Report on the

1. Aquatic Warbler Expedition to Western Siberia

4 - 19 June 1999

written by
Dr. Martin Flade, Dorfstrasse 60, D-16230 Brodowin
on behalf of the Aquatic Warbler Conservation Team

Participants of the Expedition:

From Russia:	MIKHAIL KALYAKIN, Moscow University (member of AWCT)
	SERGEJ TSIBULIN, Novosibirsk University
	SLAVA ..., Novosibirsk (Car Driver)
from Germany:	MARTIN FLADE, Brodowin (chairman AWCT)
	PETER HAASE, Parey
	KLEMENS STEIOF, Berlin
	SUSANNE WINTER, Brodowin

Schedule of Expedition:

4 June:	Flight of Germans from Berlin to Moscow, stopover in Moscow
4/5 June:	flight Moscow - Novosibirsk, meeting with Sergej Tsibulin
5 June:	stopover and shopping in Novosibirsk
6 June:	travel Novosibirsk - Barabinsk - Severnoye, stopover in salt steppe habitat
7 - 12 June:	expedition from Mezhowka to Vasyuganskoye watershed mire
12 June:	investigation of Kama river valley, camp near Fjodorowka
13 June:	investigation of Om river fen mires near Yelonka
14 June:	travel to Ob floodplain N Novosibirsk, camp in the floodplain
15 June:	travel to Shegarka mire W Tomsk, camp S of Melnikovo
15 - 17 June:	investigation of the Shegarka mire (3 plots)
17 June:	travel via Tomsk to Novosibirsk, meeting with Prof. Ravkin
18 June:	flight Novosibirsk - Moscow
19 June:	stopover and sightseeing in Moscow, flight back to Berlin

1. Introduction

During the Aquatic Warbler (AW) Workshop at Brodowin from 30 March to 1 April 1998, when the Aquatic Warbler Conservation Team (AWCT) was founded, we stated at the end of the workshop, that the perhaps greatest mystery concerning AW are the rumours about a big breeding population in Western Siberia. MIKHAIL KALYAKIN showed us in his brilliant analysis, which included a comprehensive and accurate desk study on all existing data from publications and zoological collections from Russia, that it is almost impossible to give a clear answer whether the species is breeding in Siberia and European Russia (besides Kaliningrad region) or not. We got the impression: The more information we collect, the more the situation becomes mysterious.

There was no doubt, that a series of systematic expeditions is necessary to bring a little bit more light to this mysterium. So we decided to start with an expedition to the most promising regions in European Russia (Meschora mires in Ryazan region, SW-Ural in Perm region) in 1998. The expedition was performed, but no AW were found. The situation kept unclear, but regarding the existing habitats in the investigated regions we came to the conclusion, that the occurrence of a bigger permanent breeding population of AW in European Russia is unlikely. The "stop-over hypothesis" was formulated by MARTIN FLADE and MIKHAIL KALYAKIN in the "Russia 1998 Report", which means, that there still exists a permanent AW population in W-Siberia, and all data from European Russia derive from migrants on their way to or from their Siberian breeding grounds (those migrants may also occasionally breed at stop-over sites, if habitat conditions are advantageous).

The knowledge about a bigger AW breeding population in W-Siberia is of essential importance from a conservation point of view: If the species has a last unknown stronghold there, it would be of crucial interest to save those habitats, which are probably not dependend on human management. If the species is (almost) missing E of the Ural mountains, the Polessye population is so much the more important!

At this stage of work, the paper on "World population, trends and conservation status of the Aquatic Warbler" was published in "Die Vogelwelt" (vol. 120 [1999]: 65-85) by the AWCT. The necessity to investigate the most promising W-Siberian breeding grounds was one of the most important conclusions and now was performed for the first step in 1999.

To remember the background, we repeat some parts of the AWCT 1999 paper:

> **4.4 Russia**
>
> The Aquatic Warbler is rare and of erratic occurrence at least in the European part of Russia. Review of all available literature data in Russia (see below) shows that the species was very rare in whole European Russia during the last 100 years. Only very few data could be collected on its (occasional or non-permanent) breeding. Recently, no stable local breeding population is known, and no ones were known in Russia in the past at all. Moreover, dynamic of number of records is negative, and the hope on presence of big unknown breeding populations in the European part of Russia is low.
>
> Actually, new information about some scattered, not regular and small breeding populations in the South Ural region was received (area of Kama reservoir and Kama river/Perm region, Bashkiria, Chelyabinsk and Sverdlowsk regions; KARYAKIN 1997, unpublished) and one presumably "breeding pair" was discovered in 1993 (AS'KEEV & AS'KEEV 1994). Furtheron, RAVKIN *et al.* (1997) believe, that there still exists a larger breeding population of several thousand birds in W-Siberia (see below).
> ...
>
> To determine the true breeding range based on evidenced records we can use only a few references containing data about nests or fledglings (see below and fig. 5). Finally, we have to stress, **that in contrast to several published data no one nest or nestling are keeping in the main Russian zoological collections, and only one fledgling is presented in Zoological museums in Moscow**: young female from a brood, Moscow Region, 19 July 1911.
> ...
> 4.4.2. Western Siberia
>
> In W-Siberia, the Aquatic Warbler was mainly recorded in Sverdlovsk/Chelyabinsk (eastern South-Ural region) and Novosibirsk/Tomsk (middle Ob) regions, but the occurrence seems to be irregular and additional research is needed especially in the middle-Ob region. Although actual and continuous data from single sites over several years are lacking, RAVKIN (1993) and RAVKIN et al. (1997) believe that the total

W-Siberian population consists of 4,000 - 22,000 birds (which means 2,000 - 11,000 males according to RAVKINs census method).

The documentation of KALYAKIN (1998, unpublished) contains the following information about possible breeding:

