and maybe not permanent wintering sites are expected to exist in the northern Sahel (Mauritania and Mali) as well as in Ghana.

### **Principal threats affecting the species**

- Change in hydrological regime of key sites - critical
- Habitat changes due to abandonment of land use - critical
- Habitat changes and habitat loss in wintering areas - high, potentially critical



- Loss of breeding habitat through drainage and peat extraction – medium, but regionally critical
- Habitat changes and loss of broods due to uncontrolled burning - medium
- Eutrophication - medium
- Infrastructure developments - overall low, but locally high
- Unsuitable management by cutting or grazing - low, but locally high

**Goal of the action plan:**

Achieve a species conservation status that justifies removing the Aquatic Warbler from the IUCN Red List of globally threatened species.

For this, in the short-term the current size of all breeding populations of the Aquatic Warbler throughout its range is to be maintained. In the medium to long term, measures have to be implemented that allow the world population to increase and to expand to additional breeding sites (targets: by 2020, 20% population increase and an area of occupancy >1,500 km<sup>2</sup>.)

**Priority conservation actions to be taken:**

- set up and maintain national and international policies and legislation necessary for the conservation of the Aquatic Warbler (site and habitat protection frameworks, impact assessments)
- conserve all existing Aquatic Warbler sites (during breeding, stopover and wintering) through:
  - formal protection and prevention of active deterioration
  - suitable land use or site management (extensive use to prevent succession, suitable hydrological management)
- increase the area of suitable habitat at existing sites and restore additional sites
- continue ongoing monitoring and do research on key conservation relevant aspects
- make Aquatic Warbler conservation information available and promoted it amongst all stakeholders with a role to play in the conservation of the species.

## 1 - BIOLOGICAL ASSESSMENT

### Biogeographic populations

Considering the geographical isolation of subpopulations and the results of the DNA studies of GIEßING (2002), the following biogeographic populations can be separated:

- 1) the central European core population, including Belarus, E-Poland, Ukraine and Lithuania (c. 10,000 males);
- 2) the isolated Hungarian population, not present since 2011;
- 3) the isolated Pomeranian population, including the NW-Polish and the German population (currently- 2014: 13 males);
- 4) the W-Siberian population, which is isolated from the core population by 4,000 km distance. No records after 2000.

### Distribution throughout the annual cycle

The Aquatic Warblers arrive at the Central-European and Hungarian breeding grounds in early May (with first birds arriving regularly in late April), in W-Siberia probably not before mid-May. The first broods are started in mid-May, and the latest young are fledged in mid-August. During this period, a large part of the females performs two broods, with the second brood starting in mid or late June. The number and dates of broods during one season are often adjusted flexibly according to the prevailing habitat conditions.

Autumn migration starts earliest in July and is firstly directed to the West (Germany, Benelux, UK, France, Spain), with presumably the largest part of the population following the coastlines and preferring coastal stopover sites. Maximum numbers at the W-European stopover sites (Belgium, France, Spain) occur in mid-August, latest birds were ringed in France on 3<sup>rd</sup> October 2007 and 16<sup>th</sup> October 2006 (BARGAIN, GUYOT & LE NEVÉ, *pers. comm.*). Aquatic Warblers then go south along the SW-European and NW-African coast lines, using mainly coastal wetlands as stopovers. The first birds arrive in North-Africa (Morocco, Algeria, Tunisia) in September and in West-Africa (West Sahara, Mauritania) in October (SCHÄFFER *et al.* 2006).

At the wintering site in the Senegal delta, first birds arrive in November (probably also late October) and may stay there until mid-March or even longer. On the way back to the breeding grounds, first birds reach the North-African coast in February, most birds pass there in March and April (SCHÄFFER *et al.* 2006). Several records from North-Italy, Switzerland, SE-France, Slovakia and SW-Germany indicate that spring migration is performed a little bit more to the east and more on the direct way to the breeding grounds.

### Habitat requirements

The Aquatic Warbler is a habitat specialist. During the **breeding season** it occurs mainly in sedge fen mires and similarly structured marshy habitats with a preferred water depth of 1-10 cm. In primeval landscapes it depends probably on mesotrophic or slightly eutrophic floodplain fen mires which stay open because of their surface oscillating with the river water table.

Recently, it has been recorded in:

1. Rich floodplain marshes in river valleys, comprising open sedge marshes with medium and large tuft-forming and scattered sedge *Carex* (e.g. Biebrza and lower Oder river

marshes in Poland, upper Ukrainian Pripyat), partly with taller *Molinia caerulea* grass or scattered, low stems of *Phragmites australis*, and often also scattered bushes, which all serve as singing posts for the males; this type of habitat depends more or less on human management (cutting or burning).

2. Mesotrophic or poor eutrophic open sedge fen mires, the ground covered by green mosses; the grassy vegetation is dominated by low or medium, partly tuft-forming sedges (mainly *Carex elata*, *C. diandra*, *C. rostrata*, *C. omskiana*, *C. juncella*, *C. appropinquata*, *C. lasiocarpa*) and cotton grasses (*Eriophorum angustifolium*, *E. gracilis*), shallow water or wet pillows of mosses (Dikoe and Yaselda, Zvanets and upper Pripyat marshes, Uday, Supoy, Biebrza, Žuvintas); avoids too poor mire tracts with *Sphagnum* mosses and *Eriophorum vaginatum*, as well as parts with too deep water, too dense and high bushes or reeds, or too high sedge tussocks.
3. Calcareous marshes with *Cladium mariscus* (Chelm marshes, Poland).
4. Seasonally flooded brackish marshes of the Baltic Sea coast characterised by very weak and low reed stands 80–120 cm high in summer (in Germany, Swina river mouth in Poland, Lithuania along the Curonian lagoon).
5. Wet marshy grasslands covered by high grass and clumps of sedge (in Hungary and in the Narew valley in Poland).
6. Wet meadows of *Phalaris arundinacea* and *Alopecurus pratensis* cut once or twice a year, with sedge patches mainly of *Carex gracilis*, *C. nigra*, and *C. disticha* (Narew valley and lower Odra and Warta floodplains in Germany and Poland, Nemunas Delta in Lithuania).

**During migration** Aquatic Warblers strongly favour low stands of sedges and reeds near open water, normally along rivers, estuaries and coastal lagoons (DE BY 1990). In Brittany (France), two radio tracking studies in 2001 and 2002 revealed that the birds used reedbeds of *Phragmites australis* for resting, and edges of reedbed and marshes of *Scirpus* and *Carex* for feeding (BARGAIN 2002).

The **wintering habitats** in the Senegal delta consist of large open grassy marshes of *Scirpus littoralis*, *Oryza longistaminata*, *Eleocharis mutata* and *Sporobolus robustus*. Aquatic Warbler occurrence is restricted to water-logged areas. Wintering Aquatic Warblers were absent in dry grassy marshes and such with scattered bushes and trees, in narrow *Scirpus* belts at lake shores, in deep water and half-open habitats, and especially in the vast high cattail *Typha australis* stands of the Diama reservoir (FLADE et al. in prep.).

### Life history

- **Breeding** (DYRCZ 1993; DYRCZ & ZDUNEK 1993; SCHULZE-HAGEN *et al.* 1993, 1995; KOZULIN & FLADE 1999; KOZULIN *et al.* 1999; VERGEICHNIK & KOZULIN 2006)

The Aquatic Warbler has an extraordinary breeding system among all *Acrocephalus* warblers (review see SCHULZE-HAGEN *et al.* 1999) with uniparental care by the female and a mating system between promiscuity and polygyny characterised by intense sperm competition. Around 59 % of broods are fathered by more than one male. Males, emancipated of almost all parental duties, sing and advertise throughout the whole reproductive season between early May and late July. Their home ranges average c. 8 ha, have a core area of c. 1 ha and overlap widely. Nests are built on the ground under dry sedges, in tussock hollows and holes, under a canopy of only

green vegetation, above water on broken stalks of old vegetation. Nesting aggregations can be found at sites of high productivity of arthropods. Nestling growth is owing to the uniparental care, retarded, nestlings fledge within 15-16 days. Nesting success is mostly very high, up to 83 %. Losses by predators make up ca. 11 % of nests (data from Biebrza marshes), mainly by harriers *Circus spec.* and small mammals, but predation by shrew species *Sorex spec.* can occasionally be much higher (SW-Belarus, VERGEICHNIK & KOZULIN 2006). Up to 50 % of females rear a second brood.

- **Feeding**

The diet comprises mostly large arthropods of the fen mires. Arachnida, Diptera, Lepidoptera (often caterpillars), and Trichoptera form about 70 % of prey. Prey composition varies enormously due to seasonal and annual fluctuation of the arthropod fauna. Compared with other *Acrocephalus* species, the nestlings are fed with relatively large insects (SCHULZE-HAGEN *et al.* 1989). A rich prey supply seems to be essential because the female feeds the (usually four to five) nestlings alone (LEISLER & CATCHPOLE 1992). Prey consists mainly of arthropods (SCHULZE-HAGEN *et al.* 1989, SCHULZE-HAGEN 1991) with large temporal and site-specific differences in composition (A. KOZULIN unpublished data). Heavy arthropods (of >50 mg dry weight) contribute often a larger share to the total prey biomass of Aquatic Warblers than to that of other *Acrocephalus* species (SCHULZE-HAGEN *et al.* 1989; A. KOZULIN unpublished data). – Flight distances of feeding females are significantly higher in suboptimal habitats (up to 50-60 m) than in optimal habitats (25 m) (TANNEBERGER *et al.* 2008).

The diet composition of Aquatic Warbler observed on migration stopover sites is more specialised compared to those of two closely related species (*Acrocephalus scirpaceus* and *Acrocephalus schoenobaenus*), with large and specific prey (Odonata, Araneida, Leptidoptera, Orthoptera) and a relatively low prey diversity (KERBIRIOU, *in prep.*).

### **Population size and trend**

The breeding range is restricted to the western Palaearctic between 47° and 59° N. Since 2000, breeding occurred in Germany, Poland, Hungary, Lithuania, Latvia (suspected), Belarus, Ukraine and Russia. Possible breeding in Romania and Bulgaria has not been confirmed for the last 40 years. Population figures are given in Table 4.

The breeding distribution is fragmented because of habitat constraints. The species became extinct in Western Europe during the 20<sup>th</sup> century and has declined dramatically in central Europe. It formerly bred in France, Belgium, Netherlands, former West Germany, former Czechoslovakia, former Yugoslavia, Austria and Italy (CRAMP 1992).

Recent studies on genetics and on stable isotopes in Aquatic Warbler feathers show that the German/north-west Polish population is probably genetically isolated from all other studied populations (GIERING 2002). The earlier assumption, that this population has a different, very restricted and more northerly wintering area than the other central and east European populations could not be confirmed through latest genetical studies (ANNE VOGEL *pers. comm.*) and recent analyses of stable isotopes in feathers (STEFFEN OPPEL, *pers. comm.*). However, this sub-population is sharply declining, and is thought to be the last remnant of the formerly huge north German population. The west Siberian population is geographically

completely separate and is probably headed for extinction. In respect of these two sub-populations therefore it is likely that there will be a partial extinction of genetic variability within the species.

**Table 2** - Main passage countries of the Aquatic Warbler.

Country	No. of birds
The Netherlands	Regularly ringed and observed during autumn migration
Belgium	up to 229 birds ringed annually, 1523 records until 2007
France	up to >400 birds ringed annually
Luxembourg	3-6 birds ringed annually (autumn)
Spain	75-100 birds ringed annually after 2003
Portugal	Regularly ringed during autumn migration
UK	4-40 records annually
Switzerland	<10 birds ringed or observed annually
Slovakia	<10 birds ringed annually (spring)
Bulgaria	Ringling was reported (almost) annually before 1980, but records are insufficiently documented; no recent records
Morocco	Regular during autumn and spring migrations, 37 records identified up to 2004

Besides the countries with current breeding occurrence, Aquatic Warblers have been recorded on migration in 11 other countries. Birds from Poland, eastern Germany, and probably the whole Belarusian and Ukrainian Polessye migrate on a westerly heading along the Baltic coast in Latvia, Lithuania, Poland and eastern Germany, then along the North Sea coast of western Germany, Netherlands, Belgium and sometimes England, thereafter heading south along the French and Iberian Atlantic coast (SCHULZE-HAGEN 1993, AQUATIC WARBLER CONSERVATION TEAM 1999).

Scattered records are known from the Mediterranean (also as prey in nests of Eleonora's Falcon *Falco eleonorae*), from Bulgaria and North Turkey (KIRWAN 1992) so that it seems possible, that there is or has been another, much less frequented flyway along the Black and Mediterranean Seas. It is thought that the occasional occurrence on migration along the eastern Mediterranean (also in Cyprus and Egypt) mainly during the 1960s was connected with the increased occurrence in Western Siberia, which was probably caused by extensive habitat destruction in central and eastern Europe during the same period ('Exodus Hypothesis', FLADE *et al.*, in prep.).

The winter quarters lie in West Africa south of the Sahara. The Djoudj area around the Djoudj National Park (Parc National des Oiseaux du Djoudj, PNOD) in the Senegal Delta is known as an important wintering ground since 2007 (Bargain *et al.* 2008, Flade *et al.* 2011). The knowledge about extent and conditions is very good (Tegetmeyer *et al.* 2014). The Inner Niger

Delta (IND) constitutes probably a major wintering site for the AW, due to flooding regime and vegetation features, and according to the recent records of 13 AW individuals (Foucher et al. 2013). Most other potential wintering sites are mainly influenced by river floods (Senegal River valley, including the Bassin de R'Kiz and the upper Niger river valley). Smaller and maybe not permanent wintering sites are expected to exist in the northern Sahel (Mauritania and Mali). These habitats are located at shores of temporary lakes and dependent mainly on local rainfall (for example Lak Aleg, Guimi, Mbout, Lak Mahmouda, Adel Bagrou). We have very little information about potential sites in Ghana. AW were caught or observed in an old river bed near Tono in 1987 (Hedenström et al. 1990) and 2012 on the shore of a reservoir near Tono (AWCT unpublished data).

**Table 3.** Number of records of Aquatic Warblers in wintering sites before 2007 (SCHÄFFER *et al.* 2006).

Country	No. of records
Ghana	1
Mali	5
Mauritania	2
Senegal	45
<b>Total</b>	<b>53</b>

The density of **wintering Aquatic Warblers in the grassy marshes of the Senegal delta** was estimated at 0.5-1 (-1.5) birds per hectare (but in a small area Aquatic Warbler was much more abundant). The total population estimate is not less than 2,000-10,000 birds (at least 10%, eventually up to 50% of the global population).

**Table 4 - Population size (breeding) and trend by country (figures indicate the maximum number of singing males)**

Country	Breeding No. (singing males)	Quality	Year(s) of estimate	Breeding Population trend in the last 10 years	Quality	Maximum size of migrating or non breeding populations in the last 10 years	Quality	Year(s) of the estimate
<i>Belarus</i>	5,490-5,840 (2,968-5,548)	good	2007-2009 (2013)	decline	good			
<i>Germany</i>	0-10 (2)	excellent	2007-2009 (2014)	decline	excellent			
<i>Hungary</i>	132-230 (not present)	excellent	2007-2009 (since 2011)	steep decline	excellent			
<i>Latvia</i>	0-3 (last record in 2004)	excellent	2000-2009	sporadic occ.	excellent			
<i>Lithuania</i>	110-150 (106)	excellent	2007-2009 (2014)	decline since 2004	excellent			
<i>Poland</i>	2,700-3,100 (3,000)	excellent	2007-2009 (2012)	Fluctuating slight increase	good			
<i>Russia</i>	0-500 (last records in 2000)	poor	2001	unknown, but most likely extinct.	poor			
<i>Ukraine</i>	3,500-4,340 (3,400-3,780)	good	2007-2009 (2014)	Fluctuating or slow decline	good			
<i>The Netherlands</i>						ann. >100 ringed	good	1995-2009
<i>United Kingdom</i>						4-40/a ringed	good	1995-2009
<i>Belgium</i>						up to 230/a ringed	good	1995-2009
<i>Luxembourg</i>						22 ringed since 2000	good	2000-2009
<i>France</i>						up to >400a ringed (max. 1,200)	good	1995-2009 (2011)
<i>Switzerland</i>						<10/a ringed	medium	1995-2009

<i>Spain</i>						75-100	good	1995-2009
<i>Portugal</i>						2-15	poor	2008
<i>Slovakia</i>						<10/a ringed	medium	1995-2009
<i>Czech Republic</i>						<10/a ringed	good	1946-2011
<i>Morocco</i>						up to 2 ringed	good	1995-2009
<i>Senegal</i>						Up to 1,000	medium	2007-2009
<i>Mauritania</i>						5 AW ringed since 2011	poor	2013
<i>Mali</i>						19 AW ringed since 2011	poor	2013
<i>Ghana</i>						Two records	poor	2012
<b>Totals</b>	<b>10,200-13,800</b>	<b>good</b>	<b>2001-2009</b>	<b>fluctuating</b>	<b>good</b>		<b>medium</b>	



## 2 - THREATS

### General overview of threats

The Aquatic Warbler is a specialist of large open sedge and *Cladium* fen mires, which has suffered a very severe decline in western and central Europe due to habitat loss. These losses were caused mainly by drainage measures in fen mires and floodplains in order to enable or to intensify agricultural use, and for peat extraction. In addition, changes in the hydrological regime of the landscape had a severe impact. Other habitat changes like agricultural abandonment and uncontrolled burning became important only after fundamental changes of the general hydrological regime of suitable wetland habitats, but play a major role today. In the wintering sites, habitat losses through creation of fresh water reservoirs and increase of hydro-agriculture are of severe importance.

### List of critical and important threats

- **Change in hydrological regime of key sites**

Most Aquatic Warbler sites suffer to various degrees under unfavorable man-made changes in the hydrological regime. This can lead for example to (1) lack of water, leading to reduced breeding success and population decline, (2) summer flooding with destruction of nests and (3) vegetation succession and loss of Aquatic Warbler habitat. In Ukraine, recently the deepening of parts of the upper Pripyat river channel resulted in a lower water table in the adjacent floodplain sedge mires and abandonment of Aquatic Warbler breeding sites. In Senegal, the major wintering site of the global Aquatic Warbler population is completely dependent on artificial flooding through the local water management facilities.

Importance: critical

- **Habitat changes due to abandonment of land use**

This is an important factor in almost all remaining Aquatic Warbler sites in Europe, with the exception of the Hungarian site. It is presumably less important for African stopover and wintering sites. If cutting of vegetation and/or burning (or in some places grazing) ceases, succession takes place and the habitat becomes unsuitable due to overgrowing by dominant sedges/grasses, high reeds, willow bushes or succession forests of birch or alder. In the past, these sites have been extensively used for haymaking or reed cutting. These traditions have now stopped at many places.

Importance: critical

- **Habitat changes and habitat loss in wintering areas**

Large formerly (most likely) suitable habitat areas in N-Senegal and S-Mauritania have been recently lost through transformation in fresh water reservoirs (e.g. Diama reservoir at the lower Senegal River, Keur Macène in Mauritania) or in irrigated hydro-agricultural crops (rice, sugar cane; e.g. S of Richard-Toll in Senegal). Drought and habitat alteration in the winter quarters could be additional bottlenecks for the Aquatic Warbler. Main threats which have been identified are: drying up due to periods of

drought; overgrazing of grasslands by cattle; succession of grass associations into scrub; increasing desertification as well as salinisation of irrigated soils.

