

# Darwin Initiative: Half Year Report

(due 31 October 2011)

<b>Project Ref No</b>	Ref.: 18-004
<b>Project Title</b>	Altyn Dala: supporting ecosystem-scale conservation in Kazakhstan
<b>Country(ies)</b>	Kazakhstan
<b>UK Organisation</b>	The Royal Society for the Protection of Birds (RSPB)
<b>Collaborator(s)</b>	<ul style="list-style-type: none"><li>• Association for the Conservation of Biodiversity of Kazakhstan</li><li>• Karaganda State University</li><li>• North Kazakhstan State University of Petropavlovsk</li><li>• Ministry of Agriculture of Kazakhstan</li><li>• Frankfurt Zoological Society</li></ul>
<b>Project Leader</b>	<i>Dr Paul Donald</i>
<b>Report date</b>	<i>31<sup>st</sup> October 2011</i>
<b>Report No.</b>	<i>HYR2</i>
<b>Project website</b>	<a href="http://www.acbk.kz">www.acbk.kz</a>

## 1. Outline progress over the last 6 months (April – September) against the agreed baseline timetable for the project (if your project has started less than 6 months ago, please report on the period since start up).

The project is well on track and no changes to the objectives and activities have needed to be made. Project management was handed over from Michael Brombacher to Dr Paul Donald in April 2011 and new project staff has been appointed.

Nine students have been recruited through a special admission procedure and trained during fieldwork. The project co-financed a training course of the Conservation Leadership Programme in collaboration with the Wildlife Conservation Society and the Association for the Conservation of Biodiversity of Kazakhstan on Statistics and Experimental Design for Biological Monitoring and Conservation in September 2011, in which all students of the project participated and developed skills in data analysis for their diploma and master theses.

The 2011 field season was intensive: two botanists, four ornithologists, a team working on small mammals and a team working on Saiga conducted fieldwork in various habitats of the Altyn Dala project area with following research topics:

### Botanists:

- Restoration potential of abandoned farmland in southern zone of Altyn Dala
- Satellite analysis ground truthing

Three German students from Münster University spent 6 weeks of fieldwork in Kazakhstan, supervised by Prof. Norbert Hölzel (University of Münster) and Tatyana Siderova (ACBK). They trained 1 local student (another one pulled out at short notice).

The aim of the 2011 fieldwork was to gain a deeper understanding of steppe restoration on abandoned fields. 75 vegetation sample plots at the oldest abandoned fields (abandoned 15-20 years ago) were compared with 75 paired plots on adjacent unploughed steppe in two study areas within the Tengiz-Korgalzhyn region. First results of field data and lab analysis suggest that the return of typical steppe plants to abandoned farmland is promoted by the intensity of grazing on the fields – more intensively grazed fields had higher steppe plant species richness and diversity. Also, soils of abandoned fields were significantly more saline than steppe plots (salinisation caused by ploughing), which supported the invasion of salt-tolerant grass species such as *Elymus ramosus* which suppressed the restoration of steppe species.

The vegetation survey was used to ground-truth the results of an analysis of SPOT and

Landsat satellite images. Large-scale satellite image analysis suggests that ungrazed abandoned fields were subject to more frequent wildfires, caused by accumulation of dead plant biomass. In turn, more frequent wildfires are likely to support the dominance of dense grass swards that hamper the return of flower-rich steppe plant communities.

Satellite image analysis also confirmed the trends of agricultural abandonment and reclamation in the region suggested by governmental statistics.

Carbon stocks in soils of old abandoned fields were comparable to those of pristine steppe soils suggesting a high value of abandoned fields compared to used fields in terms of atmospheric carbon sequestration.

#### **Ornithologists:**

- Influence of changing land use on steppe birds, birds mapping
- Birds distribution and abundance in the SE of the Altyn Dala territory, bird counts
- Influence of changing land use on steppe raptors, cranes and bustards, car transect bird counts
- Sociable Lapwing monitoring of colonies and colour-ringed birds

Four teams aimed to gain a deeper understanding of bird-habitat relationships in the Altyn Dala study area.