1. **Sverdlovsk (Ekaterinburg) Region:** There exist no data before latest information from KARYAKIN from 1994-1995. He notes that the Aquatic Warbler was found in the south-west part of the region in the valleys of Upha and Bisert' Rivers (more than 6 records of groups of males, two or more nests with nestlings were found in late spring and the beginning of summer) and in south-east part of the region (two or three records of males), 56-57 N.
2. **Chelyabinsk Region:** Some adults and juveniles were obtained near Metlino and Tyubuk (c. 56 N, 61 E), north-east part of region, in 1872 (SABANEEV 1874; MENZBIR 1895). - According to KARYAKIN'S data the Aquatic Warbler inhabits the northern part of the Region, up to the Uyi River valley in the south (55-56 N). He believes that this population is the largest in the whole Ural region. Groups of 5-6 to 25 singing males were registered here in 1994-1995 with maximum density up to 40 males per km² (note - this territory was under strong influence of nuclear pollution after 1957; SOKOLOV & KRIVOLUTSKY 1998). In general KARYAKIN concludes, that the species is not so rare in South Ural, but it is impossible to estimate a total number of Aquatic Warbler due to the high degree of its nomadic character (there are no local populations known which can be registered at one place from year to year). KARYAKIN notes that years with middle level of moisture are more favorable for the Aquatic Warbler. Some data on breeding biology of the species are also presented in his manuscript.
3. **Tyumen Region:** A single bird was seen on 30 of July 1991 on open marsh near villages Uki, Gorno-Slitkino and Missiya, Uvat District, 58 43'N, 68 42'E (BOBKOV *et al.* 1997).
4. **Novosibirsk Region:** The species was regularly registered with low density in Chulim, Vengerovo, Kargat, Barabinsk and Chani Districts at the beginning of 1960^{ies}, 54-56 N, 76-81 E (PUKINSKII 1969): a female was collected near the nest on 14 of June 1961, three females with good brood patches and enlarged ovaries were obtained from 5-10 of June 1962, and 2 fledglings were caught on 7 of July 1962, all in Vengerovo District; nest containing 4 nestlings was discovered on 8 of June 1962 in Kargat District. The species was mentioned as a rare, occasionally breeding species in south of the Region at the Kharasuk river (53 50'-54 N, 78-79 E) during the 1970^{ies} (DANILOV & MIKHANT'EV 1976). A breeding group of male and 4 females was discovered near Shelkovichikha rain station (55 N, 82 30'E), 42 km to the west from Novosibirsk, in June 1982 (BALATSKY 1992). Four nest with clutches were found in this year, but the species was not registered here in the other years from 1971-1988. - TOTUNOV has caught some Aquatic Warblers on the Chani Lake (c. 55 N, 77 E) in the beginning and in the end of 1970ies (RAVKIN 1993). One bird was recorded near villages Ukrainka and Ostaninka (56 43'N, 78 18'E, north part of Novosibirsk Region) on 17 August 1993 (BOBKOV *et al.* 1997).
5. **Altai Region:** The Aquatic Warbler is known from the region by one specimen collected by A. VELIZHANIN near Barnaul, (53 20'N, 83 40'E) (Ob' river valley, not far from Novosibirsk) on 28 June 1901 (JOHANSEN 1954).
6. **Tomsk Region:** The Aquatic Warbler was discovered by P. PANTELEEV "in the Ob' river region subtaiga low marsh", presumably in this area, as a common species with density 5 birds per km² in June 1960 (RAVKIN 1993). The mostly abundant population was found in the middle Ob' river valley (56 25'N, 84 20'E) 50 km west of Tomsk, south of the Tomsk Region, in summer 1967 (RAVKIN 1973). Density of birds was estimated as follows (individuals per km²): 141 on 28 of May, 0 (zero) on 11 of June, 53 on 27 of June, 205 on 8 of July, and 220 on 20 of July. Additionally the species was "common" 9 km to the north from the place mentioned above (density was estimated as 36 birds per km² on the next day, on 21 of July 1967). Some specimens were collected, they are cited as keeping in the Museum of the Zoological Institute of Russian Academy of Science, Novosibirsk, and in the Zoological Museum of Tomsk University (RAVKIN 1973). (Note: A. YURLOV, a curator of zoological collection of the Novosibirsk Institute, has informed KALYAKIN about absence of Aquatic Warbler specimens in the collection). - Later, the Aquatic Warbler was not found at the same place during several years with one exception - two alarming females on 4 July 1974 (GYNGAZOV & MILOVIDOV 1977). More actual data are missing.

2. Design of expedition, selection of survey route and sample sites

Based on this information, we decided to visit the Tomsk - Novosibirsk region at first. ALEXANDER KOZULIN in March 1999 had contact with the botanist ELENA LAPSHINA from Tomsk University. She told us by means of the comprehensive habitat descriptions of AW from Belarusian Polessye, that similar habitats occur in huge areas (in total up to 20,000 km²) in the W-Siberian plain, especially in the Vasyuganskoye mires W of Tomsk. There exists a detailed vegetation map 1 : 1,500,000 from W-Siberia, which shows also the fen mire distribution.

MIKHAIL KALYAKIN prepared the expedition with the help of colleagues from the Novosibirsk University, especially SERGEY TSIBULIN, and thus we decided to fly to Novosibirsk first to meet Sergey with the car, than meet ELENA LAPSHINA and go in the field together with her. At first priority, we wanted to look at representative fen mire plots shown to us by Elena, which could be reached by car without bigger problems. At second priority we wanted to visit the famous Shegarka mire, where RAVKIN reported big numbers of AW in 1967, but later the species was absent (see above, "6. Tomsk region").

Seeing the vegetation map in Novosibirsk, it was no problem to identify the applicable vegetation units suitable for Aquatic Warbler:

> Type 118: Green moss fen mires with *Carex lasiocarpa, C. diandra, C. limosa; Drepanocladus vernicosus; Betula nana;* also higher scrubs of *Betula humilis, B. pubescens, Pinus sylvestris.*
>
> Type 119 (second choice): Green moss and Sphagnum fen mires with *Carex caespitosa, C. diandra, C. lasiocarpa* and *Calliergon giganteum, Sphagnum obtusum, S. warnstorfii, S. subsecundum.*

The largest patches of Type 118 mires of the Ob - Novosibirsk - Barabinsk region are shown in the centre of the huge watershed mires of central Vasyuganskoye: Areas up to ca. 700 km² and up to 40 km in maximum N-S-extend. This mires are surrounded by huge Pine-Sphagnum bogs and are located at the spring region of numerous rivers which rise from central Vasyuganskoye. The whole central mire complex of fen mires and bogs has an E-W-extend of 300 km² and a N-S-diameter of 40-60 km.

More and much larger Type 118 mires are shown W of the Irtysh river W of Tara and around Tyumen; but this region was not reachable for us because of the big distance (more than 1,500 km to drive).

Some other Type 118 and 119 mire complexes are shown in the numerous river valleys of S-Vasyuganskoye between (WNW) Novosibirsk and Severnoye, which lead straight parallel from Northeast to the Southwest.

The Shegarka mire is shown in the map as a relative narrow, N-S-orientated stripe in the Ob lowland S of Melnikovo, as Type 119 mire.

It was clear, that especially the apparently (for us) most promising mires in central Vasyuganskoye are very hard to reach by car. On the other hand, the Shegarka mire is very easy to access by car.

Taking all this aspects into account, and regarding the fact, that it was not possible to phone with Elena because she was in the field at that moment, we decided to start without her and first to try to reach one or more of the big Type 118 mires in central Vasyuganskoye. Then look at some river mires WNW Novosibirsk and finally visit the Shegarka mire. As a result, we hoped to get a good overview on the Type 118 and 119 mires in the Novosibirsk - Tomsk region as well as to get an impression of the famous Shegarka mire.