Importance: high, potentially critical

- **Loss of breeding habitat through drainage and peat extraction**

This threat is responsible for the dramatic historical decline of the species. The rate of active destruction of breeding sites through drainage and peat extraction has slowed considerably in the past 15 years, so that this threat is now localised, but critical where it occurs. This is usually related to drainage for agriculture or peat extraction/excavation, damming of floodplains (Pripyat, Yaselda), unfavourable water management (e.g. water extraction or drainage of adjacent areas), and canalisation of rivers. Currently there are problems at several sites in Ukraine, Belarus and Poland with drainage amelioration and peat extraction affecting adjacent sedge fens (upper Pripyat, Zvanets, Dikoe, Sporova, Ner Valley) and also direct destruction still of fen mires in Ukraine (Volyn and Rivne regions).

Importance: medium, but locally critical

- **Habitat changes due to uncontrolled burning**

Burning is often used as a management tool in pastoral agriculture. Uncontrolled fires, especially in spring and summer and if the mire is very dry, cause severe habitat destruction by burning out of the upper peat layer. In Biebrza there was in 1994 a 3,000-ha fire which caused a great deal of soil mineralization, but uncontrolled burning is more often a direct threat, especially (to birds and nests) during the breeding season. Big spring and summer fires happened also in the Zvanets and Yaselda mires in Belarus. In Hungary, burned areas of suitable habitat were reoccupied by Aquatic Warblers only 5-6 years after fire. - But note: *controlled* burning in winter or early spring during appropriate water or snow levels can be an appropriate management technique for maintaining the habitat quality.

Importance: high

- **Eutrophication**

Eutrophication of floodplain fen mires from city waste water and fish breeding ponds, by inundation with polluted river water, leading to changes in vegetation structure and species composition and speeding up the rate of vegetation succession, was observed in the Yaselda floodplain downstream of Berioza (Belarus) and in parts of the Rozwarowo Mire in NW-Poland.

Mineralization of mires due to lowered water levels leads to minerals being washed downstream to flooded Aquatic Warbler areas, thus speeding up the rate of vegetation succession. This could be an important factor (Yaselda incl. Sporova mires, Belarus; several areas in the upper Pripyat region, Ukraine).

Eutrophication from atmospheric nitrogen deposition and increased CO<sub>2</sub> concentration in the atmosphere in general also contribute to the problem of accelerated vegetation succession.

Importance: medium

- **Infrastructure developments**

Habitat loss and alterations in hydroregime, due to building of roads on dams crossing fen mires and floodplains has occurred at some sites (historically at the Biebrza Marshes in Poland, now e.g. Dikoe mire in Belarus) or is still planned (lower Oder in Germany).

Importance: overall low, but locally high

- **Unsuitable management by cutting or grazing**

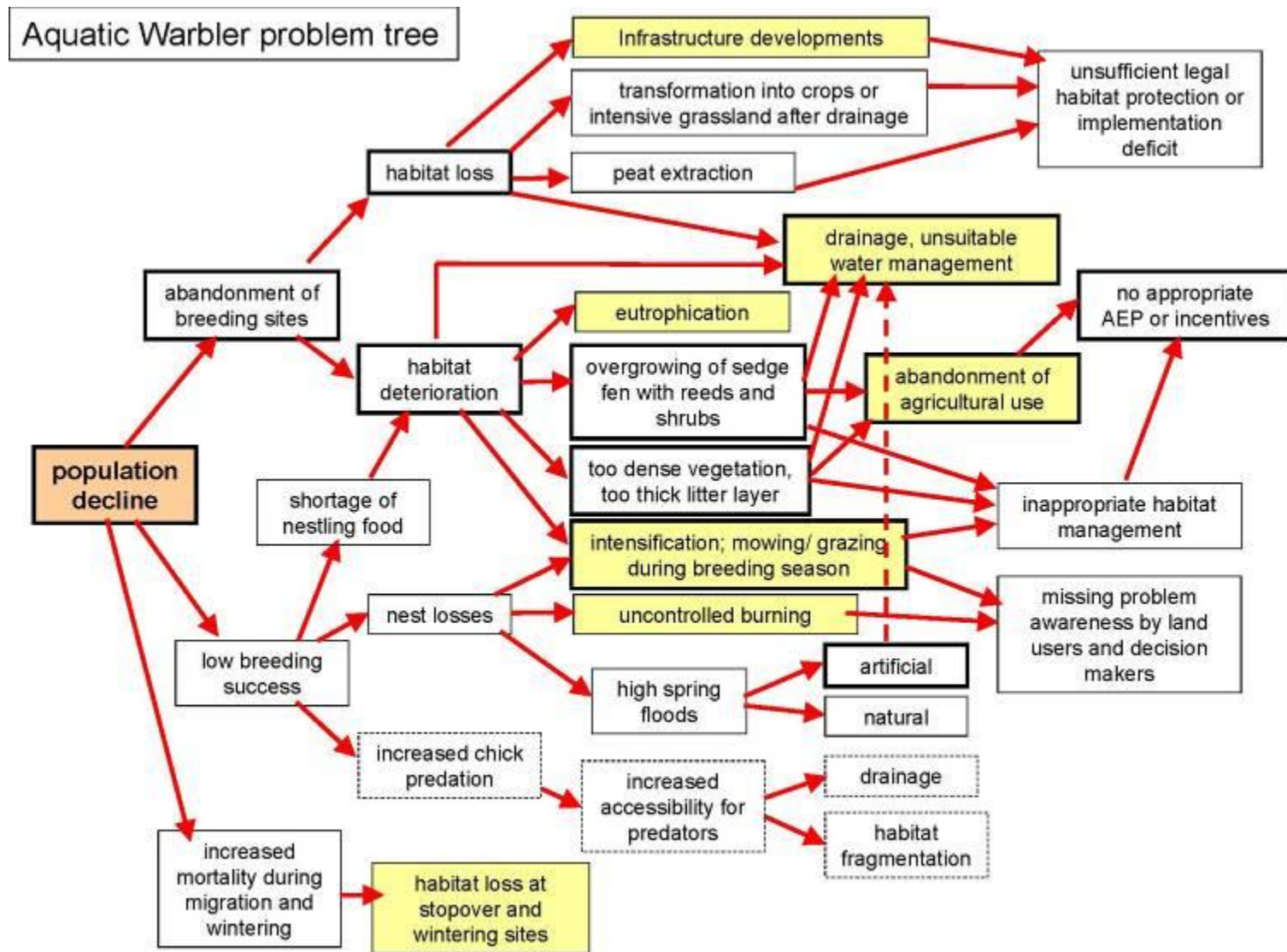
Some sites in Hungary, NW-Poland, NE-Germany (Swina delta and lower Oder valley), in parts of the Biebrza Valley in Poland, the Ner Valley in Poland and Lithuania (Nemunas/Neman delta) suffer from too frequent or too early cutting or too intensive grazing, or from unfavourable agricultural management measures during the breeding season (too low intensity of cutting or grazing is included in the earlier section on 'abandonment').

Importance: low, but locally high

### **Population Viability Analysis**

A PVA for the species has not been elaborated until now, despite (at least) a part of the necessary data is available. AWCT members are currently thinking about preparing a PVA in the near future.

Problem tree - Legend: (solid frame - high impact; normal - medium impact; dashed - low impact)



### 3 - RECENT CONSERVATION MEASURES

- **Belarus**

Systematic surveys in the whole of Belarus in 1995-2009 showed, that Belarus holds nearly half of the known world population of Aquatic Warbler, altogether 4000-7600 singing males. It is estimated from retrospective analysis of open fen mire areas, that since the 1960s suitable habitat area and population size of Aquatic Warbler must have suffered a decline of more than 90% within the last 30 years, mainly due to drainage, land reclamation and peat extraction (KOZULIN & FLADE 1999). Nearly 15,000 km<sup>2</sup> of fen mires have been drained since 1960; the open fen mire area decreased from c. 3,800 km<sup>2</sup> in the mid-1970s to c. 440 km<sup>2</sup> in 1995/96. The key remaining breeding sites: Zvanets, Sporava and Dzikoe hold 90% of Belarusian and 40% of the global AW population.

Considering the importance of the Belarusian mires for the conservation of the Aquatic Warbler, an international project was implemented in Belarus 1999-2002 to elaborate management plans for three key fen mires. Initiated by APB-BirdLife Belarus and the Royal Society for the Protection of Birds (UK), the project was funded by the Darwin Initiative for the Survival of Species (UK) and UNDP. As a result, the management plans for Zvanets, Sporovo and Dikoe have been successfully prepared. The management plans identified main threats and specified and prioritised actions that need to be implemented. For all three sites, water management was deemed as priority action and several conservation projects targeted restoration of hydrological regime of these sites. Hydrological management helped to stabilise water level and to prevent further quick habitats' degradation.

Following restoration of water regime, vegetation management was pioneered. To prevent natural successions and overgrowing of open fen mires the pilot project "Conservation of open fen mires in Sporauski reserve" started in 2006 as the second stage of management plans implementation. The project was initiated by APB-BirdLife Belarus in partnership with State biological reserve "Sporauski" in 2006 and was supported by GEF Small Grants Programme. The results showed that mowing is technically possible and can be economically justifiable. Altogether 397 hectares of Sporava mire were mown and 30 hectares were cleared from bushes since 2006. Monitoring works implemented showed positive effect of habitat management, leading to up to three times increase in the density of vocalising males of the Aquatic Warbler. It should also be underlined that the implementation of large-scale management activities is vitally important for all key breeding sites.

The legislative base of controlled burning as an effective and cheap management tool was established in 2007. The Law of the Republic of Belarus on Wild Animals allows scientifically grounded burning of dry vegetation with the purpose to benefit red listed species in frame of SPAs.

- **Belgium**

On migration (almost exclusively in autumn), the Aquatic Warbler has been observed at 89 sites, only 44% of which are formally protected, 56% unprotected. 1,523 records have

been collected until 2007, mostly through ringing. This includes 2 very old breeding records. The species occurs most regularly at three coastal wetlands (Veurne, Zeebrugge, Lapscheure), two of which are bound to disappear in the near future. In Veurne, since 1988 between 7 and 84 birds have been caught and ringed each year (N. ROOHTAERT, *pers. comm.*). In Zeebrugge, in 1987–1990 between 11 and 145 Aquatic Warblers have been caught and ringed (T. DE SCHUYTTER, *pers. comm.*).

Large areas of inland wetlands are going to be developed in the coming years providing good chances for replacement stopover habitat for the species.

- **Bulgaria**

Notes about breeding of the Aquatic Warbler proved to be unreliable (e.g. about possible nesting in grassy gardens at the edge of villages and towns, KUZNETSOV 1967 cited in NANKINOV 1995). There is not any evidence for breeding in the country (P. IANKOV *pers. comm.*). NANKINOV (1995) published a summary of – partly unconfirmed and doubtful - records in Bulgaria. Most of these observations and captures origin from the period 1976 to 1988. 401 Aquatic Warblers have been ringed, most of them from August to October. A small peak occurred also in May. The reported maximum of birds caught for ringing was 186 in 1977 and 118 in 1980. However, all these figures need still to be critically reviewed and confirmed.

- **France**

Large reedbeds on the coast (Channel, Atlantic and Mediterranean) are regularly used during migration, occasionally also inland sites in the SE of the country during spring migration. The species is rare during spring passage. In autumn, France could receive 90-100 % of the global population. The number of birds ringed has remained fairly stable despite an increase in ringing effort (EURING ACRO PROJECT). The number varies between 110 and >400 individuals caught each year (JUILLARD *et al.* 2006; B. BARGAIN *pers. comm.*).

- **Germany**

The breeding population is the westernmost and smallest of all the European countries. The former population at the Baltic Sea coast near Greifswald became extinct in 1998 as a result of overgrazing. Since 1999 there has been only one isolated breeding site, the Lower Oder valley National Park in the north-east corner of Germany close to the Polish border (TANNEBERGER *et al.* 2008). The national park administration tries to improve management since 2007. In the lower Peene valley, habitat restoration measures (mowing, controlled burning etc.) have been started in course of the running Polish-German EU LIFE project (see Poland). The remaining German population is only 0-15 singing males in total (2007: 10 males; 2008: 1 male). The year 2009 was the first year without any record during the breeding season in Germany.

- **Hungary**

The only breeding population is in the Hortobágy National Park, where it has increased from 19 singing males in 1971 to 700 singing males in 2001 (KOVÁCS & VÉGVÁRI 1999, VÉGVÁRI *pers. comm.*). Following a serious drought in 2002 and the burning of 30 % of Aquatic Warbler habitats, only 386 singing males were recorded in that year. In 2006, after a big long-lasting and high spring flood, the population crashed down to only 60 males, but recovered slightly to 132 males in 2007, 220-230 males in 2008, and 190-200

males in 2009. - A monitoring scheme has been in effect for more than 20 years, longer than in any other country.

- **Latvia**

There are 36 confirmed records since 1940 (mostly captures at Lake Pape and Lake Liepāja, A. CELMIŅŠ, unpublished data) and further unconfirmed records, but only one proof of breeding in 1940 at Lake Babīte (ROMS 1942). Special searches for breeding populations of the species in 1997 at the ten most promising sites in the whole country remained unsuccessful (O. KEIŠS, unpublished report), despite some suitable habitat areas being found. However, in 2000-2002, 1-3 singing males were observed at Lake Liepāja (A. CELMIŅŠ, unpublished data). In the following years up to 2009 the site was not occupied. This only Latvian site is heavily threatened by overgrowing by reeds and willow-bushes, as well as unfavourable hydrological regime. Thus the breeding occurrence of Aquatic Warbler in Latvia has to be classified as irregular and sporadic.

- **Lithuania**

A systematic survey in 1995-1997 (Ž. PREIKSA, unpublished report) in the central and western parts of the country revealed eight localities with 225-280 singing males in total, with main breeding sites along the Curonian Lagoon, especially in the Sakučiai - Dreverna area (200-300 singing males), the Nemunas/Neman delta Regional Park (c. 50 males) and Žuvintas Biosphere Reserve (decrease from c. 25 in 1986 to 10-15 males in 2000-2002). The total population reached a peak in 2004 (309 males), but then declined to only 150 males in 2007, 110 males in 2008 and 150 males in 2009. Altogether, habitat changes related to vegetation succession due to cessation of cutting (or other appropriate management like controlled burning) is the most important threat (Žuvintas), followed by changes in water table (Nemunas/Neman delta). Cutting of vegetation in the breeding season has been identified as a problem for Aquatic Warblers in the Nemunas/Neman delta Regional Park (P. MIERAUSKAS, Ž. PREIKSA pers. comm.). An action plan for the species and a management plan for Nemunas/Neman delta Regional Park have recently been prepared and now need implementation. At the Curonian lagoon, the two main sites (Kliosiai and Svencele) are designated as SPA. Additionally, also the Serpiejai mire should be established as SPA. A management plan should be prepared for Kliosiai site, whereas for Svencele site this has been already done. - It is still necessary to do a proper survey in the eastern parts of the country, because further suitable breeding habitats are known there.

- **Luxembourg**

The Aquatic Warbler is being recorded in Luxembourg mainly during autumn migration, but occasionally also during spring. Ringing schemes show that half of the individuals are adult birds (Heidt 2008). So far, 34 records have been collected for Luxembourg, most of these by ringing schemes, 22 of these since 2000 (Conzemius 1995, Heidt 2008, Lorgé 2008 and unpublished). The records of the last 10 years origin from three sites, which are all protected as Special Protected Areas and as National Nature Reserve. One of these sites seems to be the most important one (Valley of the Syre), as it holds 18 of the records since 2000. All three sites are to be qualified as large reedbeds, but the most important one (the largest reedbed of Luxembourg - the Valley of the Syre) also has adjacent large sedge meadows. Conservation measures are undertaken since years in all three sites.

- **Mauritania**

The species is recorded in Mauritania mainly during migration (40 records identified up to 2004 in both migration periods). It is however likely, that sites in southern Mauritania, especially along the Senegal River, are being used also as wintering sites. The most likely potential wintering site in Mauritania is the Diawling National Park in the Senegal Delta, located very close to the Djoudj NP in Senegal on the other side of the Senegal River. The Diawling NP now has a system that allows the administration to regulate the water levels in the park for the benefit of wildlife. A satellite image study identified several smaller potential wintering sites in southern Mauritania, but first surveys in 2008 were unsuccessful. The identification of regular wintering sites is the most urgent conservation task for the Aquatic Warbler in this country.

- **Poland**

The most recent full-country survey of the species in 2009 resulted in 3,162 singing males. Rather large year-to-year differences in the national population are mainly explained by fluctuations in the number of singing males at the key site, the Biebrza Marshes. Overall, the population is fluctuating with a possible underlying slow decline. Especially smaller sites, including those of the isolated Pomeranian population show declining numbers. There are three main subpopulations:

1. The Podlasie population in north-eastern Poland in the valleys of the rivers Biebrza and Narew: This is the largest population in Poland, with 2638 singing males in 2009 (85% of the national population). Of these, the bulk is found within the Biebrza National Park (c. 2402). Smaller numbers are found in the buffer zone of the Biebrza National Park (126) and along the Narew river valley, including the Narew National Park (101 according to data from 2009). Overall, the population is fluctuating, but largely stable. All sites are included in SPAs, but only the Biebrza and Narew National Parks have additionally a national protected area designation.

Without conservation activities a decline due to overgrowth by reeds and willow-birch communities, caused by the cessation of traditional cutting and grazing combined with the effects of historical drainage works would be inevitable. Conservation work, implemented by the Biebrza National Park administration and the Polish Society for the Protection of Birds (OTOP), especially within an EU-LIFE Project led by OTOPI-BirdLife Poland ("Conserving Aquatic Warblers in Poland and Germany, LIFE05 NAT/PL/000101, duration 2006-2010), has considerably improved conditions at some main sites, while smaller sites are in danger of disappearing soon.

2. The Lublin population in south-eastern Poland: In 2009, c. 460 singing males occupied two complexes of fen mires located within the Poleski National Park and around the town of Chelm, as well as a newly discovered site in the floodplain of the Bug River near Chelm. All sites are protected as SPAs. All but one site are also included in national protected areas (Poleski National Park, Chelm Landscape Park). The population at these mires is decreasing during the past decade, due to successional overgrowth of the breeding sites after abandonment of land use and the effective prevention of wild and illegal fires. All park administrations and two NGOs (Lublin Ornithological Society and OTOPI) are making efforts to prevent further succession at these sites, but the efforts are to date not sufficient nor



sustainable. The sites are not covered by the EU LIFE Project “Conserving Aquatic Warbler in Poland and Germany”.