- 1) A detailed ecological study has been conducted about the endemic and biome-restricted Black Lark (*Melanocorypha yeltoniensis*) in the Korgalzhyn study area near Lake Tengiz. Black Larks were known from last year's fieldwork to prefer abandoned farmland to steppe in pristine condition and thus make an ideal model species to evaluate drivers behind preferences for abandoned farmland over pristine steppe observed in many species. Johannes Kamp (PhD-student in the project) and Ruslan Urazaliev (ACBK) compared Black Lark numbers, nest and chick survival and habitat and food preferences between mid April and mid July in the two habitats using data on 130 nests. 100 pitfall traps were deployed over four weeks to estimate arthropod densities and data on habitat parameters were collected. Faecal samples from 110 chicks have been collected to analyse food preferences during the feeding season. First results point to on average 3 times higher densities of singing males and nests in abandoned farmland, but significantly lower nest and chick survival. Statistical modelling suggests that factors driving Black Larks into abandoned farmland are i) higher abundance of arthropods, mainly Tenebrionid and Carabid beetles compared to pristine steppe, ii) higher abundance of three species of seed-rich annual weeds preferred by the larks (lab analyses show higher nutrient contents compared to steppe grasses), iii) higher density of horse dung piles (horse dung is used to built nests in this species) and more favourable vegetation structures with a mosaic of short cropped plants (used for foraging) and grass tufts sheltering nests in direct vicinity compared to mostly dense, uniform feather grass swards. This work is contributing greatly to our understanding of the steppe/farmland ecosystem.
- 2) Work on the Critically Endangered Sociable Lapwing (*Vanellus gregarius*) has been continued. 105 nests have been found and monitored, 87 chicks colour-ringed and their survival followed and two birds fitted with satellite tags. Analysis of these data are currently underway.
- 3) The third research team has conducted long-range bird count transects in the South-West area of "Altyn Dala". The aim was to register all steppe bird species in the period of 7<sup>th</sup> May and 2<sup>nd</sup> June through walked and car transects. Two ACBK staff and 2 students of ACBK's network participated in the survey.

The total length of the walked transects was 1050km, the length of walked transects – 190km. 380 walked transects have been conducted in 20 areas. The distance between the transect plots was 20km. Along the driven transects a total of 150 observations of steppe species were made.

According to the data collected along the walked transects, the dominant species of the clay semi-desert were: Bimaculated Lark *Melanocorypha bimaculata*, Greater Short-

toed Lark *Calandrella cineria* and Lesser Short-toed Lark *Calandrella rufescens*.

Fauna of reptiles and amphibians was represented by the following species: *Bufo viridis*, *Agrionemys horsfieldi*, *Phrinocephalus guttatus*, *Agama sanguinolenta*, *Eremias lineolata*, *Eremias intermedia*, *Eremias velox*, *Eremias grammica*, *Vipera berus*, *Vipera ursini*, and *Psammophis lineolatum*.

Only once Red Fox *Vulpes vulpes* and Goitied Gazelle *Gazella subgutturosa* were observed during the trip, alongside with several species of Gerbils and Tolai Hare *Lepus tolai*. According to the historical data this territory was an important area for Saiga antelope, however this species was not encountered.

Among interesting bird observations have been: Imperial Eagle *Aquila heliaca* (IUCN – VU), Black Vulture *Aegypius monachus* (NT), Pallid Harrier *Circus macrourus* (NT), Little Bustard *Tetrax tetrax* (NT), Black-bellied Sandgrouse *Pterocles orientalis* and Pallas's Sandgrouse *Syrhaptes paradoxus*.

- 4) An MSc research work on “Habitat preferences of steppe breeding birds in Central Kazakhstan, in relation to different forms of land use” was conducted by an ACBK staff, studying at University of East Anglia, UK (with the support of a Darwin scholarship award), together with a local university student. The aim was to assess and compare habitat preferences of larger steppe breeding bird species in Central Kazakhstan. All species of eagles, harriers, buzzards (*Accipitridae*), falcons (*Falconidae*), cranes (*Gruidae*) and bustards (*Otididae*) were counted along a total of 687 car transects, with transect section length varying between 1 km and 43 km (mean = 6,7 km) and a total length of 3185 km. Transects were conducted within five main habitat types, including natural steppe, arable fields, abandoned fields, fodder grass fields and burnt areas.

Data on twenty-four species of larger steppe breeding birds were collected, including four globally threatened and four biome restricted species, with total of 1857 individuals recorded. In addition, a total of 600 Black Larks *Melanocorypha yeltoniensis* and 295 White-winged Larks *Melanocorypha leucoptera* (both biome-restricted species) were recorded along transects.