3. Results

3.1 Barabinsk forest steppe

The road from Novosibirsk to the W to Barabinsk (350 km) lead us through the northernmost part of the forest steppe. Besides arable land, small forests and small lakes there occur shallow depressions with very large reedbeds (many km² each, often in context with lakes), which are mostly shown as Type 120 mire in the vegetation map (*Phragmites australis, Carex omskiana, C. caespitosa, C. wiluica*), and patches of grassy steppe-like vegetation obviously with strong influx of salt (with e.g. *Triglochin maritima, Aster tripolium*). Within this steppe vegetation occur small shallow ponds and numerous patches of reed and sedges, which seem to be almost too small to hold AW populations.

Some bird species observed:

> On small ponds and lakes along the road: *Podiceps auritus* (several times), *Podiceps nigricollis, Podiceps cristatus, Anas strepera, A, querquedula, A. clypeata, Aythya ferina, Larus minutus, Chlidonias niger, C. leucopterus, Sterna hirundo, Remiz pendulinus.*
>
> In steppe vegetation with small shallow ponds, reedbeds, sedge patches and forest islands: *Circus cyaneus, C. aeruginosus, Coturnix coturnix, Vanellus vanellus, Tringa stagnatilis,Tringa totanus, Numenius arquata, Dendrocopos leucotus, Motacilla citreola, Anthus richardi, Acrocephalus dumetorum, A. agricola (1 sing.), Sylvia communis, Luscinia svecica, Saxicola torquata mauri, Emberiza leucocephalos.*

However, it seems to be possible, that in the central and southern Barabinsk steppe, especially around the big salt lakes S and SW of Barabinsk, there occur some larger habitat patches with suitable structures for AW (probably a little bit similar to Hortobagy Puszta habitats). But there are only very few and doubtful records from this region in this century. Thus it may be a question of follow-up expeditions to check this more systematically. We decided not to focus on steppe habitats during this first expedition.

3.2 Vasyuganskoye

By the first attempt we visited a not very large patch of Type 118 mire N of Severnoye (56 10'N, 78 15'E). We had our first camp in the vicinity of the mire. The type of mire was quite well in general, with cover of green mosses and *Carex diandra, Equisetum palustre, Comarum palustre, Lysimachia thyrsiflora. Salix lapponum* was quite common. But altogether there were too many scrubs, bushes and young trees, and also scattered common reed, so that the habitat structure was not open enough for AW. Other bird species observed (sunset visit) have been *Crex crex, Gallinago gallinago, Acrocephalus dumetorum, Locustella lanceolata* and also one singing *Locustella fluviatilis* near the camp (Mikhail). It is possible, that this mire was much more suitable 10-30 years ago, but is actually overgrown by woods due to the impact of drainage measures (we found some ditches) and/or abandonment of agricultural use (hay cutting by hand).

On the way further north we passed several very promising habitat patches along the road: Open green moss-sedge-fen with wet moss cover and only very few willow bushes, but the area size was too small (up to 10-15 ha only). Of course we looked for AW without success.

Transport turned out be one of the major problems. To come to the large "Type 118" fen mire tracts, after the last village Mezhowka it was necessary to cross the Tara river (which flows into the Irtysh river far more W at the town Tara), then a swampy birch-poplar-aspen-forest and Sphagnum-Pine-forest belt of about 15-20 km, then a raised bog of ca. 5 km.

Logistic problems were enormous. The only bridge over the river was heavily damaged by the last high spring flood. Workers who just were repairing the bridge succeeded in preparing a ramp for us with a caterpillar grader to cross the river. But by this way the caterpillar grader immersed in the mud, and the second did also. Afterwards the workers needed two days to get their caterpillars free. The next day we tried the whole day to cross the forest tract by our four-wheel-drive car, using the muddy forest roads, but had to give up unsuccessfully. About 10 times we had to dig free the car, sometimes felling birch trees to use them as lever arms, building pontoons from branches etc. At the end we had to return.

This major problem was accompanied by a second problem: The first days it was rather hot and oppressive during day (up to +25-30 C) and there occurred enormous densities of mosquitoes (not only the big ones, also the very small and very cruel ones, called "moshka" in Russian), horseflies and ticks. This joint forces turned the whole trip more and more into an intolerable torture.

> Some bird species observed in the forest tract were: *Circus cyaneus, Tetrao urogallus* (1 f flew off; many places with droppings), *Coturnix coturnix* (clearing/meadow), *Gallinago megala, Cuculus orientalis, Jynx torquilla, Dryocopus martius, Dendrocopos major, Anthus trivialis, A. hodgsoni, Luscinia calliope, Phylloscopus (collybita) tristis, Acrocephalus dumetorum, Corvus corax, Fringilla coelebs, Emberiza leucocephalos.* At the Tara river: *Actitis hypoleucos, Motacilla cinerea, Luscinia luscinia.*

Being just at the brink to return from central Vasyuganskoye, we found a man in Mezhowka who had a very strange light caterpillar car, a kind of self-made hybrid between truck and tank (we called it "tanketka"). By means of this tanketka and by help of an old forester we were brought through the major part of the forest belt to a small hunting hut, were we could make a camp and store some things (food etc.). Next day we wanted to continue by walking to the north.

Next morning (10 June) the weather surprised us with snow on the tents and temperatures around 0 C. But we were even more surprised by the mosquitoes, which were still alive (but handicapped and rather slow). So it was nice weather for a hard walk, but activity of birds was very low.

We went to the last mineral forest island at the southern edge of raised bog to make our last camp there. At 11 June we crossed the bog (5 km of rather dangerous way over floating Sphagnum cover etc.) and reached the fen mire complex, which we checked in three different directions/three groups. Because of the hard walking conditions no one of us came further than 5 km into the fen mire (remember: diameter of the fen according to the vegetation map is 40 km!).

The co-ordinates of the visited mire tract are: 56 50' N, 77 45' E.

The habitat structure appeared to be rather suitable for AW: Large open sedge swamps (up to several km²) with scattered bushes and young trees, interrupted by small forest islands (Pine-Sphagnum) and reed patches. Vegetation description: Grass cover not closed, partly *C. lasiocarp* nant. *Betula nana* thickets cover up to 30 %. Water-saturated green mosses cov the whole surface (water level 30-40 cm maximum), also *Equisetum palustre* and *chia thyrsiflora.* Scattered occurrence of *Carex appropinquata, Comarum palu Eriophorum angustifolium.* Scarce patches of *Phragmites australis* and *Typha spec* red bushes of *Salix lapponum,* young trees of *Pinus sylvestris* and *Betula* (specie hin this grassy fen mire occur more or less small *Sphagnum* islands with tussocks cies like *Ledum palustre, Oxycoccus palustris, Andromeda polifolia, Chamaedap culata.*

Despite of the low activity of birds, caused by the cold and windy weather, we v that AW was absent - at least in this southern part of the mire.

It has to be stressed, that there exists a very recent AW summer record (1 1993, BOBKOV *et al.* 1997) from a similar habitat patch (Type 118) near th Ukrainka and Ostaninka (56 43'N, 78 18'E), ca. 35 km ESE of our checked plot. Last not least: The only two confirmed collected AW specimens from W (in the St. Petersburg collection) originates from Vengerovo district, about 130 from our plot, from June/July 1962.