3. In Western Pomerania (lower Oder valley, Oder and Swina estuary) the number of recorded singing males was 383 in 1991, 217 in 1993, 226-231 in 1997, 60-80 in 2002, 60-89 males in 2003-2007, and only 54 males in 2009. In 2009, 6 sites were still occupied. All are located within SPAs, two sites are included in the Wolin and Warta Mouth National Parks, all other sites are not protected under national designations. The largest Pomeranian breeding site of Aquatic Warblers, holding > 50% of the Pomeranian population in recent years, is located at the Rozwarowo Marshes near Wolin. The site is used for winter reed cutting. All sites are focus areas of the EU-LIFE Project “Conserving Aquatic Warblers in Poland and Germany” (LIFE05 NAT/PL/000101, led by OTOB-BirdLife Poland, duration 2006-2010). Management Plans for all these sites are being developed in cooperation with the relevant land users. Active management measures are being implemented at all sites, which are due to improve the habitat situation and to stop the further decline of this isolated population.

A few not regularly occupied small sites exist in central Poland that could provide a link between the above populations, the most stable of which currently seems to be the Ner River Valley with up to 10 singing males in 2007.

An agri-environment scheme focussing on Aquatic Warblers is being implemented since 2009, which should provide large-scale improvement of the habitat conditions across Poland.

- **Portugal**

At least 88% of all records are concentrated in one site, the Lagoa de S Andre, where 2-15 birds are estimated for the year 2008. Part of the concentration may be explained by intensive ringing work at this site. The site is fully protected as protected area and SPA, like most other potentially suitable coastal lagoons in the country.

It would be desirable to include habitat management objectives to benefit the Aquatic Warbler into the management plans of some of the most suitable stopover sites.

- **Russia**

The species is rare and of erratic occurrence at the Curonian Lagoon in the Kaliningrad region (not more than four singing males found, KALYAKIN 1996) in close neighbourhood to the Lithuanian core population. A review of all available literature data in Russia (KALYAKIN, unpublished report, 1998; AQUATIC WARBLER CONSERVATION TEAM 1999) shows that the species was rare in all territories within its Russian range during the last 100 years, but possibly overseen at many sites during the first half of the 20<sup>th</sup> century. Only very few data could be collected on its (occasional) breeding. Recently, no stable local breeding population is known, and none was known in European Russia in the past. Moreover, the small and decreasing of number of records does not suggest the presence of large unknown breeding populations.

Special attempts to find breeding birds in the most promising parts of European Russia were made in 1993-1995 and especially 1998 (Perm, Ryazan, Moscow and Vladimir regions) and 2006 (Smolensk, Pskov and Tver regions), but remained unsuccessful -

despite some smaller patches of suitable habitats being found (FLADE, KALYAKIN and co-workers).

Four AWCT expeditions to W-Siberia in 1999-2000 could not find any Aquatic Warblers in Tomsk-Barabinsk-Novosibirsk region, despite large areas of suitable structured habitats occur here. In the Shegarka mire W Tomsk, where RAVKIN (1973) reported a big population in 1967, the species was definitely absent in 1999. In 2000, very small numbers of singing males (11-15 in total) were found near Tyumen and at two sites in northern Omsk oblast, but these sites were abandoned in the subsequent years. The total West Siberian population was estimated at 50-500 males maximum in 2000, and it is believed that this is the last remnant of a former larger population connected with central Europe, now going extinct. There exist large areas of suitable fen mires in West Siberia, but the population is probably too isolated and small to survive in this region of sub-optimal climate at a great distance from the probable wintering sites.

- **Senegal**

Before 2007, 45 records mainly from the Djoudj National Park on the coast were known (SCHÄFFER *et al.* 2006). In January 2007, the wintering habitats in vast open water-logged grass marshes inside and north of the Djoudj National Park have been discovered by an AWCT expedition and 56 Aquatic Warblers were caught. The density was estimated at 0.5-1.0 (or 1.5) birds per hectare over a total area of suitable habitat of 2,000-10,000 hectares (extrapolation 2,000-10,000 birds in total). That means, that this site holds between 10 and 50 % of the entire global population.

Intensive search for more potential wintering sites in northern Senegal in January 2008 (and in The Gambia in January/February 2009) was not successful. The very few potential marshes were either transformed into hydro-agriculture (Richard-Toll) or too dry (Lake Ndiel S of Ross-Béthio).

Potential threats arise from the ongoing change of the whole hydrological regime, since the Senegal River was enclosed with dikes in 1964 and dammed by the Diama dam upstreams of St. Louis in 1986 (begin of the works) -1992. The flooding of the National Park and surroundings is now managed artificially. It is thus of prime importance to carry out further detailed studies on these potential or ongoing habitat changes and to elaborate a thorough threat status analysis. These studies have started in course of a PhD project in January 2008.

Another threat for grass marshes in Senegal and southern Mauritania is the transformation of grass marshes into hydro-agriculture, mainly sugar cane and rice fields. At Lac de Guiers east of Djoudj NP, large areas of grass marshes have been transformed in sugar cane fields in the past two decades. At Keur Macène in Mauritania, large areas of formerly suitable habitat have been recently transformed in a big fresh water reservoir and are overgrown with the invasive cattail *Typha australis*. We assume that other potential wintering sites of Aquatic Warbler in sub-Saharan W-Africa could be under serious threat.

- **Slovakia**  
Only one site of regular occurrence is currently known. It seems to be frequented especially during spring migration. Given the country's location close to nearest breeding sites in NE-Hungary and SE-Poland in the future even breeding birds may be discovered. No information on recent conservation measures is available at this stage.
  
- **Spain**  
The Aquatic Warbler is a regular migrant, using both coastal and inland wetlands. It has been recorded in spring as well as in autumn, however, it is more abundant during autumn migration, when it is found in wetlands of the western Iberian Peninsula. The Ebro valley acts as a connection corridor along the migration routes (ATIENZA *et al.* 2001).  
Main identified site is the Laguna de la Nava in North Spain (687 birds ringed there from 1999 to 2007, occurring between end of July and mid-September, with maximum numbers in late August). The site benefits from a LIFE project run from 2002-2006. This was the first LIFE project with the specific object of Aquatic Warbler conservation in Europe, and included, among other provisions, the restoration of lakes, land acquisition to increase the size of suitable habitats, improvement of water quality, studies of phenology and ecology of the species, and public awareness-raising campaigns.
  
- **Switzerland**  
Regular records during migration, especially during spring. No information on recent conservation measures is available at this stage.
  
- **Ukraine**  
Extensive surveys in 1996-1998 by A. POLUDA and co-workers in central and north-west Ukraine, and FLADE, GORBAN, KOZULIN, TISHECHKIN and co-workers along the upper Ukrainian Pripjat in Volyn region, revealed a total population of 2,400 - 3,400 singing males, which are mainly concentrated at the following sites:
  1. The Pripjat population group: Upper Pripjat and tributaries (Volyn and Rivne regions) 1,850-3,700 males, with bigger subpopulations along the Pripjat between Ratno and Cyr mouth (1,120-1,450), Vizhery mire, lower Turiya (250), Stochid valley (200-300), and the Styr valley (150).
  2. The Desna-Dniepr population group: Kyiv and Chernigiv regions c. 500-580 males, with bigger subpopulations in the Uday valley (250-270) and the Supoy valley (180-200).

Despite of the lack of reliable reference data one can assume, that the Aquatic Warbler must have suffered a dramatic decline due to habitat loss in the whole Ukraine during the past decades. Nevertheless, the actual situation of the two sub-populations seems to be very different: The Uday and Supoy populations seem to be not actually threatened. Major parts are included in protected areas and, more important, habitat conditions seem to be rather stable without management. The habitat is a mesotrophic fen mire, which oscillates according to the river water table and is not regularly used for cutting or grazing. There were also no signs of impact of burning in the survey years. In the past, parts of Supoy valley have been destroyed as Aquatic Warbler habitat by

damming up of fishponds and alteration of water table, and big parts of Uday valley have formerly been drained. Thus the remaining breeding habitats are remnants of a much bigger area of suitable habitat. It should be ensured by legislative and administrative measures that the remaining habitats have to be protected under the status quo conditions.

In contrast, parts of the upper Pripyat population are threatened. Only about 50% of the population is disposed within protected territories. On one hand, drainage work for agriculture and peat excavation has destroyed huge fen mire areas even during the past 5-10 years and is still continuing; the amount of direct habitat loss is difficult to assess, but is likely to exceed 80 % within 30 years. On the other hand, the remaining fen mires are heavily impacted by vegetation succession due to alterations of hydroregime and ceasing of traditional land use practices.

The most suitable and stable (but also declining) habitats have survived very close to the Pripyat river, where regular flooding and high water table restrains vegetation succession. The two most important subsites, Zalesye mire (200-300 males) and the Pripyat marshes between Vetly, Borki and Tsir mouth (600-800 males), are still used for hay making in some parts (mostly smaller patches), but more than the half of these floodplain mires are overgrown by willow shrubs in the meanwhile. Without large-scale habitat management the Aquatic Warbler populations are likely to become extinct within the next 20-30 years.

Recently, a severe new threat has arisen at the upper Pripyat: parts of the Pripyat river channel have been cleaned deepened. As a consequence, the water table of adjacent floodplain sedge mire declined and several (smaller) breeding sites were abandoned in 2006 and 2007.

- **United Kingdom**

In the UK, the bird is mostly recorded in August. Numbers have been maintained until at least the end of the 1990s, though this situation may be due to some extent to increased ringing effort. All the most important sites known regularly to support the species have been designated as Special Protection Areas (SPA) and/or are within nature reserves.

#### 4 - POLICIES AND LEGISLATION RELEVANT FOR MANAGEMENT.

##### **International conservation and legal status of the species**

The Aquatic Warbler is classified as Vulnerable at a global level (BirdLife International 2000) and is listed as Vulnerable in the *IUCN Red List of Threatened Species* (Hilton Taylor 2000). At the European level it is classified as Endangered (TUCKER & HEATH 1994). It is also included in Annex I of the EU Wild Birds Directive, in Appendix II of the Bern Convention and in Appendix I and Appendix II of the Bonn Convention.

An International Memorandum of Understanding for the Conservation of the Aquatic Warbler has been set up under the Bonn Convention for Migratory Species of Animals (CMS) in April 2003. By now, it has been signed by 12 out of 15 CMS-recognised range states and will soon be signed by France. Only the Netherlands and Russia have not yet joined the Memorandum. The number of recognised range states is expected to be extended by a further 7 countries during the next MoU meeting in 2010.

##### **National policies, legislation and ongoing activities**

**Belgium:** A detailed Aquatic Warbler Action Plan has been prepared for the community of Flanders in 2007. As the vast majority of records originate from this region, this plan can be considered a National Action Plan. The plan foresees the creation of additional suitable habitat, especially within protected areas to compensate for the loss of some unprotected sites. The species has been added to a group of species of community interest that occur in Flanders, and for which so called 'conservation objectives' are currently being prepared. These 'conservation priorities' are to be the guidelines for future conservation measures.

**Belarus:** In the last 2004 edition of the Red Data Book of the Republic of Belarus, the Aquatic Warbler has the status of a rare, locally distributed species. It is listed as Endangered (EN) species in the Category II. This means an increase in protection status comparatively to the previous 1994 edition of the Red Data Book of the Republic of Belarus, where it was listed in Category IV as a data deficient and insufficiently known species. This level of protection is sufficient to ensure adequate protection of the species and its breeding sites. 98% of Belarusian AW population breed in protected areas, 99% of AW population occupy habitats that are designed as IBA, 92% breed at Ramsar sites.

**France:** The Aquatic Warbler is strictly protected in France; it is included in the National Red Data Book as Non-Evaluated Species (BARGAIN 1999). The main stopover resting sites are classified as SPA. An EU-LIFE Project is currently (2004-2009) in operation at three experimental sites in Brittany (run by the NGO Bretagne Vivante). The French government has just issued an invitation to tender (May 2008) to set up a National Restoration Plan for Aquatic Warbler during one year.

**Germany:** The Aquatic Warbler is classified as Critically Endangered in the German Red Data Book and is legally protected.

**Hungary:** The species is strictly protected under the Hungarian law for the conservation of nature and is listed as Endangered in the Hungarian Red Data Book.

**Latvia:** The species is listed as Endangered (category 1) in the Latvian Red Data Book (LIPSBERGS 2000) and it has been included in the List of strictly protected species of Latvia.

**Lithuania:** The Red Data Book (2001) classifies the species as especially protected, Vulnerable.

**Luxembourg:** The Aquatic Warbler is strictly protected under different legislations, regulations and the modified nature protection law of 2004. Management Plans are in preparation for the three sites where AW regularly occur. A national Species Action Plan is discussed, focusing mainly on the site of the Valley of the Syre.

**Mali:** No information available at present.

**Mauritania:** No information available at present.

**Poland:** The Aquatic Warbler is protected under the Nature Conservation Law of 1991 and is listed in the Polish Red Data Book as Endangered (GLOWACINSKI 1992).

**Portugal:** In Portugal the Aquatic Warbler is classed as Critically Endangered according to the National Red Data Book (Cabral et al. 2005).

**Russia:** The Aquatic Warbler is included in the Red Data Book of 2000 in category 4 (insufficiently known). It is also listed in three regional official Red Data books, eleven regional scientific Red Data books, and five regional official Red Lists.

**Senegal:** In Senegal the Aquatic Warbler is protected by law, but the conservation status is evaluated as insufficient by the National Park administration (DIRECTION DES PARKS NATIONAUX DU SÉNÉGAL 2006)

**Slovakia:** No information available at present.

**Spain:** The Aquatic Warbler is strictly protected in Spain; it is included in the the List of Wild Species under Special Protection included at the Royal Decree 139/2011. In the bird Red Data Book the species is listed as Vulnerable in accordance with IUCN criteria. The majority of the areas where the species is regularly recorded are protected, including by Ramsar sites and Special Protection Areas (SPAs), National Parks (Doñana) and Protected Natural Areas of the Autonomous Communities.

**Switzerland:** No information available at present.

**Ukraine:** The species is included in the Second Edition of the Red Data Book (1994).

**United Kingdom:** The Aquatic Warbler is identified as a Red List species owing to its status as globally threatened, and because more than 50% of the UK passage population is restricted to 10 or fewer sites (Gregory et al. 2002). A single species action plan for Aquatic Warbler in the UK was published in 1995 and has been implemented since then (<http://www.ukbap.org.uk/UKPlans.aspx?ID=76>)

## 5 - FRAMEWORK FOR ACTIONS

### GOAL

Achieve a species conservation status that justifies removing the Aquatic Warbler from the IUCN Red List of globally threatened species

### OBJECTIVES

#### A.

**In the short-term the current size of all breeding populations of the Aquatic Warbler throughout its range is maintained.**

#### Target:

*Until 2012 the following population sizes are maintained:*

- world population 10,500-14,200 singing males
- central European population: 10,000-13,500 singing males (of these, 150-300 singing males in the Baltic States)
- Hungarian population: > 200 singing males
- Pomeranian population: 80 singing males

#### B.

**In the medium to long term, the world population of the species has started to increase and to expand to additional breeding sites.**

#### Target:

- By 2020, the area of occupancy of the species (=land surface of all currently occupied breeding sites) increased from c. 1,000 km<sup>2</sup> to > 1,500 km<sup>2</sup> and the world population has increased by at least 20% since 2008 (world population 12,600-17,000 singing males).

### RESULTS

#### **Result 1:**

National and international policies and legislation necessary for the conservation of the Aquatic Warbler and its habitat are in place.

#### **Result 2:**

All sites currently used by the Aquatic Warbler during its annual life cycle are in favourable conservation condition.

#### **Result 3:**

The area of suitable habitat for the Aquatic Warbler has been increased to allow for an increase of the area of occupancy and for increased exchange between populations.

#### **Result 4:**

All knowledge necessary to inform and guide the conservation efforts for the Aquatic Warbler exists.

#### **Result 5:**

Information and knowledge on the conservation of the Aquatic Warbler and its habitat is made available and promoted amongst all stakeholders with a role to play in the conservation of the species.

## Actions

<i>Result</i>	<i>Action</i>	<i>Priority</i>	<i>Time scale</i>	<i>Organisations responsible</i>
<b>Result 1:</b> National and international policies and legislation necessary for the conservation of the Aquatic Warbler and its habitat are in place.	<b>Action 1.1.</b> Give full legal protection to the Aquatic Warbler and the habitat types it uses through national and international legislation.	essential	short	National governments, esp. Ministries of Environment
	<b>Action 1.2.</b> <i>Create or maintain a legal framework that ensures legal protection for the sites regularly used by Aquatic Warblers.</i>	high	medium	European Union, Council of Europe, National Governments of non-EU countries
	<b>Action 1.3.</b> <i>Ensure the legal prescription and effective implementation of Environmental Impact Assessment Procedures for all activities that potentially damage the sites used by the Aquatic Warbler.</i>	essential	short	European Union, National Governments
	<b>Action 1.4.</b> <i>Prepare National Species Action Plans or equivalent strategic documents suitable to inform and guide national conservation efforts for the Aquatic Warbler and use them actively.</i>	high	medium	National Governments, esp. Ministries of Environment, with support from conservation organisations and experts
	<b>Action 1.5.</b> <i>Seek national and international policies and financial incentives to promote suitable land management practices at sites whose sustainability depends on continued extensive land use.</i>	essential	medium	European Union, National Governments, esp. Ministries of Agriculture and Environment with support from conservation organisations and experts
	<b>Action 1.6.</b> <i>Create legal mechanisms that allow for the use of controlled burning as a management tool for sites used by Aquatic Warblers.</i>	high	medium	National Ministries of Environment



<i>Result</i>	<i>Action</i>	<i>Priority</i>	<i>Time scale</i>	<i>Organisations responsible</i>
<b>Result 2:</b> All sites currently used by the Aquatic Warbler during its annual life cycle are in favourable conservation condition.	<b>Action 2.1.</b> <i>Seek formal designation as protected areas of all sites regularly holding Aquatic Warblers.</i>	essential	short	European Commission, National Governments, esp. Ministries of Environment
	<b>Action 2.2.</b> <i>Create, approve, use and regularly update Management Plans for each Aquatic Warbler site with special consideration of the conservation needs of the species.</i>	high	medium	Ministries of Environment, Protected Area Administrations with support from conservation organisations and experts
	<b>Action 2.3.</b> <i>Prevent the implementation of activities, projects or programmes that could be detrimental to the sites used by the Aquatic Warbler.</i>	essential	short	Competent national/regional/local authorities responsible for granting permissions, Protected Area Administrations with support from conservation organisations and experts, possible role for European Commission
	<b>Action 2.4.</b> <i>Create favourable hydrological conditions at the sites used by the Aquatic Warbler, either through restoration of natural hydrological conditions or through suitable management of new or existing hydrological infrastructure.</i>	essential	short	Protected Area Administrations, site managers, water boards
	<b>Action 2.5.</b> <i>Limit the eutrophication of sites caused by water feeding the site, mineralisation of drained peat soil and through aerial deposition.</i>	medium	long	International Community/Agreements, National governments, Protected Area Administrations, site managers, local administrations
	<b>Action 2.6.</b> <i>Prevent the natural succession of the vegetation by ongoing active management at those Aquatic Warbler sites where the extent and quality of suitable habitat would otherwise deteriorate.</i>	essential	short	Protected Area Administrations, site managers, land owners and land users, with support from conservation organisations

<i>Result</i>	<i>Action</i>	<i>Priority</i>	<i>Time scale</i>	<i>Organisations responsible</i>
	<b>Action 2.6.1</b> <i>Regular mowing.</i>	essential	short	Protected Area Administrations, site managers, land owners and land users, with support from conservation organisations
	<b>Action 2.6.2</b> <i>Extensive grazing.</i>	medium	short	Protected Area Administrations, site managers, land owners and land users, with support from conservation organisations
	<b>Action 2.6.3.</b> <i>Controlled burning.</i>	high	medium	Protected Area Administrations, site managers, land owners and land users, with support from conservation organisations
	<b>Action 2.6.4</b> <i>Ensure the sustainability of ongoing active management.</i>	essential	medium	Protected Area Administrations, site managers, land owners and land users, with support from conservation organisations
	<b>Action 2.7.</b> <i>Prevent wild and illegal fires occurring on Aquatic Warbler sites during unfavourable and uncontrollable conditions.</i>	high	ongoing	Protected Area Administrations, site managers, land owners and land users, fire guards, local administrations
	<b>Action 2.8.</b> <i>Limit the use of pesticides (herbicides, insecticides and avicides) in the catchment areas of Aquatic Warbler sites where they have been shown to negatively affect the species.</i>	low	medium	Protected Area Administrations, site managers, land owners and land users, local administrations
	<b>Action 2.9.</b> <i>Lease or purchase current or potential Aquatic Warbler sites through bodies committed to the conservation of the species to ensure suitable long-term management if a deterioration of the site is otherwise likely.</i>	medium	long	Protected Area Administrations, conservation organisations

<i>Result</i>	<i>Action</i>	<i>Priority</i>	<i>Time scale</i>	<i>Organisations responsible</i>
<b>Result 3:</b> The area of suitable habitat for the Aquatic Warbler has been increased to allow for an increase of the area of occupancy and for increased exchange between populations.	<b>Action 3.1.</b> <i>Increase the area of suitable habitat at existing Aquatic Warbler sites and restore former sites and other sites with a potential to become Aquatic Warbler sites.</i>	essential	long	Protected Area Administrations, site managers, land owners and land users conservation organisations, National Ministries of Environment
	<b>Action 3.2.</b> <i>Consider the implementation of ex-situ measures (translocation of birds) to maintain or increase the range of the species where feasible and necessary.</i>	essential	short	National authorities, site managers, NGO's
<b>Result 4:</b> All knowledge necessary to inform and guide the conservation efforts for the Aquatic Warbler exists.	<b>Action 4.1.</b> <i>Further improve and standardise the methodologies used in different range states for the monitoring of breeding, migrating and wintering numbers of Aquatic Warblers.</i>	high	short	Aquatic Warbler Conservation Team
	<b>Action 4.2.</b> <i>Maintain and improve a monitoring programme covering all Aquatic Warbler sites on a regular basis that is suitable to identify trends in the numbers of breeding, migrating and wintering Aquatic Warblers.</i>	high	ongoing	Aquatic Warbler Conservation Team, conservation organisations, national experts, National Ministries of Environment

<i>Result</i>	<i>Action</i>	<i>Priority</i>	<i>Time scale</i>	<i>Organisations responsible</i>
	<b>Action 4.3</b> <i>Finalise the inventory of breeding sites with a special focus on smaller sites and further search for breeding sites in Russia.</i>	high	short	Aquatic Warbler Conservation Team, conservation organisations, national experts, National Ministries of Environment
	<b>Action 4.4</b> <i>Identify regular stop-over sites during autumn and spring migration in Europe (esp. France and Spain) and northern Africa (Morocco, West-Sahara, Mauritania, but also Tunisia, Libya).</i>	high	short	Aquatic Warbler Conservation Team, conservation organisations, national experts, National Ministries of Environment
	<b>Action 4.5</b> <i>Identify key regular wintering sites in western Africa.</i>	essential	short	Aquatic Warbler Conservation Team, national experts,
	<b>Action 4.6</b> <i>Conduct research on a number of topics important to improve the effectiveness of conservation measures for the Aquatic Warbler including studies necessary for possible translocation or reintroduction of birds</i>	high	short	Aquatic Warbler Conservation Team, conservation organisations, research institutions
<b>Result 5:</b> Information and knowledge on the conservation of the Aquatic Warbler and its habitat is made available and promoted amongst all stakeholders with a role to play in the conservation of the	<b>Action 5.1</b> <i>Maintain and further develop a strong international network of organisations and individuals committed to the conservation of the Aquatic Warbler using the CMS MoU and the BirdLife International Aquatic Warbler Conservation Team (AWCT) as coordination platforms.</i>	high	ongoing	Bonn Convention (CMS) Secretariat, Aquatic Warbler Conservation Team, RSPB
	<b>Action 5.2</b> <i>Develop and maintain national networks of public bodies, conservation organisations and experts committed to the conservation of the Aquatic Warbler.</i>	medium	short	National Ministries of Environment, national conservation organisations

<i>Result</i>	<i>Action</i>	<i>Priority</i>	<i>Time scale</i>	<i>Organisations responsible</i>
species.	<b>Action 5.3</b> <i>Fundraise for projects contributing to the implementation of this action plan using national and international sources of funding, thereby highlighting the joint responsibility of all range states for the survival of the species.</i>	high	ongoing	European Union, Bonn Convention (CMS) Secretariat, National Ministries of Environment, Aquatic Warbler Conservation Team, conservation organisations
	<b>Action 5.4</b> <i>Make conservation information readily available to all relevant stakeholders.</i>	medium	ongoing	Aquatic Warbler Conservation Team
	<b>Action 5.5</b> <i>Promote the need for the conservation of the Aquatic Warbler and its habitat and disseminate conservation information and habitat management recommendations to land managers and local stakeholders at Aquatic Warbler sites and to a wider public beyond the sites.</i>	high	ongoing	Aquatic Warbler Conservation Team, conservation organisations, National Ministries of Environment, Protected Area Administrations

## 5 - REFERENCES

- ATIENZA, J.C.; PINILLA, J.; JUSTRIBÓ, J. H. (2001): Migration and conservation of the Aquatic Warbler *Acrocephalus paludicola* in Spain. *Ardeola* 48 (2): 197-208.
- AQUATIC WARBLER CONSERVATION TEAM, AWCT (1999): World population, trends and threat status of the Aquatic Warbler *Acrocephalus paludicola*. - *Vogelwelt* 120: 65-85.
- BATTEN, L. A.; BIBBY, C. J.; CLEMENT, P.; ELLIOTT, G. D.; PORTER R. F. (eds.), (1990): Red data birds in Britain: action for rare, threatened and important species. - T. and A. D. Poyser London.
- BARGAIN, B. (1999): Phragmite aquatique *Acrocephalus paludicola*. Pp. - in : ROCAMORA, G & YEATMAN-BERTHELOT, D.: Oiseaux menacés et à surveiller en France. Liste rouges et recherche de priorités. Populations. Tendances. Menaces. Conservation. Société d'Études Ornithologiques de France / Ligue pour la Protection des Oiseaux. Paris. 560 p.
- BARGAIN, B. (2002): Étude du milieu fréquenté par le phragmite aquatique en baie d'Audierne; radiopistage 2001 et 2002. Bretagne Vivante - SEPNEB. Brest. 16 p.
- BARGAIN B, LE NEVE´ A, GUYOT G (2008) Premie`re zone d'hivernage du Phragmite aquatique *Acrocephalus paludicola* de´couverte en Afrique. *Ornithos* 15:411-425
- BAUMANIS J. (1983): [Aquatic Warbler *Acrocephalus paludicola* (Vieill.)] P. 153. in J. VIKSNE (ED.). Birds of Latvia: distribution and numbers [in Russian with English summary]. Zinātne, Rīga.
- VAN DEN BERG, A.B. & C.A.W. BOSMAN (1999): Rare birds of the Netherlands. *Avifauna van Nederland* 1. - Haarlam, Utrecht. (S. 277-281)
- CABRAL M.J. ET. AL. (EDS) (2005): Livro Vermelho dos Vertebrados de Portugal. Instituto da Conservação da Natureza. Lisboa.
- CELMIŅŠ, A. (2003): [Singing Aquatic Warbler in breeding habitat - first after 60 years again in Latvia] Dziedošs grīšļu ļauķis ligzdošanas biotopā - pirmoreiz Latvijā pēc 60 gadiem [in Latvian]. *Putni dabā* 13.2: 12.
- CONZEMIUS, T. (1995): Liste der Vögel Luxemburgs. *Regulus Wissenschaftliche Berichte*. 14: 41-56.
- CRAMP, S. (1992): The Birds of the Western Palearctic, Vol VI, Warblers: *Acrocephalus paludicola* Aquatic Warbler, pp 117-130. Oxford University Press, Oxford
- DE BY, R. A. (1990): Migration of Aquatic Warbler in western Europe. - *Dutch Birding* 12: 165-181.
- DYRCZ, A. (1989): Polygyny in the Aquatic Warbler. - *Ibis* 131: 298-300.
- DYRCZ, A. (1993a): Nesting biology of the Aquatic Warbler *Acrocephalus paludicola* in the Biebrza marshes (NE Poland). - *Vogelwelt* 114: 2-15.
- Dyrcz, A 1994: Aquatic Warbler. In TUCKER, G. M., HEATH, M. F., TOMIALOJC, L. & GRIMMET R. F. A.: Birds in Europe - their conservation status, pp. 394-395. BirdLife International, Cambridge

- DYRCZ, A.; BOROWIEC, M.; CZAPULAK, A. (1994): Nestling growth and mating system in four *Acrocephalus* species. - *Vogelwarte* 37: 179-182.
- DYRCZ, A.; KRUSZEWICZ, A.; WINK, M. (2003): Male paternal success in the promiscuous Aquatic Warbler. *Vogelwarte* 42: 130.
- DYRCZ, A.; ZDUNEK, W. (1993a): Breeding statistics of the Aquatic Warbler *Acrocephalus paludicola* on the Biebrza Marshes, northeast Poland. - *J. Ornithol.* 134: 317-323.
- DYRCZ, A.; ZDUNEK, W. (1993b): Breeding ecology of the Aquatic Warbler *Acrocephalus paludicola* on the Biebrza marshes, north-east Poland. - *Ibis* 135: 181-189.
- FLADE M, DIOP I, HAASE M, LE NEVE´ A, OPPEL S, TEGETMEYER C, VOGEL A, SALEWSKI V (2011) Distribution, ecology and threat status of the Aquatic Warbler *Acrocephalus paludicola* wintering in West Africa. *J Ornithol* 152(Suppl 1):S129-S140.
- FOUCHER J., BOUCAUX M., GIRAUDOT E., ANDRÉ A., LORILLIÈRE R. & DUGUÉALEWSKI U. (2013): Nouveaux sites d'hivernage du Phragmite aquatique *Acrocephalus paludicola*. *Ornithos* 20-1 (2013): 1-9.
- GIEBING, B. (2002): Viele Väter für eine Brut – vorteilhaft oder unausweichlich für das Weibchen? Zum Paarungssystem und zur Populationsgenetik des Seggenrohrsängers (*Acrocephalus paludicola*). Diss. Univ. Köln.
- HEIDT, C. (2008): Der Durchzug der Rohrsänger *Acrocephalus spec.* und Schwirle *Locustella spec.* im Naturschutzgebiet „Schlammwies“ bei Uebersyren von 2001-2006. *Regulus Wissenschaftliche Berichte*. 23: 29-42.
- HEREDIA, B.; ROSE, L.; PAINTER, M. (1996): Globally threatened birds in Europe. Action Plans. Council of Europe Strasbourg.
- JUBETE, F. (2001): La migración del carricerín cejudo en España. *Quercus* 184: 18-23.
- KALYAKIN, M. V. (1996): Aquatic Warbler in Russia. - Unpublished report for BirdLife/Vogelbescherming Nederland, Moscow: 45 p.
- KEIŠS, O. (2003): Brief history of the Aquatic Warbler *Acrocephalus paludicola* in Latvia [in Latvian with English summary]. *Putni dabā* 13.2: 9-11.
- KLOSKOWSKI, J.; KROGULEC, J. (1999): Habitat selection by Aquatic Warbler *Acrocephalus paludicola* in Poland: consequences for conservation of the breeding areas. - *Vogelwelt* 120: 113-120.
- KOVÁCS, G. (1994): Population increase and expansion of the Aquatic Warbler (*Acrocephalus paludicola*) on the Hortobágy between 1977 and 1994. - *Aquila* 101: 133-143.
- KOVÁCS, G.; VÉGVÁRI, Z. (1999): The Aquatic Warbler *Acrocephalus paludicola* in Hungary. - *Vogelwelt* 120: 121-125.
- KOZULIN, A.; FLADE, M. (1999): Breeding habitat, abundance and threat status of the Aquatic Warbler *Acrocephalus paludicola* in Belarus. - *Vogelwelt* 120 (2): 97-111.
- KOZULIN, A.; FLADE, M.; GRICHIK, V. 1999. Fen mires and the benefit of mobility: a hypothesis for the origin of promiscuity in Aquatic Warbler *Acrocephalus paludicola*. *Subbuteo* 2: 11-17.
- KOZULIN, A. V.; FLADE, M.; TISHECHKIN, A. K.; PAREYKO, O. A. (1998): Recent distribution and number of Aquatic Warbler (*Acrocephalus paludicola*) in Belarus. - *Subbuteo* 1: 3-16.

- KOZULIN A.; VERGEICHNIK L.; STEPANOVICH Y. (2004): Factors affecting fluctuations of the Aquatic Warbler *Acrocephalus paludicola* population of Byelarusian mires. - Acta Ornithol. 39: 48-55.
- KOZULIN, A.; VERGEICHNIK, L. (2006): Dynamics of the Aquatic Warbler (*Acrocephalus paludicola*) population at the Zvanets mire (Belarus). Acta Zoologica Lituanica 16, № 4: 15-24.
- KUZNETSOV, L. A. (1967): Nesting of Aquatic Warbler in the Penza Region [in Russian]. - Ornithologia 8: 362-363.
- LEISLER, B.; CATCHPOLE, C. K. (1992): The evolution of polygamy in European reed warblers of genus *Acrocephalus*: a comparative approach. - Ethology, Ecology and Evolution 4: 225-243.
- LEISLER, B.; LEY, H.-W.; WINKLER, H. (1989): Habitat, behavior and morphology of *Acrocephalus* warblers: an integrated analysis. - Ornis Skand. 20: 181-186.
- LIPSBERGS, J. (2000): Aquatic Warbler *Acrocephalus paludicola* (Vieillot, 1817). Pp. 74-75 in G. ANDRUŠAITIS (ed.) Red Data Book of Latvia, vol. 6. University of Latvia Institute of Biology, Rīga.
- LORGÉ, P. & LHK (2008): Seltene Vogelarten in Luxemburg 2004-2007. Bericht der Luxemburger Homologationskommission. Regulus Wissenschaftliche Berichte. 23: 52-61.
- MATTHYSEN, E., VAN HOVE, D., ADRIAENSEN, F.: (2007) Actieplan voor de waterrietzanger (*Acrocephalus paludicola*) in Vlaanderen, Antwerpen
- NANKINOW, D. N.: (1995): Was wissen wir über das Vorkommen des Seggenrohrsängers *Acrocephalus paludicola* in Bulgarien? Ornithol. Mitt. 47: 278-283
- PAIN, D., R.E. GREEN, B. GIEßING, A. KOZULIN, A. POLUDA, U. OTTOSSON, M. FLADE & G. HILTON (2004): Using stable isotopes to investigate wintering areas and migratory connectivity of the globally threatened Aquatic Warbler *Acrocephalus paludicola*. - Oecologia 138: 168-174.
- PALTANAVICIUS, S. (1992): Red Data Book of Lithuania. Environmental Protection Department of the Republic of Lithuania Vilnius.
- RAVKIN, Y. S. (1973): [Aquatic Warbler in the Ob'] [in Russian]. - Fauna Sibiri (Fauna of Siberia). Novosibirsk: Nauka 2 (16): 260-262.
- RAVKIN, Y. S. (1993): Aquatic Warbler in Russia. - unpublished report for BirdLife International: 9 p.
- RAVKIN, Y. S.; MILOVIDOV, S. P.; VARTAPETOV, L. G.; YUDKIN, V. A.; ADAM, A. M.; TOROPOV, K. V.; ZHUKOV, V. S.; FOMIN, B. N.; POKROVSKAYA, I. V.; TSIBULIN, S. M.; ANANIN, A. A.; PANTELEEV, P. A.; SOLOVIEV, S. A.; POLUSHKIN, D. M.; SHOR, E. L.; ANUPHRIEV, V. M.; KOZLENKO, A. B.; TERTITSKII, G. M.; VAKHRUSHEV, A. A.; BLINOVA, T. K. (1997): Numbers and distribution of Corncrake and Aquatic Warbler on the West-Siberian Plain [in Russian]. - Siberiskii ekologicheskii jurnal 6: 631-634.
- ROMS J. (1942): *Acrocephalus paludicola* Vieill. Brutvogel in Lettland. Folia Zoologica et Hydrobiologica 11 (2): 215.



- SALEWSKI, V., B. BARGAIN, I. DIOP & M. FLADE (2008): Quest for a phantom—the search for the winter quarters of the Aquatic Warbler *Acrocephalus paludicola*. *Africa Bird Club Bulletin*.
- SCHÄFER, H. M. (1998): Räumliche Organisation von Seggenrohrsängermännchen *Acrocephalus paludicola*. - Dipl. Arb. Albert-Ludwigs-Univ. Freiburg i. Br.
- SCHAEFER, H. M., NAEF-DAENZER, B., LEISLER, B., SCHMIDT, V., MÜLLER & SCHULZE-HAGEN, K. (2000): Spatial behaviour in the Aquatic Warbler (*Acrocephalus paludicola*) during mating and breeding. - *J. Ornithol.* 141: 418-424.
- SCHÄFFER, N., B. A. WALTHER, K. GUTTERIDGE & C. RAHBK (2006): The African migration and wintering grounds of the Aquatic Warbler *Acrocephalus paludicola*. - *Bird Conservation International* 16: 33-56.
- SCHMIDT, V.; SCHAEFER, H. M.; LEISLER, B. (1999): Song behaviour and range use in the polygamous Aquatic Warbler *Acrocephalus paludicola*.. - *Acta Ornith.* 34: 209-213.
- SCHULZE-HAGEN, K. (1991a): *Acrocephalus paludicola* (Vieillot 1817) – Seggenrohrsänger. - In: U.N. GLUTZ VON BLOTZHEIM (ed.): *Handbuch der Vögel Mitteleuropas*, Vol. 14, AULA- Verlag, Wiesbaden: pp. 252-291.
- SCHULZE-HAGEN, K.; FLINKS, H.; DYRCZ, A. (1989): Brutzeitliche Beutewahl beim Seggenrohrsänger *Acrocephalus paludicola*. - *J. Ornithol.* 130: 251-255.
- SCHULZE-HAGEN, K.; LEISLER, B.; BIRKHEAD, T. R.; DYRCZ, A. (1995): Prolonged copulation, sperm reserves and sperm competition in the Aquatic Warbler *Acrocephalus paludicola*. - *Ibis* 137: 85-91.
- SCHULZE-HAGEN, K.; LEISLER, B.; SCHÄFER, H. M.; SCHMIDT, V. (1999): The breeding system of the Aquatic Warbler *Acrocephalus paludicola* - a review of new results after 1991. - *Vogelwelt* 120: 87-96.
- SCHULZE-HAGEN, K.; SWATSCHEK, I.; DYRCZ, A.; WINK, M. (1993): Multiple Vaterschaften in Bruten des Seggenrohrsängers: Erste Ergebnisse des DNA-Fingerprinting. - *J. Ornithol.* 134: 145-154.
- TANNEBERGER, F., M. FLADE & 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.
- TANNEBERGER, F., J. BELLEBAUM, T. FARTMANN, H.-J. HAERLAND, A. HELMECKE, P. JEHLE, P. JUST & J. SADLIK (2008): Rapid deterioration of Aquatic Warbler *Acrocephalus paludicola* habitats at the western margin of the breeding range. *J. Ornithol.* 149: 105-115.
- TEGETMEYER, C., F. TANNEBERGER, M. DYLAWERSKI, M. FLADE & H. JOOSTEN (2007): Saving Europe's most threatened song bird – reed cutters and conservationists team up in Polish peatlands. *Peatlands International*: 19-23.
- TEGETMEYER C, FRICK A, SEIFERT N (2014) Modelling habitat suitability in the Aquatic Warbler wintering ground Djoudj National Park in Senegal. *Ostrich* 85: 57-66.
- TUCKER, G. M.; HEATH, M. F. (1994): *Birds in Europe: their conservation status*. BirdLife Conservation Series no. 3.