Some observed bird species:

In Pine-Sphagnum forest and on the forest island:

Streptopelia orientalis, Cuculus canorus, C. orientalis, Luscinia callliope, Tarsiger cyanurus (exclusively in Sphagnum-Pine forests)*, Turdus ruficollis, Phylloscopus borealis, P. c. tristis.*

In the raised bog:
Circaetus gallicus (1 soaring)*, Aquila heliaca* ([?] - 1 immat.), *Lagopus lagopus* (1 ind. + 1 p), *Lyrurus tetrix* (4 + 1 males, 1 female), *Asio flammeus, Cuculus canorus, Saxicola torquata, Lanius collurio* (1 m)*, Anthus trivialis* (numerous), *Emberiza leucocephalos.*

In the transitory mire belt:
Falco subbuteo (1 pair), *Numenius arquata* (>= 6 bp), *Gallinago gallinago, Saxicola torquata, S. rubetra, Phylloscopus c. tristis, Hippolais caligata.*

In the fen mire complex:
Table 1: Birds of central Vasyuganskoye fen mire N Mezhowka at 11 June 1999, 5 km transect (FLADE/KALYAKIN); m = male, f = female, p = pair, bp = breeding [territorial] pair.
Notice bad weather conditions: +2-4 C, strong wind from NNW, snow showers!

Species - English name	*Species - scientific name*	number, comments
Spotted Eagle	*Aquila clanga*	1 soaring
Kestrel	*Falco tinnunculus*	1 foraging
Black Grouse	*Lyrurus tetrix*	3-4 m flying off
Common Crane	*Grus grus*	1 calling
Corncrake	*Crex crex*	1 singing
Curlew	*Numenius arquata*	4 bp
Tree Pipit	*Anthus trivialis*	2 bp
Whinchat	*Saxicola rubetra*	1 m
Stonechat	*Saxicola torquata*	4 bp
Lanceolated Warbler	*Locustella lanceolata*	3 sing. m
Blyth's Reed Warbler	*Acrocephalus dumetorum*	1 sing. m
Booted Warbler	*Hippolais caligata*	1 sing. m
Chiffchaff	*Phylloscopus collybita tristis*	2 sing. m
Willow Warbler	*Phylloscopus trochilus*	1 sing. m
Great Grey Shrike	*Lanius excubitor*	1 bp with fledged young
Hooded Crow	*Corvus (corone) cornix*	2 bp
Raven	*Corvus corax*	1 flying
Chaffinch	*Fringilla coelebs*	2 sing. m
Pine Bunting	*Emberiza leucocephalos*	1 sing. m
Pallas's Reed Bunting	*Emberiza pallasi*	1 f alarming, with food
Reed Bunting	*Emberiza schoeniclus*	1 m

3.3 Upper Kama and Om river valleys

After successful return from the watershed mire (picked up by the tanketka at the hunters hut) we checked the Kama river valley S of Severnoye (E from the road bridge) and upstreams near Fyodorowka (56 05'N, 78 50'E) on 12/13 June.

The upper Kama river has a shallow valley with wide, more eutrophic river fen mires. This mires are dominated by large reedbeds (up to 5 km in diameter), which are partly cut or burned, and eutrophic sedge meadows (sometimes with more or less dense reed stands), with *Carex acutiformis, C. omskiana,* patches with *C. lasiocarpa*. Within the reedbeds or sedge-reed-areas occur large willow thickets. The habitats resemble some AW sites in the upper Ukrainian Pripyat valley, the Yaselda mouth E Pinsk in Belarus and the upper Polish Narew valley, where AW occurs in low densities. Although we checked some fairly suitable (but not large) habitat patches during sunset (N Fyodorowka), we did not find any AW.

Other bird species observed:

> Kama valley E of the road bridge from Severnoye:
> *Botaurus stellaris, Aquila clanga* (1)*, Circus pygargus, Falco vespertinus* (1+1)*, Asio flammeus* (1+1)*, Tringa totanus* (alarming)*, Motacilla flava, M. citreola, Saxicola torquata* (>= 6 bp)*, Acrocephalus schoenobaenus* (>= 2 sing.)*, Emberiza aureola, E. palasi.*
>
> Edge of Kama floodplain mire N Fyodorowka:
> *Botaurus stellaris* (distant), *Anas clypeata* (f with nest or chicks), *Circus cyaneus* (1 m), *Limosa limosa* (>= 4 bp), *Tringa stagnatilis* (bp), *Tringa totanus* (bp), *Gallinago gallinago* (display), *Asio flammeus* (>= 3 bp), *Dendrocopos leucotus* (adult with food), *Motacilla flava, M. citreola, Luscinia svecica* (>= 4 sing. m), *Acrocephalus schoenobaenus* (3 sing. m), *Oriolus oriolus, Carpodacus erithrinus.*

The habitats in the Om valley near Elanka (54 50'N, 79 30'-45'E) are rather similar to those in Kama valley. We checked a site with relatively big tussocks of *Carex elata* (or a similar species) and parts of open water. Altogether there was an area of ca. 100 ha of potential AW habitat. We performed an extensive sunset visit but did not find any AW.

> Other bird species found in Om valley N and NE Elanka:
> *Anas penelope (>20 ind.), Anas crecca (>30 ind.),*
> *Circus macrourus* (several!), *C. pygargus, C, aeruginosus,*
> *Aquila clanga* (quite numerous in the floodplain meadows, up to 4 ind. at one site!),
> *Locustella naevia* (several singing), *L. lanceolata,*
> *Acrocephalus schoenobaenus* (high density, ca. 40 sing. m/100 ha),
> *Luscinia svecica* (numerous in the sunset plot, 1 nest with 6 juveniles found)

3.4 Ob floodplain

On 14 June we travelled to the Ob river floodplain and had a camp at the bank of an oxbow (between Vyuny and Dubrovino, 55 30'N, 83 00'-15'E). The whole floodplain is a typical floodplain of a big river with high floods, with a pronounced relief (oxbows and river arms between relatively [periodically] dry floodplain meadows and birch forest blocks) and turned out to be almost unsuitable for AW. Larger sedge habitats (more than a few hectares) have not been found and are unlikely to occur at all. So we decided to continue our travel to the famous Shegarka mire on 15 June.

3.5 Shegarka mire

The Shegarka mire 50 km W of Tomsk (56 25'N, 84 20'E) is located along the western edge of the Ob river valley and is the easternmost big fen mire of the Palearctic. The vegetation map shows that there is not any Type 118 or Type 119 mire E of the Ob river. If AW ever bred in Shegarka mire, it must have been the easternmost breeding site of its range.