- VERGEICHIK, L.; KOZULIN, A. (2006a): Breeding ecology of Aquatic Warblers *Acrocephalus paludicola* in their key habitats in SW Belarus. Acta Ornithol. 41: 153–161.
- VERGEICHIK, L.; KOZULIN, A. (2006): Changing nesting dates and nest placement as adaptations of Aquatic Warbler *Acrocephalus paludicola* to unstable nesting conditions on the fen mires in Belarus. Vogelwelt 127: 145-155.
- WAWRZY尼亚K, H.; SOHNS, G. (1977): Der Seggenrohrsänger. Neue Brehm Bücherei Wittenberg-Lutherstadt

ANNEX 1

Importance of threats at the population/group of countries level

Type of threat	Breeding area (BY, UA, PL, LT, HU, D, RU, LV)	Migration (NL, UK, Belgium, FR, ES, PT, BLG, Morocco)	Wintering (Senegal, Mali, Mauritania)
<b>1. Habitat loss/destruction</b>	<i>Threat score</i>	<i>Threat score</i>	<i>Threat score</i>
1.1 infrastructure developments	Local	Local	Critical
1.2 transformation into crops or intensive grassland after drainage	Formerly critical, now medium, but locally critical	Low	Critical
1.3 peat extraction	Formerly critical, now medium, but locally critical	-	-
<b>2. Habitat deterioration</b>			
2.1 partial drainage, unsuitable water management	Critical	High	Critical
2.2 eutrophication	Medium	Medium	Low
2.3 negative changes in vegetation structure (overgrowing with reeds and shrubs, too high, too dense)	Critical	High	Unknown
2.4 abandonment of extensive agricultural use	High	High	Unknown
2.5 inappropriate (too intensive) habitat management	Low, locally high	Low	Unknown
2.6 uncontrolled burning	High	Unknown	Unknown
2.7 Increased chick predation due to habitat deterioration	Unknown, probably locally high	-	-

ANNEX 2

Sites/Important Bird Areas for the species and their status

Country	Name of Site	Area (ha)	Min. Pop. in site	Max. pop. in site	Quality	Year	Name of Protected Area	Area of PA (ha)	Designation	Overlap between IBA and PA in ha
Poland	Nietlice marshes	3853	0	0	good	2003	Bagna Nietlickie	1133	Nature Reserve	1133
Poland	Biebrza river valley	136900	2217	2235	good	2007	Biebrzański Park Narodowy	59223	National Park	59223
Poland	Bubnów marshes	2344	182	182	good	2007	Poleski Park Narodowy	4813	National Park	2344
Poland	Chelm calcareous marshes	4118	166	167	good	2007	Brzezno	158	Nature Reserve	158
Poland	Chelm calcareous marshes	4118	166	167	good	2007	Chelmski Landscape Park	14000	Landscape Park	1100
Poland	Chelm calcareous marshes	4118	166	167	good	2007	Chelmski Landscape Protection Area	32110	Landscape Protection Area	600
Poland	Chelm calcareous marshes	4118	166	167	good	2007	Roskosz	473	Nature Reserve	473
Poland	Chelm calcareous marshes	4118	166	167	good	2007	Bagno Serebryskie	377	Nature Reserve	377
Poland	Delta of the Swina river	8893	27	27	good	2007	Woliński Park Narodowy	10937	National Park	2000
Poland	Lower Odra river valley	58230	6	6	good	2007	Dolina Dolnej Odry	6009	Landscape Park	6009

Country	Name of Site	Area (ha)	Min. Pop. in site	Max. pop. in site	Quality	Year	Name of Protected Area	Area of PA (ha)	Designation	Overlap between IBA and PA in ha
Poland	Lower Odra river valley	58230	6	6	good	2007	Cedyński Park Krajobrazowy	30850	Landscape Park	30850
Poland	Lower Odra river valley	58230	6	6	good	2007	Kurowskie Blota	31	Nature Reserve	31
Poland	Warta River Mouth	32800	10	10	good	2007	Warta Mouth National Park	8038	National Park	8038
Poland	Upper Narew River Valley	15840	12	30	good	2003	Narew River Valley Landscape Protection Area		Landscape Protection Area	
Poland	Marshy Valley of the Narew River	24730	35	42	good	2003	Narew River National Park	7350	National Park	7350
Poland	Narew River Gaps	7273	7	16	good	2003	Łomża Narew River Valley Landscape Park		Landscape Park	
Poland	Kampinos Forest	40570	0	0	good	2007	Kampinos National Park	38544	National Park	38544
Poland	Rozwarowo Marshes	4198	37	37	good	2007	none	0	none	0
Poland	Miedwie Site	16820	0	0	good	2007	Brodogory	5.24	Nature Reserve	5.24
Poland	Miedwie Site	16820	0	0	good	2007	Stary Przylep	2.1	Nature Reserve	2.1
Poland	Wizna Swamp	15700	7	69	good	1989-2003	none	0	none	0
Poland	Ner River Valley	6861	6	6	good	2007	Bzura Valley Landscape Protection Area		Landscape Protection Area	
Poland	Nida River Valley	15960	1	1	poor	before 2003	Nadnidzianski Park Krajobrazowy	22850	Landscape Park	

Country	Name of Site	Area (ha)	Min. Pop. in site	Max. pop. in site	Quality	Year	Name of Protected Area	Area of PA (ha)	Designation	Overlap between IBA and PA in ha
Poland	Szyszla River Valley	2721	1	1	poor	before 2003	none	0	none	0
Germany	Peenetal (Peenetalmoor and Anklamer Stadtbruch)	30530	0	0	good	1998 to 2007	Peenetalmoor und Anklamer Stadtbruch	27800	Landscape Protected Area	0
Germany	Peenetal (Peenetalmoor and Anklamer Stadtbruch)	30530	0	0	good	1998 to 2007	Peenetalmoor und Anklamer Stadtbruch	0	Special Protection Area	0
Germany	Lower Oder valley	11779	7	13	good	2000 to 2007	Lower Oder valley	5400	Ramsar Wetland Site	5400
Germany	Lower Oder valley	11779	7	13	good	2000 to 2007	Lower Oder valley	11778	Special Protection Area	0
Germany	Lower Oder valley	11779	7	13	good	2000 to 2007	Lower Oder valley	2517	Landscape Protected Area	0
Germany	Lower Oder valley	11779	7	13	good	2000 to 2007	Lower Oder valley	9500	National Park	9500
Hungary	Hortobágy	136300	0	700	good	1971-2015	Hortobágy	68506	National Park	80200
Hungary	Hortobágy	136300	0	700	good	1971-2015	Hortobágy National Park	52000	Biosphere Reserve	52000
Hungary	Hortobágy	136300	0	700	good	1971-2015	Hortobágy	23121	Ramsar Wetland Site	16109
UK	Dungeness to Pett Level	9080	5	30	good		Dungeness to Pett Level SPA	1474	SPA, Ramsar	

Country	Name of Site	Area (ha)	Min. Pop. in site	Max. pop. in site	Quality	Year	Name of Protected Area	Area of PA (ha)	Designation	Overlap between IBA and PA in ha
UK	Marazion Marsh	54	2	6	poor		Marazion Marsh SPA	54	SPA	
UK	Poole Harbour	2172	0	11	Medium	1997	Poole Harbour SPA	2172	SPA	
Portugal	Santo Andre and Sancha Lagoons	2638	2	15	medium	2008	Lagoa da Sancha e Lagoa de S. Andre	2638	SPA	100%
Latvia	Liepaja Lake	4816	0	0	good	2008	Liepaja Lake		SPA	
Lithuania	Zuvintas	18500	7	7	good	2007	Zuvintas	7500	Ramsar Wetland Site	7500
Lithuania	Zuvintas	18500	7	7	good	2007	Zuvintas	18860	Biosphere Reserve	18500
Lithuania	Tyras	2540	110	130	good	2004	Kliosiai	2619	Landscape Reserve	
Lithuania	Nemunas delta	26625	60	110	medium	2006	Nemunas Delta	23950	Ramsar Wetland Site	23950
Lithuania	Nemunas delta	26625	60	110	medium	2006	Nemuno delta	29012	Regional Park	26625
Lithuania	Nemunas delta	26625	60	110	good	2006	Svencele meadows	55	Botanical-zoological reserve	
Luxembourg	Baggerweihergebiet Remerschen	80			good	2000-2009	Haff Réimech	260	Special Protected Area (+ National Nature Reserve)	100%

Country	Name of Site	Area (ha)	Min. Pop. in site	Max. pop. in site	Quality	Year	Name of Protected Area	Area of PA (ha)	Designation	Overlap between IBA and PA in ha
Luxembourg	Schifflinger Brill	15			good	2000-2009	Upper valley of the Alzette	1213	Special Protected Area (+ National Nature Reserve)	100%
Luxembourg	Schlammwiss Uebersyren	120			good	2000-2009	Valley of the Syre	375	Special Protected Area (+ National Nature Reserve)	100%
Lithuania	Nemunas delta	26625	60	110	good	2006	Sausgalviai meadows	240	Botanical-zoological reserve	
Netherlands	IJsselmeer				medium		Makkumer Zuidwaard		Special Protected Area	
Netherlands	Zwarte Meer				medium		Zwarte Meer		Special Protected Area	
Netherlands	Weerribben				medium		Weerribben		Special Protected Area	
Netherlands	Wieden				good		Wieden		Special Protected Area	
Netherlands	Maasvlakte, Westplaat				good		Voordelta		Special Protected Area	



Country	Name of Site	Area (ha)	Min. Pop. in site	Max. pop. in site	Quality	Year	Name of Protected Area	Area of PA (ha)	Designation	Overlap between IBA and PA in ha
Belgium	Lapscheure (Blauwe Sluis)	2	0	28	good	1976-2006	Poldercomplex SPA		Special Protected Area	
Belgium	Veurne (Suikerfabriek)	40	1	83	good	1987-2006	none		none	0
Belgium	Zeebrugge (Haven)	?	0	88	Good	1976-2006	None		none	0
France	Marais de la Baie d'Audierne	3100	250	300	unset	1991	Baie d'Audierne	850	Hunting Reserve	850
France	Marais de la Baie d'Audierne	3100	250	300	unset	1991	Baie d'Audierne	1600	Special Protection Area	1600
France	Marais de la Baie d'Audierne	3100	250	300	unset	1991	SEPNB Reserve	52	Private Reserve	52
France	Estuaire de la Gironde : marais de la rive nord	2580	100	500	unset	1991	Estuaire de la Gironde	1290	Hunting Reserve	1290
France	Vallée du Rhin de Strasbourg à Marckolsheim		?	?	poor				Special Protection Area	
France	Vallée du Rhin d'Artzenheim à Village-Neuf		?	?	poor				Special Protection Area	
France	Courant d'Huchet		?	?	poor				Special Protection Area	

Country	Name of Site	Area (ha)	Min. Pop. in site	Max. pop. in site	Quality	Year	Name of Protected Area	Area of PA (ha)	Designation	Overlap between IBA and PA in ha
France	Bassin d'Arcachon : embouchure de la Leyre		?	?	poor				Special Protection Area	
France	Marais d'Orx		?	?	poor				Special Protection Area	
France	Estuaire et marais de la basse Seine		60	300	good				Special Protection Area	
France	Basses vallées du Cotentin et baie des Veys		?	?	medium				Special Protection Area	
France	Baie du Mont Saint-Michel		?	few tens birds caught per year but irregularly studied	medium				Special Protection Area	
France	Landes et dunes de la Hague		?	?	poor				Special Protection Area	
France	Baie de Goulven		?	irregularly studied	medium				Special Protection Area	
France	Rade de Brest, Aulne maritime		?	irregularly studied	medium				Special Protection Area	

Country	Name of Site	Area (ha)	Min. Pop. in site	Max. pop. in site	Quality	Year	Name of Protected Area	Area of PA (ha)	Designation	Overlap between IBA and PA in ha
France	Marais de Pen Mané		?	irregularly studied	medium				Special Protection Area	
France	Marais de l'île de Hoedic		?	?	medium				Special Area of Conservation	
France	Golfe du Morbihan		?	?	medium				Special Protection Area	
France	Forêt et zones humides du pays de Spincourt		?	?	poor				Special Protection Area	
France	Etangs du Lindre, forêt de Romesberg et zones voisines		?	?	poor				Special Protection Area	
France	Marais Audomarois		?	?	poor				Special Protection Area	
France	Dunes de Merlimont		?	?	poor				Special Protection Area	
France	Lac de Grand Lieu		?	?	medium				Special Protection Area	

Country	Name of Site	Area (ha)	Min. Pop. in site	Max. pop. in site	Quality	Year	Name of Protected Area	Area of PA (ha)	Designation	Overlap between IBA and PA in ha
France	Estuaire de la Loire		60	300	good				Special Protection Area	
France	Marais de l'Erdre		?	?	medium				Special Protection Area	
France	Marais du Mès, étang du Pont de Fer		?	?	poor				Special Protection Area	
France	Grande Brière		?	?	good				Special Protection Area	
France	Marais Breton, baie de Bourgneuf		?	?	medium				Special Protection Area	
France	Marais d'Olonne		?	?	medium				Special Protection Area	
France	Marais poitevin		?	?	medium				Special Protection Area	
France	Anse du Fier d'Ars en Ré		?	?	poor				Special Protection Area	
France	Estuaire et basse vallée de la Charente		?	?	medium				Special Protection Area	
France	Camargue		?	?	poor				Special Protection Area	

Country	Name of Site	Area (ha)	Min. Pop. in site	Max. pop. in site	Quality	Year	Name of Protected Area	Area of PA (ha)	Designation	Overlap between IBA and PA in ha
France	Marais entre Crau et Grand Rhône		?	?	poor				Special Protection Area	
France	La Durance		?	?	poor				Special Protection Area	
Slovakia										
Switzerland										
Spain	Costa de la Muerte (North coast)	9650	0	30	poor	1996	Cabo Vilán	7	Natural Site of National Interest	7
Spain	Aiguamolls del Ampurdán (Gerona)	5454	0	30	poor		Estany de Palau		Nature Reserve	
Spain	Delta del Ebro (Tarragona)	32000	0	30	poor				Nature Reserve	
Spain	Marjal de El Moro. (Valencia)	350	0	30	poor				Nature Reserve	
Spain	Carrizales y estancas de Las Cinco Villas (Zaragoza)	860	0	30	poor				Nature Reserve	
Spain	Tierra de Campos (Valladolid, León y Palencia)	268000	50	200	good	2002-2006	Laguna de La Nava		Special Protection Area	

Country	Name of Site	Area (ha)	Min. Pop. in site	Max. pop. in site	Quality	Year	Name of Protected Area	Area of PA (ha)	Designation	Overlap between IBA and PA in ha
Spain	Marismas del Guadalquivir. (Cádiz, Huelva Sevilla)	230000	0	30	poor		Brazo de la Torre		Nature Reserve	
Spain	Ría de Arosa (Pontevedra)	2561	0	15	poor		Ensenada do Bao		Special Protection Area	
Portugal	Santo Andre and Sancha Lagoons	2638	2	15	medium	2008	Lagoa da Sancha e Lagoa de S. Andre	2638	Special Protection Area	2638
Italy	Simeto mouth and Biviere di Lentini	3398	2	3	good	1997	Simeto mouth and Biviere di Lentini	0	Special Protection Area	0
Italy	Simeto mouth and Biviere di Lentini	3398	2	3	good	1997	Oasi del Simeto	1859	Regional Nature Reserve	400
Ukraine	Supoy valley between Vilne and M.Berezanka	200-220	180	200	good	2008	"Usivsky-1 and 2"	3448	Hydrological zakaznik of national importance	
Ukraine	Supoy valley near Novy Bykov	25	20	25	poor	2005	"Boloto Supoy"	1102	Hydrological zakaznik of local importance "Boloto Supoy"	

Country	Name of Site	Area (ha)	Min. Pop. in site	Max. pop. in site	Quality	Year	Name of Protected Area	Area of PA (ha)	Designation	Overlap between IBA and PA in ha
Ukraine	Supoy valley near Bilotserkivtsy	20	12	12	good	2007	"Boloto Supoy"	1102	Hydrological zakaznik of local importance "Boloto Supoy"	
Ukraine	Supoy valley near Voron'ky	60	10	15	good	2007	"Boloto Supoy"	1102	Hydrological zakaznik of local importance	
Ukraine	Uday valley between Doroginka and Monastirishche	420	300	320	good	2007	"Doroginsky"	2300	Hydrological zakaznik of national importance	
Ukraine	Galka valley between villages Bogdanivka and Leonidivka	80	30	35		2007	"Bogdanivskiy", is just established		Hydrological zakaznik of national importance	
Ukraine	Perevod valley near Paskivshchina	30	12	15		2007	"Boloto Perevid" is just established		Hydrological zakaznik of national importance	
Ukraine	Mire to South-East from Petrivka	40	25	30		2007	"Gorodok"	337	Hydrological zakaznik of local importance	

Country	Name of Site	Area (ha)	Min. Pop. in site	Max. pop. in site	Quality	Year	Name of Protected Area	Area of PA (ha)	Designation	Overlap between IBA and PA in ha
Ukraine	Pripyat valley between Richitsa and Pidgirye (Shchedrogir)	250	120	150	medium	2007	"Richitskiy" and "Shchedrogirskiy"	1747	Hydrological zakazniks of local importance	
Ukraine	Pripyat valley between Pidgiryia and Turiya mouth	175	30	40	medium	2007	"Shchedrogirskiy"	700	Hydrological zakaznik of local importance	
Ukraine	Eastern part of Turya mouth	30-40	30	30	good	1999	"Pripyat-Stokhid"	39315,5	National natural park	
Ukraine	Area near canal Wizhewskiy - Pripyat	350	105	160	medium	1996	"Zalukhivskiy"	839,4	Hydrological zakaznik of local importance	
Ukraine	Pripyat valley to the south of Nevir (including mire "Zalissya")	>500	300	350	good	2006	"Pripyat-Stokhid"	39315,5	National Nature Park	
Ukraine	Area between Vetly, Birky, Girky, Lyubotyn and Tsyr (valley of rivers Pripyat and Tsyr)	~ 1900	800	900	good	2007	"Pripyat-Stokhid"	39315,5	National Nature Park	



Country	Name of Site	Area (ha)	Min. Pop. in site	Max. pop. in site	Quality	Year	Name of Protected Area	Area of PA (ha)	Designation	Overlap between IBA and PA in ha
Ukraine	Pripyat valley (left bank) between Vetly - Lubotin	>500	400	500	good	2007	"Pripyat-Stokhid"	39315,5	National Nature Park	
Ukraine	Pripyat valley (left bank) to south-west of Grechishcha and hay-mowing to south	200	80	100		2008	"Pripyat-Stokhid"	39315,5	National Nature Park	
Ukraine	Area to north of Lyubyaz lake	90-100	110	120		2007	"Pripyat-Stokhid"	39315,5	National Nature Park	
Ukraine	Southern and eastern banks of Wolyanske lake and canal "Khabarische"	100	70	90		2005	"Zalukhivskiy"	839,4	Hydrological zakaznik of local importance	
Ukraine	Area near lake Rogozne	30-40	40	40		1997	"Rogiznenskiy"	610,2	Hydrological zakaznik of local importance	
Ukraine	Turya valley (mire "Vizhery")	275	330	350		2007	"Turskiy"	3940	Hydrological zakaznik of local importance	
Ukraine	Area between lakes Bile and Pischane	310	120	150		2005				

Country	Name of Site	Area (ha)	Min. Pop. in site	Max. pop. in site	Quality	Year	Name of Protected Area	Area of PA (ha)	Designation	Overlap between IBA and PA in ha
Ukraine	Shatskiy National Park (mire Unichy)	100	25	25		2007	Shatskiy National Park	48977	National Park	
Ukraine	Styr valley between Navoz and Kolky	220	130	150		2007	"Gursko-Gryvenskiy"	145,2	Hydrological zakaznik of local importance	
Ukraine	Chornoguzka valley	430	150	200		2005	"Chornoguzka"	1500	Hydrological zakaznik of local importance	
Ukraine	Stokhid valley near Sudche	150	150	150		2008	"Pripyat-Stokhid"	39315,5	National Park	
Ukraine	Stokhid valley near Berezna Volya	150	20	30		2008	"Pripyat-Stokhid"	39315,5	National Park	
Ukraine	Area near lake Nobel'	10	10	10		1998				
Ukraine	Mire near Perebrody	5	8	8		2004	Rivnenskiy	47046,8	Nature Reserve	
Belarus	Almany	3496	150	200	poor	2006	Almanskiya baloty	94219	National landscape reserve (zakaznik)	
Belarus	Babrovitskae lake	69	0	0	good	2006	Vyganashchanskae	43000	National hydrological reserve (zakaznik)	
Belarus	Dzikoe mire	869	158	216	good	2008	Belavezhskaya pushcha	152242	National park	

Country	Name of Site	Area (ha)	Min. Pop. in site	Max. pop. in site	Quality	Year	Name of Protected Area	Area of PA (ha)	Designation	Overlap between IBA and PA in ha
Belarus	Dzitva	1711	0	0	medium	2006	Dzitva	1400	National wetland reserve (planned for 2010)	
Belarus	Dzivin-Habovichy	28	1	3	good	2009	none	-	-	
Belarus	Dzivin-Luban	79	0	0	good	2009	none	-	-	
Belarus	Dzivin-Rudzets	56	10	12	good	2009	none	-	-	
Belarus	Gayna mouth	711	0	0	good	2009	Byarezina-Gayna	13500	National wetland reserve (planned for 2014)	
Belarus	Glybokae mire	35	2	5	good	2006	Belavezhskaya pushcha	152242	National park	
Belarus	Lelchytsy	3479	0	0	medium	2009	Lelchytskaye	?	Regional reserve (zakaznik)	
Belarus	Narau floodplain	234	2	10	medium	2006	Belavezhskaya pushcha	152242	National park	
Belarus	Prastyr	2972	0	0	poor	2006	Prostyr	3440	National landscape reserve (zakaznik)	

Country	Name of Site	Area (ha)	Min. Pop. in site	Max. pop. in site	Quality	Year	Name of Protected Area	Area of PA (ha)	Designation	Overlap between IBA and PA in ha
Belarus	Servach	240	25	30	good	2009	Servach	9068	National hydrological reserve (zakaznik)	
Belarus	Shchara-2-Tuhovichy	144	0	0	good	2006	Vyganashchanskae	43000	National hydrological reserve (zakaznik)	
Belarus	Shchara-4-Petuhoushchy na	173	10	100	poor	1996	none	-	-	
Belarus	Shchara-Dabramysl	80	10	20	good	2009	none	-	-	
Belarus	Sporava mire	3765	617	1016	good	2007	Sporauski	19384	National biological reserve (zakaznik)	
Belarus	Stary Zhadzen	605	20	40	poor	2006	none	-	-	
Belarus	Styr mouth	1405	2	2	poor	2007	Syarednyaya Prypiat	90447	National landscape reserve (zakaznik)	
Belarus	Svislach	212	41	47	good	2009	Svislach	3100	Regional reserve (zakaznik)	
Belarus	Vyganauskae lake	94	5	10	good	2006	Vyganashchanskae	43000	National hydrological reserve (zakaznik)	

Country	Name of Site	Area (ha)	Min. Pop. in site	Max. pop. in site	Quality	Year	Name of Protected Area	Area of PA (ha)	Designation	Overlap between IBA and PA in ha
Belarus	Yaselda mouth	1745	0	0	poor	2006	Syarednyaya Prypiat	90447	National landscape reserve (zakaznik)	
Belarus	Zarelishcha	351	10	100	poor	2003	none	-	-	
Belarus	Zvanets mire	5775	3540	4411	medium	2009	Zvanets	10460	National landscape reserve (zakaznik)	
Mauritania	Diawling National Park									
Mali	Inner Niger Delta									
Senegal	Djoudj wetlands	56000	2000	10000	good	2007	Parc National des Oiseaux du Djoudj	16000	National Park	16000

*Notes*

- ✓ **Population Min - Max.** For breeding ('season' column), figures are usually given in pairs; for other seasons, figures are given in individuals
- ✓ **Season:** Breeding, Migration, Non breeding visitor (wintering)
- ✓ **Accuracy: Good (Observed)** = based on reliable or representative quantitative data derived from complete counts or comprehensive measurements.  
**Good (Estimated)** = based on reliable or representative quantitative data derived from sampling or interpolation.  
**Medium (Estimated)** = based on incomplete quantitative data derived from sampling or interpolation.  
**Medium (Inferred)** = based on incomplete or poor quantitative data derived from indirect evidence.  
**Poor (Suspected)** = based on no quantitative data, but guesses derived from circumstantial evidence.
- ✓ **Protected Area name** = Nature Reserve, National Park, Ramsar site, etc.
- ✓ **Type of protected area:** IUCN Category
- ✓ **Protection status:** level of overlap between the IBA and a National protected area or International designation.

ANNEX 3

*National legal status*

<b>Country</b>	<b>Legal protection</b>	<b>For game species, give opening/closing dates of hunting season</b>
<i>Poland</i>	Full	N/A
<i>Germany</i>	Full	N/A
<i>Hungary</i>	Full	N/A
<i>Bulgaria</i>	Full	N/A
<i>UK</i>	Full	N/A
<i>Portugal</i>	Full	N/A
<i>Latvia</i>	Full	N/A
<i>Lithuania</i>	Full	N/A
<i>Netherlands</i>	Full	N/A
<i>Belgium</i>	Full	N/A
<i>France</i>	Full	N/A
<i>Spain</i>	Full	N/A
<i>Ukraine</i>	None	N/A
<i>Belarus</i>	Full	N/A
<i>Russia</i>	None	N/A
<i>Senegal</i>	None (full protection in preparation)	N/A

*Recent conservation measures*

<b>Country</b>	<b>Is there a national action plan for the species?</b>	<b>Is there a national species project / working group?</b>
<i>Poland</i>	<i>Draft</i>	<i>Yes</i>
<i>Germany</i>	<i>In preparation for Land Brandenburg</i>	<i>Yes</i>
<i>Hungary</i>	<i>No</i>	<i>Yes</i>
<i>Bulgaria</i>	<i>No</i>	<i>No</i>
<i>UK</i>	<i>Yes</i>	<i>Yes</i>
<i>Portugal</i>	<i>No</i>	<i>No</i>
<i>Latvia</i>	<i>No</i>	<i>Yes</i>
<i>Lithuania</i>	<i>Draft</i>	<i>Yes</i>
<i>Netherlands</i>	<i>No</i>	<i>No</i>
<i>Belgium</i>	<i>Yes (for Flanders)</i>	<i>No</i>
<i>France</i>	<i>In preparation</i>	<i>Yes</i>
<i>Spain</i>	<i>No</i>	<i>Yes</i>
<i>Ukraine</i>	<i>Draft</i>	<i>Yes</i>
<i>Belarus</i>	<i>Draft</i>	<i>Yes</i>
<i>Russia</i>	<i>No</i>	<i>No</i>
<i>Senegal</i>	<i>Planned</i>	<i>Yes</i>

*Ongoing monitoring schemes for the species*

<b>Country</b>	<b>Is there a national survey / monitoring programme for the species?</b>	<b>Is there a species monitoring programme in protected areas?</b>
<i>Poland</i>	<i>Yes</i>	<i>Yes</i>
<i>Germany</i>	<i>Yes</i>	<i>Yes</i>
<i>Hungary</i>	<i>Yes</i>	<i>Yes</i>
<i>Bulgaria</i>	<i>No</i>	<i>No</i>
<i>UK</i>	<i>Yes</i>	<i>Yes</i>
<i>Portugal</i>	<i>No</i>	<i>No</i>
<i>Latvia</i>	<i>Yes</i>	<i>Yes</i>
<i>Lithuania</i>	<i>Yes</i>	<i>Yes</i>
<i>Netherlands</i>	<i>No</i>	<i>No</i>
<i>Belgium</i>	<i>Yes</i>	<i>No</i>
<i>France</i>	<i>Yes</i>	<i>Yes</i>
<i>Spain</i>	<i>Yes</i>	<i>Yes</i>
<i>Ukraine</i>	<i>Yes</i>	<i>Yes</i>
<i>Belarus</i>	<i>Yes</i>	<i>Yes</i>
<i>Russia</i>	<i>No</i>	<i>No</i>
<i>Senegal</i>	<i>Yes</i>	<i>Yes</i>



*Overview of the coverage of the species in networks of sites with legal protection status*

<b>Country</b>	<b>Percentage of national population included in IBAs</b>	<b>Percentage of population included in Ramsar sites</b>	<b>Percentage of population included in SPAs<sup>1</sup></b>	<b>Percentage of population included in protected areas under national law</b>
<i>Poland</i>	100%	90-100%	100%	89-93%
<i>Germany</i>	100%	100%	100%	100%
<i>Hungary</i>	100%	100%	100%	100%
<i>Bulgaria</i>	80%	<i>Unknown</i>	100%	80%
<i>UK</i>	50-90%	50-90%	50-90%	50-90%
<i>Portugal</i>	100%	0%	100%	100%
<i>Latvia</i>	100%	<i>Unknown</i>	100%	100%
<i>Lithuania</i>	80%	<i>Unknown</i>	80%	80%
<i>Netherlands</i>	99%	<i>Unknown</i>	99%	99%
<i>Belgium</i>	33%	<i>Unknown</i>	33%	33%
<i>France</i>	80%	<i>Unknown</i>	80%	80%
<i>Spain</i>	90-100%	<i>Unknown</i>	90-100%	90-100%
<i>Ukraine</i>	90-100%	<i>Unknown</i>	N/A	60%
<i>Belarus</i>	99%	90-100%	N/A	98%
<i>Russia</i>	<i>Unknown</i>	<i>Unknown</i>	N/A	<i>Unknown</i>
<i>Senegal</i>	100%	50%	N/A	50%

*This table has been generated based on information collected from the national experts during the implementation review of the Species Action Plan in 2008*

<sup>1</sup> This is relevant only for European Union member states. Any other regional (legal) protection should be mentioned in next column.



ANNEX 4

Applicability of actions per country (to be completed also for Slovakia, Switzerland, African countries?)

Action code	short action description	Non-country	Poland	Germany	Hungary	Bulgaria	UK	Portugal	Latvia	Lithuania	Netherlands	Belgium	Luxembourg	Switzerland	Slovakia	France	Spain	Ukraine	Belarus	Russia	Senegal	Mauritania	Mali	Morocco
1.1	legal protection to AW and its habitat		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1.2	legal protection for sites		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1.3	environmental Impact Assessment Procedures obligatory		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1.4	national species action plans or equivalent strategic documents		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1.5	incentives to promote suitable farming practices		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1.6	allow controlled burning		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2.1	formally protect all sites		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Action code	short action description	Non-country	Poland	Germany	Hungary	Bulgaria	UK	Portugal	Latvia	Lithuania	Netherlands	Belgium	Luxembourg	Switzerland	Slovakia	France	Spain	Ukraine	Belarus	Russia	Senegal	Mauritania	Mali	Morocco
2.2	targeted Management Plans for all sites		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2.3	prevent damaging activities		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2.4	create favourable hydrological conditions		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2.5	limit eutrophication		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2.6	prevent successional overgrowth		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2.6.1	regular mowing		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2.6.2	extensive grazing		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2.6.3	controlled burning		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2.6.4	ensure the sustainability of ongoing active management		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2.7	prevent wild and illegal fires		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2.8	limit the use of pesticides		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Action code	short action description	Non-country	Poland	Germany	Hungary	Bulgaria	UK	Portugal	Latvia	Lithuania	Netherlands	Belgium	Luxembourg	Switzerland	Slovakia	France	Spain	Ukraine	Belarus	Russia	Senegal	Mauritania	Mali	Morocco
2.9	lease or purchase Aquatic Warbler sites		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
3.1	increase suitable habitat and restore former sites		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
4.1	improve and standardise monitoring methodologies	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
4.2	maintain and improve monitoring programme	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
4.3	finalise inventory of breeding sites	X	X		X										X			X	X	X				
4.4	identify regular stop-over sites	X		X		X	X	X			X	X	X	X	X	X	X					X		X
4.5	identify key regular wintering sites	X																			X	X	X	
4.6	conduct conservation research	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Action code	short action description	Non-country	Poland	Germany	Hungary	Bulgaria	UK	Portugal	Latvia	Lithuania	Netherlands	Belgium	Luxembourg	Switzerland	Slovakia	France	Spain	Ukraine	Belarus	Russia	Senegal	Mauritania	Mali	Morocco
5.1	strong international AW conservation network	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
5.2	national AW conservation networks	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
5.3	fundraise for conservation projects	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
5.4	make conservation information available	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
5.5	promote AW conservation	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

## Detailed description of actions

### To achieve Result 1:

National and international policies and legislation necessary for the conservation of the Aquatic Warbler and its habitat are in place.

#### Action 1.1.

*Give full legal protection to the Aquatic Warbler and the habitat types it uses through national and international legislation.*

Given its status as a globally threatened species, action should be taken to ensure that the Aquatic Warbler receives the fullest possible legislative species protection in all range states. This is a key priority for action especially in the Ukraine, Russia and Senegal, where the species is not yet fully protected.

Steps should also be taken to ensure that in all range states effective legislation is in place to formally protect the habitat types used by Aquatic Warblers in each country. This legislation should provide legal protection to intact peatland or wetland habitats independent of its formal designation as a protected area. Because the Aquatic Warbler is a habitat specialist, using only a very narrow range of habitats, usually covering only very minor proportions of a country's land surface, this is not an unrealistic objective.

#### Deliverable 1.1.1:

*Full national species protection given to the Aquatic Warbler.*

#### Deliverable 1.1.2:

*Full national habitat protection given to habitat types used by the Aquatic Warbler.*

Priority: essential

Time-scale: short

#### Action 1.2.

*Create or maintain a legal framework that ensures legal protection for the sites regularly used by Aquatic Warblers.*

Policies or legislation should be put in place - or be maintained where existing - that trigger formal protection as a protected area for sites that are proven to be regularly used by Aquatic Warblers as breeding, stop-over or wintering sites.

Because the Aquatic Warbler throughout its annual life cycle occurs in well defined concentrations with high densities in suitable habitats, while completely absent otherwise, the site protection approach is working particularly well for this species. Even in countries with large breeding populations, such as Poland, only a very small proportion (c. 1.5%) of the country needs to be protected to cover over 99% of all regular breeding sites of the species.

The EU Birds and Habitat Directives can be considered to be such an effective piece of legislation. Similar legislation should be put in place in all range states outside the EU.

#### Deliverable 1.2.1:

*A legal framework exists that triggers formal protection for sites regularly used by Aquatic Warblers.*

Priority: high  
Time-scale: medium

### **Action 1.3.**

*Ensure the legal prescription and effective implementation of Environmental Impact Assessment Procedures for all activities that potentially damage the sites used by the Aquatic Warbler.*

Legal mechanisms should be put in place, or be improved or maintained where existing, that prescribe the implementation of thorough and effective Environmental Impact Assessment (EIA) Procedures for all activities, projects, plans and strategies that could potentially damage sites regularly used by the Aquatic Warbler. This applies in particular to any activities that could cause changes in the hydrological conditions or vegetation structure or loss of habitat or increased disturbance. The procedures should be set up in such a way that projects proven to be damaging cannot normally be allowed. Only in exceptional circumstances implementation should be allowed under the condition of full mitigation or compensation of the damage.

The Article 6-Procedure of the EU Habitats Directive and Environmental Impact Assessments following the rules of the EU EIA-Directive can be considered to be such an effective mechanism.

Special attention should be paid to the proper implementation of these procedures on the ground.

#### **Deliverable 1.3.1:**

*An Environmental Impact Assessment Procedure exists that applies to all activities that potentially damage sites used by the Aquatic Warbler.*

#### **Deliverable 1.3.2**

*The national Environmental Impact Assessment Procedure is being effectively implemented for all activities that potentially damage sites used by the Aquatic Warbler.*

Priority: essential  
Time-scale: short

### **Action 1.4.**

*Prepare National Species Action Plans or equivalent strategic documents suitable to inform and guide national conservation efforts for the Aquatic Warbler and use them actively.*

A National Species Action Plan is a strategic document targeted specifically at the conservation of one species which is to inform and guide the conservation efforts of all public and private bodies and individuals. National Species Action Plans for the Aquatic Warbler should be developed and approved by the authorities at least in all countries holding a major part of the world population during breeding, stop-over or wintering; these are: Belarus, Ukraine, Poland, Hungary, Lithuania, France, Spain and Senegal.