Nevertheless, this mire was by far the most suitable AW habitat we found during our expedition. It consists of a 1-3 km wide and about 30 km long N-S-orientated stripe of wet natural fen mire along the relatively steep western slope of the lower Ob valley terrace. The Ob river flows in a distance of 1-5 km to the East and is separated from Shegarka mire by a line of low elevations of river sediments and dunes. The mire obviously is not directly influenced by floods from the Ob river and is mainly fed by ground water and water coming out of the adjacent slope.

The structure is partly open (wide fen areas up to 1-3 km² without higher woods), but also half-open with mostly scattered, but partly dense shrubs and trees, and also small forest islands on sandy elevations. The vegetation height of the grassy layer (sedges dominating, see below) is about 40-50 cm, on moss-dominated areas and patches with closed cover of *Menyanthes trifoliata* much lower. *Sphagnum* mosses are almost absent, and green mosses cover 20-100 % of the surface. The sedges and Cotton grasses are interwoven with thickets of *Betula nana*, which covers <5 - 30% (and which is absent in the Polessye fen mires).

We chose 3 sample plots: Plot I in the centre of the mire, Plot II in the southern part and Plot III near the northern end. All three plots consisted of relatively open parts of sedge fen, because the probability of finding AW there was the highest. At each plot, the observers chose parallel transects from the western edge into the centre of the mire. The lenght of each observer transect was between 1,500 and 2,400 m, the distance between transects was 200-300 m, and the number of transects was 5 each in plot I and III and 2 in plot II. On these transects we performed sunset counts (plot I at 15 June, plot III at 16 June) and on plot II a late morning count (16 June).

Table 2 shows the vegetation composition in plot I. In plot II, the coverage of shrubs was somewhat higher. *Carex diandra* had a much higher coverage, and *Carex limosa*, *Carex chordorrhiza* and *Eriphorum gracile* were not rare. *Pedicularis palustris* occurred in nearly the whole plot, and near the edge of the mire *Caltha palustris* and *Equisetum palustre* were abundant.

Table 2: Some plant species (without mosses) detected in plot I; +++ = covers nearly the whole area; ++ = common, but not everywhere; + = scarce or patchy; (+) = at one or a few places only; for scrubs and trees the approximate coverage in % is given; some species may be not correctly identified, if there are Siberian species very similar to central European species (e.g. some sedges); in those cases the species found in Shegarka mire has the same height and structure as the central-European species mentioned in the list. -
Notice, that the list is very incomplete.

Species	coverage	Species	coverage
Carex lasiocarpa	+++	*Typha latifolia*	+
Lysimachia thyrsiflora	+++	*Stellaria palustris*	+
Menyanthes trifoliata	+++	*Equisetum palustre*	+
Carex limosa	++	*Utricularia spec.*	+
Carex diandra	++	*Carex caespitosa*	(+)
Carex rostrata	++	*Nuphar lutea*	(+) in ponds
Galium palustre	++	*Caltha palustris*	(+) at the edge
Eriophorum angustifolium	0-++	*Parnassia palustris*	(+)
Thelypteris palustris	0-++	*Andromeda polifolia*	(+)
Eriophorum gracile	+	*Oxycoccus palustre*	(+)
Carex appropinquata	+		
Carex dioica	+		
Phragmites australis	+	*Betula nana*	<5 - 30%
Comarum palustre	+	*Salix spec.* (shrubs)	>= 10%
Dactylorhiza incarnata	+	*Betula humilis*	<= 10%
Pedicularis palustris	+	*Betula pendula*	<= 5%
Filipendula ulmaria	+	*Populus tremula*	< 5 %
Rumex acetosa	+	*Pinus sylvestris*	< 5 %
Triglochin maritima	+	*Salix lapponum*	(+)

The bird community was surprisingly rich (more than 40 breeding species) and abundant (probably much more than 200 bp/km²). Among the 6 dominating species (>5% total share) are 4, which do not occur in the Polessye fen mires; only Sedge Warbler and Snipe are similar to Polessye (Table 4). Aquatic Warbler was absent for sure. Remarkable was the very high density of Wood Sandpiper (up to 17.4 bp/km²) and the relatively high abundance of Booted Warbler, which inhabits the *Betula nana* thickets within the sedges.

Generally, the waders are rather numerous in the mire; they concentrate mostly in small colonies (up to 20 pairs) at places with low and mossy vegetation (Black-tailed Godwit, Curlew, Lapwing, Redshank and a part of the Wood Sandpipers). Pallas's Grashopper Warbler was fairly numerous in bushy parts of the central plot, but might be overlooked in the other plots (activity was only high during sunset). Baillon's Crake had a good population in the central plot, but obviously was absent in the northern part (Table 3); most or all singing males occurred on patches with very dense cover of *Menyanthes trifoliata* (pure stands) and shallow water, some places also with sparse *Typha latifolia* stands.

A highlight was the discovery of a ground nest of Peregrine Falcon with 3 chicks in the northern central mire (Mikhail), which was placed on a small elevated island between ferns and birch trees. Sergej reported, that exactly at the same place in 1967 there was also found a Peregrine nest with 3 chicks! - From our observations we believe, that in 1999 there were 3 breeding pairs in the whole mire (Table 3).

Table 3: Birds of the Shegarka fen mire S Melnikowo at 15 and 16 June 1999, transect counts by FLADE, HAASE, KALYAKIN, STEIOF, TSIBULIN; m = male, p = (breeding) pair; [ ] = foraging birds, perhaps not breeding in the mire; # = nest found; [col.] = in one colony; [F] = feathers found;
* = underestimated because of weather, or season, or daytime