While targeted plans are still recommended for countries with smaller numbers of Aquatic Warblers, it might be sufficient in these countries if relevant targeted information and



objectives are included in other strategic documents (e.g. National Protected Area Strategies, National Wetland Strategies). However, it is strongly recommended that the endangered and very specific Pomeranian population (shared between Germany and Poland) be covered by specific Species Action Plans, which besides a National Species Action Plan in Poland also requires a Species Action Plan for Germany, or at least for the German Länder of Brandenburg and Mecklenburg-Vorpommern.

Once developed and approved, these plans should be actively used and regularly revised and updated.

**Deliverable 1.4.1:**

*A National Species Action Plan or an equivalent strategic document exists and has been approved by the relevant authorities.*

**Deliverable 1.4.2:**

*The National Species Action Plan or equivalent strategic document is actively being implemented.*

Priority: high  
Time-scale: medium

**Action 1.5.**

*Seek national and international policies and financial incentives to promote suitable land management practices at sites whose sustainability depends on continued extensive land use.*

The sustainability of the majority of breeding, stop-over and wintering sites depends on continued extensive land use of wet grasslands. Without special support, this type of land use is bound to be increasingly uneconomical and would disappear, giving way to either intensification (with additional drainage, fertiliser use and earlier and more frequent mowing dates or higher grazing densities) or abandonment with subsequent successional overgrowth. Hence, international policies, such as the EU's Common Agricultural Policy and its national counterparts inside and outside the EU, but also the policies on renewable fuels and biofuels need to provide for the maintenance of extensive land use and prevent the intensification or abandonment of wet grassland habitats.

A good example of effective incentives is the new Polish agri-environment package for bird species on wet grassland with a focus option targeting Aquatic Warblers, whose implementation starts in 2009.

It is important to note that extensive land use does not necessarily have to be implemented through traditional labour-intensive methods, such as hand-mowing, as equivalent mechanised options are available.

The support of biodiversity-friendly business can also contribute to maintaining extensive farming practices on wet grassland.

**Deliverable 1.5.1:**

*Suitable policies and incentives exist to promote suitable farming practices at sites whose sustainability depends on continued extensive land use.*

Priority: essential  
Time-scale: medium

**Action 1.6.**

*Create legal mechanisms that allow for the use of controlled burning as a management tool for sites used by Aquatic Warblers.*

The use of fire as a management tool has been banned by law in most European countries since the second half of the 20<sup>th</sup> century, mostly governed by nature conservation considerations. However, new scientific results show that this leads to a series of unwanted conservation effects, such as the decline of certain species, and to the overgrowth of traditionally open habitats (such as heathlands, and dry and wet grassland). It has also become clear that fires do have very different impacts on the vegetation, soil and animals of the burnt areas depending on the burning conditions (air temperature, water level, wind direction, travelling speed of the fire, inclination of the ground, date of burning). Fires can be very destructive at the wrong time of the year under the wrong conditions, but can be very beneficial at the right time of the year under suitable conditions.

Therefore, the general tendency is now to allow the use of fire as a management tool under controlled conditions and with special permissions. Experience with controlled burning in Belarus on key Aquatic Warbler breeding sites (now legal), shows very beneficial effects for the habitat and an increased number of birds in the following season. The fire removes accumulations of old biomass, such as old reed stems, and limits the overgrowth with bushes and trees. A high water or snow level ensures that a sufficient amount of litter needed for nest building remains close to the ground and that the peat layer remains untouched.

Ideal burning conditions for Aquatic Warbler sites are water or snow levels well above ground level and a timing in late autumn or early winter (to allow re-growth of vegetation from early spring before the birds' arrival).

Fire is especially relevant in large areas, where no other management option would be economically feasible.

All range states should adopt legislation that allows the use of fire for management purposes subject to special permissions, while still continuing to prevent wild and illegal fires. Initial experiments should be accompanied by intensive public relation activities explaining the rationale of controlled fires.

**Deliverable 1.6.1:**

*Under the current national legislation it is possible to obtain permission for controlled burning to manage Aquatic Warbler sites.*

Priority: high  
Time-scale: medium

**To achieve Result 2:**

All sites currently or potentially used by the Aquatic Warbler during its annual life cycle are in favourable conservation condition.

**Action 2.1.**

*Seek formal designation as protected areas of all sites regularly holding Aquatic Warblers.*

As outlined under action 1.2, the site protection approach works well for the Aquatic Warbler, a species with very concentrated occurrence. Due to the small number of sites regularly used for breeding, stop-over and wintering, it is realistic to demand that all these sites be designated as protected areas.

The protection status needs to be sufficient to prevent the deterioration of the site and its habitats, whereby attention needs to be paid to the fact that “strict protection” with the prohibition of any type of management is not a suitable protection category for those sites whose habitats depend on continuous land use, e.g. nutrient-rich floodplain habitats.

The protection status needs to be properly enforced.

**Deliverable 2.1.1:**

*All sites regularly holding Aquatic Warblers are included in formally designated protected areas.*

Priority: essential

Time-scale: short

**Action 2.2.**

*Create, approve, use and regularly update Management Plans for each Aquatic Warbler site with special consideration of the conservation needs of the species.*

For each site regularly used by Aquatic Warblers during breeding, stop-over and wintering appropriate management plans should be created and approved, which take into account the species’ requirements. These plans can be created even for areas that do not (yet) have formal protection status. The plans are to inform and guide the management of the sites by all relevant land users and should be regularly updated. They should make prescriptions and recommendations regarding ongoing land use and additional projects required to improve or increase the site and consider the resources needed for this.

Good examples for targeted Aquatic Warbler site management plans exist from the three largest breeding sites in Belarus. For all sites designated as Natura 2000 sites under the EU’s Birds and Habitats Directives – the majority of the Aquatic Warbler sites within the EU - management plans have to be developed in the near future.

**Deliverable 2.2.1:**

*Each Aquatic Warbler site has a management plan considering the special conservation needs of the species.*

Priority: high

Time-scale: medium

**Action 2.3.**

*Prevent the implementation of activities, projects or programmes that could be detrimental to the sites used by the Aquatic Warbler.*

Any activities, project, plans or programmes that are likely to be detrimental to sites regularly used by Aquatic Warblers during their annual life cycle have to be prevented. This applies to any projects taking place within the sites and those taking place outside but with a potential effect on the site.

Normally, the designation of sites as protected areas and properly applied Environmental Impact Procedures (as outlined in action 1.3) should prevent any of these projects from going ahead. But where these procedures are not or not properly applied or where legal requirements are not clear enough, a special effort has to be made to prevent these projects or at least to obtain full mitigation and compensation, where absolutely unavoidable.

Currently, the most threatening development is the ongoing deepening of the riverbed of the upper Pripyat River in the Ukraine, which threatens the habitat of over 1000 singing male Aquatic Warblers. A similar case is the ongoing deepening of the Ner River in central Poland, threatening a small population of up to 14 singing males.

Equally, efforts should be made to eliminate negative effects caused by regular land use which is not subject to Environmental Impact Procedures, for example the large-scale early mowing in the polders of the Nemunas Delta in Lithuania, which reduces the breeding success of the local population (about 100 singing males) to zero.

#### Deliverable 2.3.1:

*No activities, projects or programmes threatening the population of Aquatic Warblers at sites regularly used by the species are implemented*

Priority:       essential  
Time-scale:   short

#### **Action 2.4.**

*Create favourable hydrological conditions at the sites used by the Aquatic Warbler, either through restoration of natural hydrological conditions or through suitable management of new or existing hydrological infrastructure.*

Suitable hydrological conditions are one of the most crucial habitat factors for the Aquatic Warbler during breeding, migration and wintering. During the breeding season, the species typically prefers water levels at or up to 10 cm above ground level, with water levels during summer and autumn slightly below ground level. Also migration and wintering sites with water levels at or just above ground are preferred.

Only very few sites still possess an undisturbed natural hydrological regime without any need of management. All other sites depend on suitable management of existing hydrological infrastructure such as sluices, pumps, ditches and dams or on the restoration of near-natural suitable conditions. Too high water levels promote the growth of reeds, while too low water levels favour successional overgrowth with bushes and trees.

Under near-natural water conditions, the need for vegetation management is much reduced compared to sites with a disturbed water regime, making water management one of the most cost-effective land management tools.

It should also be noted that overgrowth with trees increases evaporation and reinforces reduced water levels. Hence tree and bush removal can be considered as one way of helping restore hydrological conditions.

Suitable water levels also play an important role in reducing the negative impacts of nest predation on breeding success, with the number of predators being lower when water levels are high. This has been shown at several sites in Belarus, where predation of young by shrews (*Sorex sp.*) has been very high during years with low water levels.

As a minimum a basic monitoring of water levels is a pre-condition for proper water management at each site.

**Deliverable 2.4.1:**

*All Aquatic Warblers sites have a favourable hydrological condition.*

Priority: essential

Time-scale: short

**Action 2.5.**

*Limit the eutrophication of sites caused by water feeding the site, mineralization of drained peat soil and through aerial deposition.*

Nutrient-rich Aquatic Warbler sites require considerably more active vegetation management (such as mowing, even early mowing in places) to maintain suitable habitat conditions for the Aquatic Warbler. This required intensive management can be directly detrimental to the species, e.g. when early mowing destroys broods, but normally cannot be realistically implemented across the whole site. Hence, on these sites it is advisable to limit all additional external and internal sources of nutrients to the minimum.

External sources are nutrient-rich river waters feeding the site (to be remedied through the building of sewage facilities upstream) and nutrients seeping in from nearby fields and settlements (to be remedied by setting up buffer zones with limits on fertiliser usage levels).

Internal sources of nutrients are the mineralisation of non-water-logged peat soil, which is to be avoided through appropriate water management (see action 2.4) or the mineralisation of arisings left on site after mowing, which is to be avoided by removal of this biomass after mowing.

Eutrophication through nutrients in the air has strongly increased over the past century and does have an impact on increased vegetation growth. For this, remedial action is only possible on a global scale.

**Deliverable 2.5.1:**

*All Aquatic Warbler sites have suitable mineralisation levels close to their natural trophic levels.*

Priority: medium

Time-scale: long

**Action 2.6.**

*Prevent the natural succession of the vegetation by ongoing active management at those Aquatic Warbler sites where the extent and quality of suitable habitat would otherwise deteriorate.*

Very few of the remaining current Aquatic Warbler breeding sites (and only a few of the stop-over and wintering sites) are so close to pristine fen mires that they will stay open without any type of vegetation management for more than one hundred years. All other sites require some form of active vegetation management at different intervals – very long ones for near pristine fen mire sites and very short ones for highly anthropogenic sites especially in nutrient-rich floodplains.

This habitat management does not necessarily always have to be implemented as a conservation activity as in many sites normal land use can do the job, if it is properly directed. In fact, efforts should be made (see action 1.5) to promote land use and business models that can provide the necessary vegetation management, while still operating economically.

Only where this is not possible, targeted conservation measures have to be implemented.

#### Deliverable 2.6.1:

*Active management keeps all Aquatic Warbler sites open that are threatened by successional overgrowth.*

Priority: essential

Time-scale: short

#### **Action 2.6.1**

*Regular mowing.*

Regular mowing is the best proven and most effective management measure to improve Aquatic Warbler habitats. It is needed to maintain the vegetation structure and composition preferred by the Aquatic Warbler during breeding, and probably also at most stop-over sites and some of the wintering sites. Without mowing most areas are prone to overgrowth by bushes and trees, accumulation of old reed stems or the accumulation of a dense litter layer of dead biomass.

However, it is also the most expensive management method, if mowing is not implemented as part of ongoing economic land use.

The periodicity of mowing depends on the habitat characteristics, with the centres of near-natural fen mires with low and medium trophic levels needing no or very occasional mowing (e.g. every 20 years). The outer areas of those sites and the whole of smaller sites, which are normally more influenced by negative edge effects (e.g. less optimal water levels, more succession of trees from neighbouring stands) will need more regular mowing (e.g. every 3-5 years).

With increasing mineralisation, the periodicity of mowing increases, with the need for mowing every two years (e.g. on drained but still wet fen mires, where mineralisation of peat occurs during the drier summer months) or every year up to even twice a year on some secondary floodplain sites.

Mowing should always be implemented in a way that creates as many mowing edges (between mown and unmown areas) as possible, especially in non-optimal habitats, as these edges are preferred by the species for singing and feeding. This can be done by

leaving strips of unmown land or by rotational mowing, e.g. by leaving a different 50% of the site unmown every year. Mowing in strips (one strip mown, one strip left unmown) should be tested.

Mowing at the breeding sites should take place between 1 August and the end of February/March, leaving enough time for vegetation development in spring before the birds' arrival and giving them the chance to successfully rear second broods in July. In early August there is already only a very small chance of destroying the last remaining active broods. When mowing in late winter on sites with water tables above ground, it is especially important to leave areas unmown so that early arrivals can find nesting opportunities above the water level.

A special situation exists for very nutrient-rich floodplain sites, which require two annual cuts to make the site suitable for breeding Aquatic Warblers in the following year. Here, the first cut has to take place in June or July, during the breeding season. Areas with currently breeding birds need to be exempt from this early cut, thus requiring a thorough inventory of all plots with breeding Aquatic Warblers.

In order to prevent the build up of dense litter layers and to extract nutrients from the sites, biomass should normally be collected and removed from the sites after mowing. This is less crucial in sites with lower nutrient levels, and therefore longer periodicities of mowing (3-5 years or more) and lower annual production of biomass, and higher water levels. Here, especially if the removal of biomass is technically and financially challenging, it can be acceptable to leave the biomass on site, normally in mulched form.

Traditionally, mowing of the difficult to access Aquatic Warbler sites has been done by hand-scything. Across the species' range, it is now impossible to implement hand-scything on any large areas due to the high costs involved and the very limited number of potential contractors for this type of work. Hence, mechanical options need to be employed.

Sites that become dry in summer (floodplain sites, drained areas) can be mown with normal agricultural equipment (tractors, if needed with twin tyres). However, sites that are permanently wet and normally have peaty soils (i.e. typical Aquatic Warbler habitats) require special low pressure machinery on caterpillar tracks or balloon tyres to avoid damage to the peat soil and the vegetation.

#### Deliverable 2.6.1.1:

*Aquatic Warbler sites threatened by successional overgrowth are regularly mown at dates and intensities beneficial for the species.*

Priority: essential

Time-scale: short

#### Action 2.6.2

*Extensive grazing.*

Extensive grazing is less well tested and proven as an effective management tool for Aquatic Warbler sites than mowing. Still, it should be possible to maintain a favourable vegetation structure through carefully directed extensive grazing. The advantages of this management method are the low ongoing management costs and the potential high

economical sustainability of this type of management. The difficulty is, that a fine steering of grazing densities, dates and areas is required.

At present only some breeding sites or parts of sites in Ukraine and Poland are extensively grazed, with more research needed to determine the exact effects. In the past, the German breeding site "Freesendorfer Wiesen" held a good population during extensive grazing. Here, the Aquatic Warbler disappeared when grazing intensity increased.

Several sites in Poland (around the Szczecin lagoon) are known to have become suitable for quite large numbers of Aquatic Warblers after intensive grazing had ceased completely around 1990, but have since deteriorated in the absence of further management.

Extensive Aquatic Warbler friendly grazing management should probably look as follows, with more research needed to fine-tune these recommendations:

Grazing can be done by cattle or horses, preferably with low-maintenance traditional breeds. Grazing densities should be adapted to the productivity of the site, probably between 0.3 and 1.0 large cattle units/ha. Areas with breeding Aquatic Warblers should be exempt from grazing from early May till the end of July. Grazing before and especially after this period is necessary to reduce the vegetation, whereby especially from 1 August higher densities might be necessary. Depending on the effectiveness of grazing, it might be necessary to mow the rest of the vegetation after the grazing season in late autumn or winter.

In many sites, the grazing and especially browsing of wild animals, especially elk, can be relevant, as high numbers of elk can be very effective to keep bushes and trees down, thus reducing the need for management. Therefore, elk numbers should be promoted in suitable breeding sites (e.g. Biebrza Marshes in Poland, Zvanets fen mire in Belarus) through strict protection.

#### Deliverable 2.6.2.1:

*Where grazing can be a suitable tool to maintain Aquatic Warbler breeding sites, grazing dates and intensities are adjusted beneficially for the species.*

Priority: medium

Time-scale: short

#### **Action 2.6.3.**

*Controlled burning.*

As outlined under action 1.6, controlled fire has to be considered a suitable management tool for Aquatic Warbler sites, especially in large areas, where no other management option would be economically feasible.

Suitable burning conditions for Aquatic Warbler sites are water or snow levels well above ground (to prevent peat burning and the burning of vegetative parts of multi-annual plants and to retain a minimum amount of old biomass for nest building in the early season) and a timing in late autumn or early winter (to allow re-growth of vegetation from early spring before the birds' arrival). It is probably not necessary to burn 100% of the area, as unburnt patches might even prove beneficial in the early stages of the following season (similar to leaving unmown areas during mowing management). When used to stop reed succession,



most detrimental effects on reed growth were observed when the recently burnt areas were afterwards flooded. According to current knowledge, suitably applied burning allows for increased numbers of Aquatic Warblers as soon as the following season, while fires under unfavourable conditions (e.g. shortly before the breeding season or during dry conditions) will cause unfavourable habitat conditions during the first season after burning (in following years conditions may be back to normal or even better) and can cause lasting damage to soil and vegetation. Obviously, fires during the presence of Aquatic Warblers would have disastrous consequences for the species and the local arthropod fauna.

Historically, fire has been regularly used by local people to keep fen mires and other Aquatic Warbler sites open and to improve the vegetation for haymaking or reed cutting. Currently, fire is used to manage Aquatic Warbler sites only in Belarus (with very good results) and Senegal, an experiment is planned in Germany. In other countries it is not yet possible to obtain permission for legal controlled burning.

Any controlled burning action has to be accompanied by suitable public relation measures, until burning has become a locally accepted management tool. Otherwise, there is the danger of increased illegal fires set by the local population during unfavourable conditions.

The disadvantage of burning compared to grazing or mowing with the removal of biomass is that a large part of the nutrients fixed in the vegetation will remain on site. Therefore, it is likely to prove not suitable for regular use on nutrient-rich Aquatic Warbler sites, which require annual management. It is probably most suitable for sites with a medium nutrient content that require management every 3-5 years or more.

More research is needed to assess the exact effects of controlled burning and to compare it to other management techniques.

#### Deliverable 2.6.3.1:

*Aquatic Warbler sites threatened by successional overgrowth are burnt when necessary at dates and under conditions beneficial for the species*

Priority: high  
Time-scale: medium

#### **Action 2.6.4**

*Ensure the sustainability of ongoing active management.*

Most Aquatic Warbler sites require active management at regular intervals. While first-time measures and experimental management can be financed by typical one-off nature conservation projects, different mechanisms have to be set up to ensure long-term sustainability of ongoing management.

Where possible, it is preferable and most cost-effective to support local land users to continue or re-instate suitable forms of land use as part of their own economic activities. Where this requires incentives or adjustments to the usual methods and timings employed, financial support will be necessary (as outlined under action 1.5).

Where ongoing management needs to be implemented purely for nature conservation purposes, the required funds should be provided for in the state budget. This is a realistic option for protected areas with their own administration, staff and operational budget.

Where the traditional product of land use at Aquatic Warbler sites, hay for livestock feed and bedding, is no longer in sufficient demand or cannot be produced in sufficient quality (because of late cutting dates and very wet habitats), efforts need to be made to develop alternative uses for late-cut biomass, in order to reduce the net costs of site management and to interest land users in implementing the necessary management measures.

Recent research has shown that this type of biomass is suitable for burning as renewable fuel, either in the form of bales, pellets or briquettes as secondary fuel in large-scale power plants, or primary fuel in specialised biomass plants, or for communal or private use in ovens and fireplaces. It is also suitable for composting on its own or as additional raw material for composting facilities for other organic material, e.g. from sewage works. It is, however, not suitable for use in biogas facilities, which would require earlier cutting dates.

Most problematic for any economic use of biomass is the drying, collection and transport of the material to the facilities. Hence, any large-scale use of material from Aquatic Warbler sites for energetic uses requires the necessary facilities to be nearby.

Another way of ensuring ongoing management is the use of the cheapest management method: controlled burning (see action 2.6.3), which only requires minimal financial resources.

Deliverable 2.6.4.1:

*Realistic concepts for sustainable long-term management of Aquatic Warbler sites exist.*

Deliverable 2.6.4.2:

*The suitable management of all Aquatic Warbler sites is secured for the foreseeable future*

Priority: essential

Time-scale: medium

**Action 2.7.**

*Prevent wild and illegal fires occurring on Aquatic Warbler sites during unfavourable and uncontrollable conditions.*

As outlined under actions 1.6 and 2.6.3, fires are damaging to Aquatic Warbler sites if they occur under unfavourable conditions, e.g. shortly before the breeding season, or during dry conditions, or too frequently. It causes unfavourable habitat conditions during the first season after burning (in following years conditions may be back to normal) and can cause lasting damage to soil and vegetation. Obviously, fires during the presence of Aquatic Warblers would have disastrous consequences for the species and the local arthropod fauna.

Hence, fires occurring during unfavourable conditions are to be extinguished as soon as possible. Illegally set fires should be prevented. The most effective method to prevent unfavourable fires is appropriate water management that maintains a high water level throughout the site. It is important to accompany any controlled burning with the necessary public awareness measures, explaining the difference between controlled burning and illegal burning.

Deliverable 2.7.1:

*Wild and illegal fires do not occur at dates and under conditions unfavourable for the Aquatic Warbler.*

Priority: high  
Time-scale: ongoing

**Action 2.8.**

*Limit the use of pesticides (herbicides, insecticides and avicides) in the catchment areas of Aquatic Warbler sites where they have been shown to negatively affect the species.*

At present, no Aquatic Warbler site used by the species during breeding, migration or wintering is known to be affected by pesticides, although this is possible at the only currently known wintering site in and around the Djoudj National Park in Senegal.

It is necessary to identify the sites, where the use of pesticides on site or in the catchment area of the site can cause a problem either to the bird directly (through avicides commonly used in rice fields in Africa to combat Red-billed Queleas and similar granivorous species) or to its arthropod prey. When pesticides are shown to negatively affect the species, measures need to be taken to limit the use of pesticides to amounts not harmful for the Aquatic Warbler.

**Deliverable 2.8.1:**

*The sites where the use of pesticides negatively affect the Aquatic Warbler have been identified.*

**Deliverable 2.8.2**

*The use of pesticides in the catchment areas of these sites has been limited to amounts not harmful for the Aquatic Warbler.*

Priority: low  
Time-scale: medium

**Action 2.9.**

*Lease or purchase current or potential Aquatic Warbler sites through bodies committed to the conservation of the species to ensure suitable long-term management if a deterioration of the site is otherwise likely.*

Where the ownership structure of Aquatic Warbler sites makes it impossible to implement active conservation measures, a situation that can occur within and outside formally protected areas (e.g. within the Biebrza National Park in Poland and outside the park in its buffer zone), and it is impossible to encourage the present land owners to adopt Aquatic Warbler friendly land use practices, land lease or purchase through bodies committed to the conservation of the species should be considered and supported. This usually means the lease or purchase of private land by the state treasury or by private conservation organisations with the necessary means to ensure long-term suitable management of the site. Usually, land purchase should be preferred to land lease because it gives a better guarantee for long-term suitable land management.

Where land at Aquatic Warbler sites is public, but not under management of public conservation bodies (e.g. large parts of the Krajnik breeding site in western Poland), this

land should be passed on to the appropriate management authority of a public conservation body.

Deliverable 2.9.1:

*Aquatic Warbler sites that would otherwise deteriorate have been bought, leased or been transferred to the appropriate management authority of sympathetic bodies able to guarantee suitable and sustainable management.*

Priority: medium  
Time-scale: long

**To achieve Result 3:**

The area of suitable habitat for the Aquatic Warbler has been increased to allow for an increase of the area of occupancy and for increased exchange between populations

**Action 3.1.**

*Increase the area of suitable habitat at existing Aquatic Warbler sites and restore former sites and other sites with a potential to become Aquatic Warbler sites.*

The criterion that currently determines the status of the Aquatic Warbler as a globally threatened species is its very restricted “area of occupancy”, i.e. the area of suitable habitat within a much larger distribution range effectively occupied by the species, of less than 1,500 km<sup>2</sup> (the actual area is about 1,000 km<sup>2</sup> during the breeding season and even less during migration and in winter). To remove the species from the list of globally threatened species, it is therefore not sufficient to manage and improve all remaining sites, it is also necessary to create new additional habitat for the species.

This can be done by increasing suitable habitat at existing sites by restoring adjacent areas, e.g. through hydrological measures or bush removal. Sometimes simple mowing and biomass removal might be sufficient.

Additionally, efforts must be directed towards the identification and restoration of additional sites not currently used by Aquatic Warblers, usually drained fen mires or other previously occupied sites. When choosing restoration sites, priority should be given to sites that can become stepping stone habitats able to connect the main central European population with outlying populations such as the Pomeranian, Lithuanian, Hungarian and Siberian populations. Thereby, they should not be too far from potential source populations to provide a reasonable chance of colonisation.

Depending on the level of degradation, the restoration process could take a rather long time. A large scale restoration programme for degraded peatlands in Belarus estimates around 30 years from the moment of re-wetting a degraded fen mire to the point when it could become suitable for Aquatic Warblers. However, they will prove important for other endangered wildlife immediately after re-wetting.

This action should be a high priority for countries with large areas of former Aquatic Warbler habitat but smaller recent numbers, i.e. especially for Germany and European Russia, but also for Poland, where there is a chance to re-connect the Pomeranian population with the central population.

Deliverable 3.1.1:

*Area of suitable habitat at existing Aquatic Warbler sites has been increased.*

Deliverable 3.1.2:

*Potential sites for restoration have been identified.*

Deliverable 3.1.3:

*Former and potential sites have been restored to favourable habitat conditions for the Aquatic Warbler.*

Priority: essential

Time-scale: long

#### **To achieve result 4:**

All knowledge necessary to inform and guide the conservation efforts for the Aquatic Warbler exists.

#### **Action 4.1.**

*Further improve and standardise the methodologies used in different range states for the monitoring of breeding, migrating and wintering numbers of Aquatic Warblers.*

Methodologies have been developed by experts coordinated through the BirdLife International Aquatic Warbler Conservation Team (AWCT) to monitoring breeding, stop-over and wintering populations. Still, in some cases there is a need for further standardisation of parameters:

To ensure better comparability, ringing protocols for Aquatic Warblers used in the different stop-over countries would benefit from further standardisation.

The count of breeding populations is currently done using two methodologies, full counts and transect counts that are later extrapolated. Both methods cannot be used at every site and therefore efforts should be made to increase the accuracy of numbers derived from transect counts and to develop sampling methods that can replace full counts in years when funding is limited.

The new methodology to monitor wintering bird numbers is currently being tested over several years in the only known wintering site at Djoudj/Senegal.

In all cases, standard descriptions of the main habitat parameters - water level, vegetation composition and structure and bush or tree coverage should accompany the bird count data.

Deliverable 4.1.1:

*A set of standard monitoring methodologies has been developed and agreed.*

Deliverable 4.1.2:

*The standard monitoring methodology is used across the species' range.*

Priority: high

Time-scale: short

#### **Action 4.2.**

*Maintain and improve a monitoring programme covering all Aquatic Warbler sites on a regular basis that is suitable to identify trends in the numbers of breeding, migrating and wintering Aquatic Warblers.*

Currently, annual counts of singing males are available from all major sites of the central population and all other populations forepart from the isolated Siberian population, so that reliable estimates of overall numbers can be produced by August each year. However, full counts are not being implemented at some of the larger sites every year, and smaller sites are often not counted annually, e.g. in Poland only once every six years.

While this is sufficient to create overall annual estimates and trends, it would be desirable to obtain monitoring data (either from full counts or sample plots/transects) from all breeding sites every year.

The monitoring of stop-over sites should be extended to additional sites to get a better idea of numbers and flyways, while current monitoring stations should continue their efforts in a standardised way to obtain long-term population data that could additionally inform about breeding success and mortality.

Regular monitoring should also be set up in all wintering sites that are being identified.

**Deliverable 4.2.1:**

*Each year an accurate estimation of the species' world and national populations can be produced.*

**Deliverable 4.2.2:**

*All breeding, stop-over and wintering sites are subject to regular population monitoring (from annual to once every 6 years – depending on importance).*

Priority: high

Time-scale: ongoing

**Action 4.3**

*Finalise the inventory of breeding sites with a special focus on smaller sites and further search for breeding sites in Russia.*

It is assumed that all major breeding sites have now been identified. At the same time it has become clear that even in well monitored countries smaller sites have gone undetected until today. These small and unknown sites are very likely to disappear if they are not given special conservation attention, firstly because the occurrence of Aquatic Warblers is not known and secondly because without management smaller sites are more likely to deteriorate quickly than bigger sites.

Therefore, an inventory of smaller breeding sites should be done, especially in countries with large populations and important sites, i.e. Belarus, Ukraine and Poland, but also in European Russia, where the first active breeding site is still to be found. Satellite image analysis should be used to narrow down the search to likely sites. Also in West-Siberia, any indication for possible breeding occurrence should be followed up immediately to obtain confirmed information.

**Deliverable 4.3.1:**

*All regular breeding sites in Europe and West-Siberia are identified.*

Priority: high  
Time-scale: short

#### **Action 4.4**

*Identify regular stop-over sites during autumn and spring migration in Europe (esp. France and Spain) and northern Africa (Morocco, West-Sahara, Mauritania, but also Tunisia, Libya).*

In European passage countries, a handful of key stop-over sites is known, but there are probably more key sites still to be discovered. The aim should be to identify all regularly used European stop-over sites in order to protect them and to implement suitable management. Identification of sites should be made possible by placing mist-nets in typical Aquatic Warbler habitats, i.e. low sedge vegetation rather than in reedbeds, which are more often used as locations for mist-nets.

No regular stop-over sites are confirmed in north-west Africa, i.e. Morocco, West-Sahara and Mauritania or in countries such as Tunisia or Libya that might be regularly visited during spring migration. The key sites in these countries should be identified and protected because they seem to be crucial to facilitate the migration of the species across the Sahara and the Mediterranean Sea or along the Atlantic coast. Satellite image analysis may be used to this end.

#### **Deliverable 4.4.1:**

*All major regular stop-over sites in Europe and northern Africa have been identified.*

Priority: high  
Time-scale: short

#### **Action 4.5**

*Identify key regular wintering sites in western Africa.*

The identification of all major wintering sites in western Africa is one of the highest priority actions for the conservation of the Aquatic Warbler in the short term. To date, only one site, the Djoudj National Park in Senegal and its buffer zone, is known. This site with some probability is the most important wintering site of the species but it is likely that other important sites exist.

Given the tremendous speed of landscape changes in western Africa, with wetland sites being converted into rice fields or sugarcane plantations, and great rivers, such as the Senegal River, being converted into a series of reservoirs, it is very likely that any other sites are under immediate threat. This means that within a few years, the availability of suitable wintering habitat may become a major limiting factor for the world population of Aquatic Warblers. This is why within the next few years the wintering sites of at least 90% of all Aquatic Warblers should be identified to facilitate the protection of these sites.

Work, coordinated by the AWCT, is underway to find potential other sites using satellite image analyses, feather isotope analyses, genetical analyses, training and cooperation with local ornithologists and targeted field searches.

Deliverable 4.5.1:

*All key wintering sites in western Africa have been identified.*

Priority: essential

Time-scale: short

**Action 4.6**

*Conduct research on a number of topics important to improve the effectiveness of conservation measures for the Aquatic Warbler.*

Although the knowledge base underlying Aquatic Warbler conservation has made impressive progress during the past 13 years, further targeted research could improve this conservation work even more. The following research topics would contribute particularly valuable information and should be supported as a priority:

- Further research on optimal habitat characteristics in breeding and stop-over sites, in order to create reference target values for any kind of management.
- Development of a population model for the whole world population and relevant sub-populations.
- Assessment of the effectiveness of different active conservation measures at different sites, including water management, mowing, grazing and controlled burning.
- Habitat use and key habitat factors, home range, seasonal movements and diet of Aquatic Warblers in the wintering grounds.
- Movements during the breeding season within and between sites and the extent of exchange between different sub-populations using colour-ringing and genetic analysis.
- Comparative studies on breeding success in different sites across the species' breeding range.
- Assessment of the levels and reasons of predation on broods.
- Assessment of the impact of pesticides on the Aquatic Warbler and its arthropod prey.

Deliverable 4.6.1:

*Research results needed to improve conservation work for the Aquatic Warbler exist.*

Priority: high

Time-scale: medium

**To achieve result 5:**

Conservation efforts for the Aquatic Warbler are coordinated on an international level and information and knowledge on the conservation of the Aquatic Warbler and its habitat is made available and is promoted amongst all stakeholders with a role to play in the conservation of the species.

**Action 5.1**



*Maintain and further develop a strong international network of organisations and individuals committed to the conservation of the Aquatic Warbler using the CMS MoU and the BirdLife International Aquatic Warbler Conservation Team (AWCT) as coordination platforms.*

Since the publication of the previous EU Action Plan for the Aquatic Warbler, great progress has been made in creating strong international networks committed to the conservation of the species. In 1998, the BirdLife International Aquatic Warbler Conservation Team (AWCT), an international network of scientists and conservationists committed to the species, has been set up. The RSPB (BirdLife in the UK) provides regular support to the AWCT, and has enabled it to coordinate much of the conservation work since then.

In 2003, the Memorandum of Understanding for the Conservation of the Aquatic Warbler has been set up under the auspices of the Bonn Convention (CMS). To date, it has been signed by 12 range states of the species. RSPB and CMS are funding the position of an Aquatic Warbler Flyway Officer, who is to support the coordination of the MoU. The MoU represents a conservation network for the species on a governmental level and thus complements the AWCT. Regular range state meetings are planned every three years.

The work of both international networks is vital to the conservation of the species and needs to be continued and further supported. The AWCT should aim to continue including new members from countries with newly discovered Aquatic Warbler populations during migration and wintering. The CMS MoU should aim to obtain all range states as understood in this action plan as signatory states.

**Deliverable 5.1.1:**

*The CMS MoU continues to serve as a platform coordinating national states' efforts to conserve the Aquatic Warbler and holds regular signatory state meetings.*

**Deliverable 5.1.2**

*The BirdLife International Aquatic Warbler Conservation Team (AWCT) continues to be supported by the RSPB and serves as a platform coordinating expertise in the field of Aquatic Warbler conservation.*

Priority: high

Time-scale: ongoing

**Action 5.2**

*Develop and maintain national networks of public bodies, conservation organisations and experts committed to the conservation of the Aquatic Warbler.*

In addition to the above mentioned international networks it is necessary to establish in every country formal or informal national working groups committed to the conservation of Aquatic Warblers. These groups should include experts on the species, conservation managers and representatives of the relevant public authorities, because this combination ensures the highest impact. It would be beneficial if this working group was linked to or championed by a committed conservation organisation, e.g. the national BirdLife partner organisation, where this exists.

Deliverable 5.2.1:

*National networks of public bodies, conservation organisations and experts committed to the conservation of Aquatic Warblers exist.*

Priority: medium

Time-scale: short

**Action 5.3**

*Fundraise for projects contributing to the implementation of this action plan using national and international sources of funding, thereby highlighting the joint responsibility of all range states for the survival of the species.*

Many of the recommended actions listed in this action plan require one-off project funding, which needs to be acquired by local, national and international conservation managers.

Funding bodies therefore should continue to provide priority funding for this globally threatened species. As funding options are unevenly distributed between the range states of the species, with larger funding sources often available in countries with lower Aquatic Warbler populations, funding agencies of these more affluent states should continue to provide funding for priority projects in less affluent range states, thereby recognising the joint responsibility for the future of the species, which they have previously manifested by signing the Aquatic Warbler MoU.

Deliverable 5.3.1:

*Funding is available for priority projects needed to advance the conservation of Aquatic Warblers.*

Deliverable 5.3.2

*Range states continue to financially support priority projects in other range states.*

Priority: high

Time-scale: ongoing

**Action 5.4**

*Make conservation information readily available to all relevant stakeholders.*

Due to the large distribution range of the species and the geographical distance between experts and conservationists focusing on the species special attention needs to be given to the distribution of the latest conservation information amongst all relevant stakeholders actively working on the conservation of the species. Mechanisms for this include:

- the e-mail distribution list of the AWCT
- the website of the AWCT ([www.aquaticwarbler.net](http://www.aquaticwarbler.net))
- targeted publications, e.g. an “Aquatic Warbler Conservation Handbook”
- regular targeted conferences for scientists, conservationists and land managers.

Deliverable 5.4.1:

*Aquatic Warbler conservation information is readily available for anybody with an interest in the conservation of the species.*

Priority: medium  
Time-scale: ongoing

### **Action 5.5**

*Promote the need for the conservation of the Aquatic Warbler and its habitat and disseminate conservation information and habitat management recommendations to land managers and local stakeholders at Aquatic Warbler sites and to a wider public beyond the sites.*

The conservation of Aquatic Warblers and the sites where they occur cannot work without the understanding, acceptance and active support of the local population, especially where local people are land owners or land managers. It also needs the support of the wider public in order to be able to put Aquatic Warbler conservation on the political agenda on the national level.

Much progress has been made in this respect since the publication of previous versions of this action plan, with the Aquatic Warbler having become a well-known symbol for nature conservation and especially for the protection of fen mires and wet meadows in Belarus and Poland. Further efforts are needed to maintain this momentum and to reach local communities at all Aquatic Warbler sites, e.g. through:

- the use of Aquatic Warblers as flagship species for sedge fens and wet meadows
- the promotion of the Aquatic Warbler and its habitat as a nature tourism attraction
- local information and observation events
- the involvement of local people in the preparation of site management plans
- the employment of local people for the implementation of conservation measures
- leaflets
- media work (radio, newspapers, TV)
- presentation of films about the conservation of the species.

#### **Deliverable 5.5.1:**

*Local stakeholders at Aquatic Warbler sites and interested sectors of the wider public are aware of the conservation needs of the species.*

Priority: high  
Time-scale: ongoing