Species	***scientific name***	**Plot 1 - central part** 9,300 m/186 ha		**Plot 2 - southern part** 3,500 m/70 ha		**Plot 3 - northern p.** 7,200m/144 ha	
		m, p	p/km²	m, p	p/km²	m, p	p/km²
Bittern	*Botaurus stellaris*	**1**					
Pintail	*Anas acuta*	**5**	2.7			**4**	2.8
Mallard	*Anas platyrhynchos*	**4**	2.2			**2**	
Teal	*Anas crecca*	**2**					
Garganey	*Anas querquedula*	**4**	2.2				
Hen Harrier	*Circus cyaneus*	**2**					
Marsh Harrier	*Circus aeruginosus*	**1**					
Black Kite	*Milvus migrans*	**[3]**		**[1]**		**[2]**	
Spotted Eagle	*Aquila clanga*			**[1]**			
Peregrine Falcon	*Falco peregrinus*	**1**		**[1]**		**1 #**	
Hobby	*Falco subbuteo*	**[2]**		**[1]**		**[1]**	
Red-footed Falcon	*Falco vespertinus*	**[1]**					
Quail	*Coturnix coturnix*	**2**		**1***			
Common Crane	*Grus grus*	**1**		**[1]**			
Water Rail	*Rallus aquaticus*	**2***					
Spotted Crake	*Porzana porzana*	**4***	2.2				
Baillon's Crake	*Porzana pusilla*	**7**	3.8	**1***			
Corncrake	*Crex crex*	**14**	7.5	**3***	4.3*	**7**	4.9
Lapwing	*Vanellus vanellus*	**5**	2.7	**4**	5.7	**1**	
Common Snipe	*Gallinago gallinago*	**21***	11.3	**12***	17.1*	**12***	8.3*
Curlew	*Numenius arquata*	**8**	4.3	**5**	7.1	**9**	6.3
Black-tailed Godwit	*Limosa limosa*	**17**	9.1	**2**		**15**	10.4
Redshank	*Tringa totanus*	**1**					
Wood Sandpiper	*Tringa glareola*	**9**	4.8	**7**	10.0	**25**	17.4
Common Gull	*Larus canus*	**1**				**20[col.]**	(13.9)
Common Tern	*Sterna hirundo*					**1**	
Cuckoo	*Cuculus canorus*	**1**				**4**	2.8
Great Grey Owl	*Strix nebulosa*					**[F]**	
Swift	*Apus apus*			**[>10]**			
Tree Pipit	*Anthus trivialis*					**1**	
Yellow Wagtail	*Motacilla flava*	**3**	1.6				
Citron Wagtail	*Motacilla citreola*	**77**	41.4	**31**	44.3	**66**	45.8
Sand Martin	*Riparia riparia*			**[>20]**			
Stonechat	*Saxicola torquata*	**18**	9.7	**8**	11.4	**5**	3.5
Bluethroat	*Luscinia svecica*	**1***					
Lanceolated Warbler	*Locustella lanceolata*	**20**	10.8	**25**	35.7	**38**	26.4
Pallas's Grashopper W.	*Locustella certhiola*	**9**	4.8	**2***			
Sedge Warbler	*Acroc. schoenobaenus*	**75**	40.3	**12***	17.1*	**7***	4.9*
Blyth's Reed Warbler	*Acroc. dumetorum*	**1**					
Booted Warbler	*Hippolais caligata*	**11**	5.9	**11***	15.7*	**7**	4.9
Willow Warbler	*Phylloscopus trochilus*					**3**	2.1
Red-backed Shrike	*Lanius collurio*	**1**					
Hooded Crow	*Corvus (corone) cornix*					**3**	2.1
Yellow-breast. Bunting	*Emberiza aureola*	**75**	40.3	**13**	18.6	**38***	26.4*
Little Bunting	*Emberiza pusilla*	**1**					
Reed Bunting	*Emberiza schoeniclus*	**8**	4.3	**1***			
Total	*46 species*	**416**	223.7	**>136**	>194	**>269**	>187

Table 4: Comparison of the dominant (>5% share) and subdominant (2-5% share) breeding-bird compo-sition of Shegarka mire with those of the Dikoe and Sporova mires in Belarus (128 resp. 150 ha plots, counted in realy June 1996); exclusive species within this dominant group are printed in bold.

Shegarka mire, W-Siberia		**Dikoe and Sporova mires, Belarus**		
dominant and subdominant species	bp/km²	dominant and subdominant species	**Dikoe** bp/km²	**Sporova** bp/km²
Motacilla citreola	41.4 - 45.8	***Anthus pratensis***	66 - 70.3	(not counted)
Acrocephalus schoenobaenus	[17.1-] 40.3	***Acrocephalus paludicola***	50 - 61.7	29.3
Emberiza aureola	18.6 - 40.3	*Gallinago gallinago*	43 - 51	20.7
Locustella lanceolata	10.8 - 35.7	***Emberiza schoeniclus***	24.2	>20.0
Gallinago gallinago	[8.3-] 17.1	*Acrocephalus schoenobaenus*	(4.7- 6.0)	29.3
Tringa glareola	4.8 - 17.4			
Hippolais caligata	4.9 - 15.7	***Tringa totanus***	(3.9)	15.3
Saxicola torquata mauri	3,5 - 11.4			
Limosa limosa	<4 - 10.4	*Limosa limosa*	(2.3)	12.7
Crex crex	4.3 - 7.5	*Crex crex*	(3.1)	8.0
Numenius arquata	4.3 - 7.1			
Locustella certhiola	- 4.8			
total bird density	**>187 - 223.7**		**231.3**	**>400**

Table 5: Ecologically "replacing" and "congruent" species within the dominant and subdominant bird species group of Shegarka and Dikoe/Sporova mires (proposal based on observations of ecological niches and habitat preferences)

Shegarka	**Dikoe/Sporova**
"replacing" species:	
Motacilla citreola -	- *Anthus pratensis*
Emberiza aureola -	- *Emberiza schoeniclus*
Tringa glareola -	- *Tringa totanus*
Acrocephalus schoenobaenus -	- *Acrocephalus paludicola (?)*
Locustella lanceolata -	- *Acrocephalus schoenobaenus (?)*
"congruent" species:	
Acrocephalus schoenobaenus -	- *Acrocephalus schoenobaenus (?)*
Gallinago gallinago -	- *Gallinago gallinago*
Limosa limosa -	- *Limosa limosa*
Crex crex -	- *Crex crex*
Numenius arquata -	- *Numenius arquata* (but very low density)
species with missing equivalent:	
Hippolais caligata -	
Saxicola torquata mauri -	
Locustella certhiola -	

In Tables 4 and 5 the bird community of Shegarka mire is compared with the most similar mires of Polessye (Dikoe and Sporova) which represent the poor (mesotrophic) part of the investigated mires of Pripyat/Yaselda marshes. The strong differences are obvious. Bird communities seem to be much more different than plant associations. In Table 5 we present some ideas about replacing, according and "missing-equivalent" species of Shegarka and the Polessye mires.

4. **Interview with Professor Ravkin**

On 17 June we met Professor Yuri S. RAVKIN at his Institute in Novosibirsk and had a long and friendly conversation. We had the impression, that RAVKIN was very interested in our work and that he tried to give us all information which could help us. He even showed us the original notices (hand-written register cards) from the 1967 counts in Shegarka mire. Nevertheless, the circumstances around the old AW records are somewhat strange and are described below.

We summarise the main aspects from this talk:

Ravkin believes, that the big watershed mires of central Vasyuganskoye have an adverse climate for AW and many other fen mire species in general; a main reason for this is the permanent ice layer (perma-frost) which is ca. 30 cm below the moss cover (we also found a very low bird density during our visit, but do not know how far this was caused by the very cold weather at those days). He therefore would not search for AW in the watershed mires at first priority.

In contrast, according to Ravkin the big river valleys in S-N-direction like Ob and Irtysh have a much milder climate because of the permeability for warm air from the south (forest steppe) and the warm water masses which come from the south during spring flood; he therefore thinks, that the mires in the middle Ob lowland (like Shegarka) are much more suitable for AW (our observations in Shegarka of the very rich and abundant bird community confirm this assumption).

The Irtysh valley seems to be less suitable because of the steep edges of river valley and because it is almost covered by forests.

The damming of the Novosibirsk reservoir in 1956 had changed the ecological conditions of the middle Ob region very strongly up to the Tom mouth (near Tomsk), because the whole flood regime of the river has changed; this perhaps had not only impact on the hydroregime on a landscape scale, but also on the regional climate.

Nevertheless, Ravkin does not believe, that the absence (probably extinction) of AW in the Tomsk-Novosibirsk region could be caused by ecological changes in this region; he thinks that the reasons are rather to look for in the migration and wintering areas.

Ravkin therefore recommends to concentrate in searching for AW on the mires in the Ob valley and in the northern forest steppe (Ob valley upstreams the Novosibirsk reservoir, Barabinskaya). Our problem is, that in the vegetation map in the closer Ob region are shown only very few and very small Type 118/119 mires besides Shegarka. Thus it is very unlikely that there exists a bigger AW population in the Ob lowland. In

the Barabinsk steppe the species might inhabit other habitat types (salt marshes, low reed stands?) which still would have to be identified in the field.
Ravkin believes, that the W-Siberian AW population is small and consists of "gypsy" birds which change their breeding sites very quickly and thus are hard to find.
He gave the strange advise to look for AW earlier in the year (early May), before Sedge Warbler arrive, for not confusing AW with Sedge Warbler; AW in W-Siberia would arrive before Sedge Warbler. This is very strange, because everywhere else in the Palearctic Sedge Warbler arrives earlier than AW.

The circumstances of the record of a bigger AW population in 1967 in Shegarka mire turned out to be rather mysterious. The register cards contain the following information:

28 May: Many AW (141 ind./km²), but no Sedge Warbler; observer: Ravkin.
11 June: Only Sedge Warblers, but no AW [*as during our 1999 visit!*]; observer: Papanov.
27 June: AW (53 ind./km²) as well as Sedge Warbler; observer: Ravkin,
8 and 20 July: High density of AW (205 and 220 ind./km²) as well as of Sedge Warbler.

In the following years, the site was checked several times, but AW was not found. Only in 1974 two females with alarm calls were detected (GYNGAZOV & MILOVIDOV 1977).

Out of the 1967 population 5 specimens have been collected and given to the Tomsk University (2 sp.) and Novosibirsk University (3 sp.) collections. Ravkin was not able to show us the specimens, because the Curator was in the field during our visit. Later, Sergey Tsibulin searched for the skins on behalf of the AWCT, but was unsuccessful. He wrote (by e-mail from 27 October 1999, translation from German):

"I promised to look for the *Acrocephalus paludicola* specimens collected by Professor Ravkin to take measurements. But I regret very much, it is impossible. For whatever reason the register cards of our zoological museum do not contain any Aquatic Warbler record. The list of birds which exist in the collection of the zoological museum also do not include such a species. I checked all boxes with *Acrocephalus* skins, but did not find *A. paludicola*. There is also no specimen collected at lake Chany. It is possible, that the specimens got lost somewhere among the big bulk of unsorted material. It is not possible to check all the unsorted collections, but I did what I was able to do. Unfortunately, in our zoological museum the ornithological collection is administrated by an entomologist, so that such situation can not be excluded."

5. Discussion

Despite of occurrence of large patches of presumably suitable habitat we did not find any AW during our expedition. Although we could only visit a very small proportion of potentially suitable fen mires we believe that AW is absent in the Barabinsk – Tomsk – Novosibirsk region, because suitable structured habitats from which old records are known actually are not occupied by the species.

First we doubted the occurrence of AW in W-Siberia in general, because there was not anyone record of AW from W-Siberia which is confirmed by means of photos or collected specimen. Furthermore, identification of published records normally is not documented or described in the references, so that many doubts are keeping. Circumstances of the 1967 record of a big population in Shegarka mire are mysterious (see above). So we took the possibility into account, that the occurrence of AW in W-Siberia is a "phantom", and published records from W-Siberia are based on misidentifications.

This position has to be revised in the meanwhile, since Mikhail informed us in autumn 1999, that there are two AW specimens (confirmed identification) keeping in the zoological collection of St. Petersburg, originating from Vengerovo district from June/July 1962 (adult female from nest and a young female, declared as male). Vengerovo district NW Barabinsk is located at the margin of southern taiga (southernmost part of Vasyuganskoye mires included) and northern forest steppe. So we know, that at least in the early 1960^{ies} AW was occurring as a breeding bird in the central W-Siberian plain.

We have to keep in mind, that the objective of our expedition was not to get any recent confirmed record from AW in W-Siberia, but to find a *larger core population* E of the Ural, which could be a substantial contribution to the conservation of this globally threatened species. According to our knowledge from Polessye, there exist three classes of breeding habitats which play a different role for the population dynamics of AW (see KOZULIN & FLADE 1999):

A-Habitats hold big and stable core populations under rather stable habitat conditions, but AW abundance and reproduction rate can be relatively low; such A-Habitats are almost relatively poor (mesotrophic) fen mires at watersheds or at least more distant to big rivers, and the influence of saisonal floods is low or absent.
Examples: Dikoe, Zvanets, Supoj, Udaj.

B-Habitats can hold very big and abundant AW populations with very high breeding success, but can be lost completely in some years due to high floods; B-Habitats are more rich (poor eutrophic to eutrophic) and mostly situated in river valleys; the risk by nesting there is very high for AW because all nests of the whole population can get lost in single years, but breeding success in years with favourable conditions is extremely high.
Examples: Yaselda S Byeroza, Yaselda-Sporova, upper Ukrainian Pripyat, middle Styr.

C-Habitats are occupied occasionally by smaller groups of AW according to irregular occurrence of favourable habitat conditions; such habitats are dependent on special water level or other irregular events like burning.
Examples: Stochid valley, Yaselda mouth, perhaps also the irregular breeding sites in Perm and S-Ural regions.

It seems to be clear, that a bigger self-sustaining AW population can only exist with at least one core population in an "A-Habitat". In Polessye we still can find an ideal situation: A mixture of all three mentioned habitat and population types in a spatial context.

Main target of our AW search in W-Siberia must be to find the large "A-Population", being the core population for the region.

As a preliminary result of our research we formulated three hypothesises with the following supporting and adverse arguments:

HYPOTHESIS I:

Aquatic Warbler has become extinct in W-Siberia since the 1960ies.

Pro:	**Contra:**
Large-scale ecological changes like damming of the Ob river and intrusion of shrubs and trees in the fen mires could have caused more unfavourable conditions for AW.	There exist still large areas of presumably suitable habitats (e.g. Shegarka) which have not changed very much since the 1960ies.
The decline could be caused by changes in the migration and wintering sites; if this is the case, actually suitable habitats at the eastern edge of the range now could remain unoccupied.	In the central European breeding areas all suitable habitats are occupied; the steep population decline of the core population in Polessye seems to be exclusively caused by habitat loss. There still is a rather big number of (unconfirmed) recent records especially from the S-Ural and Perm region, which could derive from W-Siberian "stop-over" birds (see AWCT 1999 and chapter 1.). The measurements taken from resting AW in Belgium in autumn 1998 (B. GIESSING) in comparison with measurements from Biebrza marshes show significant longer and more tipped wings of the Belgian migrants; this can be interpreted as a sign for the existence of a big AW population in a much bigger distance from Belgium than Polessye.

Altogether, this Hypothesis is evaluated to be unlikely.

HYPOTHESIS II:

There still exists a small breeding population of AW of nomadic character in W-Siberia, which is much smaller than habitat capacity; this birds are permanently shifting their breeding sites according to saisonal and yearly changes in habitat quality and weather conditions and thus are very hard to find (the "Gypsy Theory", according to RAVKIN).

Pro:	**Contra**:
Occurrence of AW in W-Siberia and S-Ural ever has been very irregular; constant breeding sites are not known at all from this region during the 20th century (AWCT 1999, chap. 1).	The core population in Polessye is very constant and inhabits several large "A-Habitats" (see above). It is unlikely and against all our experiences, that there exists a completely isolated self-sustaining population of nomadic character in W-Siberia without any stable "A-Habitats", in more than 5000 km distance to the core population. Such a population structure is not known from any Passerine bird species of the Palearctic.
Besides the older records from Shegarka mire there are some very recent records from Novosibirsk region, e.g. from Ukrainka-Ostaninka in the Vasyuganskoye watershed mires, but our expedition could not find any AW despite of occurrence of suitable habitats.	The circumstances around the 1967 record from Shegarka mire and also around other records are rather mysterious (see chap. 1). There is no confirmed record (by collected specimen, photos, or even a detailed description) from W-Siberia after 1962.

This hypothesis is also evaluated to be unlikely.

HYPOTHESIS III:

There exists a big core population of Aquatic Warbler in W-Siberia which is still undiscovered.

Pro:	**Contra**:
Migrants at the Belgish resting sites in autumn 1998 had significant longer and more tipped wings than breeding-birds from Biebrza marshes (B. GIESSING, see above).	AW is absent in the Tomsk – Barabinsk – Novosibirsk region despite suitable habitats occur.
There are many recent AW data from Perm and S-Ural regions, which derive probably from stop-over birds on their way from or towards W-Siberia (AWCT 1999, see chap. 1.).	There is only one proofed and confirmed record from W-Siberia from 1962 (Vengerovo district, specimen in St. Petersburg collection). Other records are mysterious for several reasons.
There is a big number of records during the whole 20th century from the whole Russian fen mire belt, but permanent breeding populations in European Russia are unknown, and according to our latest research are unlikely to exist (AWCT 1999).	
There are still huge fen mire tracts remaining unexplored in the Tara – Tyumen region, which could hold large AW populations; the situation is also unclear in the salt marshes of the Barabinskaya forest steppe.	

Altogether, Hypothesis III is evaluated as the most likely one.

If we think about further search for AW in W-Siberia, we have to consider the following aspects:

An advantage of the Tara – Tyumen fen mire tracts is, that they are located more than 1,500 km West of the surveyed area in the Novosibirsk-Tomsk region; therefore the regional climate could be more favourable, and migration distance for AW to Polessye or W-Africa is distinct shorter. Additionally, the highest number of records (from non-permanent small AW groups) within the last 10 years originates from the Chelyabinsk region which is directly neighbouring to the West (AWCT 1999, see chap. 1). The disadvantage is, that those huge mires are very hard to access.

There is quite a number of AW records from the northern W-Siberian forest steppe (see chap. 1, "4. Novosibirsk region"), especially from Chulim, Vengerovo, Kargat, Barabinsk and Chani districts and the Kharasuk river. Problem is, that for none of this records exists a detailed habitat description. The latest records from this areas are from the 1970^{ies}, but among them is the only confirmed one (specimen from Vengerovo district, 1962)

Looking at the vegetation map, the most applicable unit of the Barabinskaya forest steppe apparently is Type 127: Marshes with *Phragmites australis, Carex caespitosa, C. paradoxa* and *Calamagrostis neglecta.* The largest patches of Type 127 marshes (up to 400 km^2) are located N and W of Lake Chany (N Lake Chany/W Barabinsk; Bolota Kuta S Barabinsk; at the Chulim/Kargat rivers NE the "Little Chany Lake", along the Kargat river SW Kargat), and NE of Omsk in the N of Ust-Tarka and NNE Vengerovo (!).

The habitat structure of this Type 127 habitats within the salt steppe (adjacent regularly occur salt steppe habitats with e.g. *Puccinellia distans, Saussurea amara, Aster tripolium*) may be rather similar to the brackish water habitats along the southern Baltic Sea coast (Freesendorfer Wiesen near Greifswald, Odra mouth/Wollin, Curonian Lagoon), where AW populations of several Hundred singing males inhabit grassy habitats with low and weak reed stands (AWCT 1999). - Unfortunately, we did not visit such type of habitat during our 1999 expedition! The situation in the Type 127 habitats should be checked with high priority in future.

Finally we want to stress, that transport problems during our 1999 expedition have been very serious, and that we spent a lot of time for solving our logistic problems. It is not possible to survey large and abroad fen mire areas without helicopter.

6. Conclusions

There is still some hope, that a self-sustaining core population of AW could be found in the Tara – Tyumen region or the Barabinskaya forest steppe, and research in this regions is worthwhile.

Future expeditions to the large fen mire tracts of W-Siberia should not be undertaken without helicopter, because transport problems otherwise are too difficult to solve. The use of helicopters will also enable us to survey large areas from the air and to localise suitable

habitat patches – also in the centre of large mire tracts, which exceed 2,000 km² in the Tara – Tyumen region.

Thus, in May/June 2000 a helicopter expedition starting from Omsk to the North (or from Tyumen to the East) and may be also to the West (Barabinskaya forest steppe) should be planned. Proper funding is needed (at least 12,000 US $) to pay for helicopter, car, petrol, pilot and driver. Applications for funding should be sent to appropriate foundations and institutes as soon as possible.

If funding for helicopter flights will not be available, it would be possible at least to visit the Barabinskaya marshes (Type 127 habitats) by car, because access to those areas is much better and habitat patches to survey are not that big.

Financial balance of the Siberia 1999 expedition

Position	costs (in DEM)
Visa costs at the Russian embassy in Berlin (155,- DEM per person)	620
Visa costs in Moscow (for official invitation)	96
Flight tickets Berlin - Moscow and return	1070
Food in the field	327
Car rent in Novosibirsk	700
Petrol, motor oil etc.	103
Rent of "tanketka" at Mezhowka	63
Costs for maps, car garage and petrol spent by Sergej	21
Various costs spent by Mikhail	12
Travel costs in Moscow, bus, luggage etc.	50
Salary car driver (Slava)	100
Salary Sergej Tsibulin	300
Salary Mikhail Kalyakin	400
Film preparation (Mikhail)	15
Total	**3877**
Taken from the AWCT budget:	3400
Paid by the German participants:	477