Results show that overall species richness and diversity were significantly higher in natural steppe in comparison to arable and abandoned fields. At the same time particular species showed preferences to different habitats. Two species reached highest densities in natural steppe: both Pallid Harrier *Circus macrourus* and Steppe Eagle *Aquila nipalensis* were significantly more abundant in natural steppe than in either farmed arable or fodder grass fields, with intermediate densities in other habitats. Fodder grass fields proved to be very important for Montagu's Harrier *Circus pygargus* and Little Bustard *Tetrax tetrax*. The latter seemed to almost completely avoid arable fields, and had substantially lower numbers amongst other habitats. Common Kestrel *Falco tinnunculus* and Demoiselle Crane *Anthropoides virgo* showed no significant preference for any habitat, more or less evenly using both pristine steppe and all types of modified habitats, with possible exception of more active use of burnt areas by latter.

Maxim Koshkin (ACBK) has been awarded his MSc at UEA with a Distinction. The local university student will finish his Diploma in June 2012.

### **Small mammals:**

The small mammal team involved a Kazakhstan-based expert from Germany, an employee of the Institute of Zoology and two local university students.

The aim of survey was to compare small mammal communities in steppe habitats, which are influenced by factors as land use or grazing of wild ungulates (Saiga antelope).

Four study areas have been surveyed – steppe grazed by Saiga, pristine steppe with no or little presence of Saiga and domestic animals, Steppe area moderately to intensively grazed by domestic animals and burnt steppe.

At each study area several methods were applied for observation of different kind of rodents: Live traps have been used for small and medium-sized rodents and insectivores. Line transects for counting and observation of boreholes, droppings and other signs. Point observation of big rodents (susliks). Night line transects (by car): counting and capturing of jerboas using

headlight beams.

All sampling sites had the same type of vegetation to ensure data to be comparable.

Totally 10 species were observed during the survey: *Citellus pygmaeus*, *Cricetulus migratorius*, *Meriones tamariscinus*, *Cricetulus evermanni*, *Allactaga elator*, *Piguetmus pumilio*, *Stylodipus telum* and *Allactaga major*.

Data of the small mammal survey is currently being analyzed by ACBK staff, supported by the Kazakhstan-based expert.

### **Saiga:**

In September 2011, the saiga telemetry component was extended to 7 more animals, which were fitted with satellite collars retrieved from those deployed in 2010. 4 collars were deployed in the region of Lake Tengiz in order to reach a more reasonable amount of tracked animals, and 3 were deployed in the northern part of the Torgai subpopulation.

Maps of saiga movement and distribution, collared in previous season are up-dated weekly and sent to governmental institutions to improve their anti-poaching work on the ground. The data will help us to understand the migration and significance of the species for the steppe/semi-desert habitat. Data are currently being analysed and will play an important role in the development of the ACDI strategy.

### **Links to press releases and theses:**

<http://www.uni-muenster.de/Oekosystemforschung/forschung/kasachstan.html>

<http://www.uni-muenster.de/Oekosystemforschung/en/forschung/kasachstan.html>

## **2. Give details of any notable problems or unexpected developments that the project has encountered over the last 6 months. Explain what impact these could have on the project and whether the changes will affect the budget and timetable of project activities.**

The project has encountered a delay with starting research on small mammals since the proposed RSPB employee had to withdraw at short notice due to health reasons. A Kazakhstan-based expert has been involved instead. The delay of the field season concluded that sufficient data have not yet been collected, but at least two students have been trained, who will be involved into the project in Y3. It is anticipated to conduct intensified research in the next field season, which should produce sufficient research results to meet the project targets.

### **Have any of these issues been discussed with LTS International and if so, have changes been made to the original agreement?**

**No**

**Discussed with LTS:**                      no/yes, in..... (month/yr)

**Formal change request submitted:**    no/yes, in.....(month/yr)

**Received confirmation of change acceptance**                      no/yes in.....(month/yr)

## **3. Do you expect to have any significant (eg more than £5,000) underspend in your budget for this year?**

Yes     No

**If yes, and you wish to request a carryforward of funds, this should be done as soon as possible. It would help Defra manage Darwin funds more efficiently if you could give an indication of how much you expect this request might be for.**

**Estimated carryforward request:    £ 5,000**

**4. Are there any other issues you wish to raise relating to the project or to Darwin's management, monitoring, or financial procedures?**

**No**

**If you were asked to provide a response to this year's annual report review with your next half year report, please attach your response to this document.**

**Please note: Any planned modifications to your project schedule/workplan or budget should not be discussed in this report but raised with LTS International directly.**

Please send your **completed form by email** to Eilidh Young at [Darwin-Projects@ltsi.co.uk](mailto:Darwin-Projects@ltsi.co.uk) . The report should be between 1-2 pages maximum. **Please state your project reference number in the header of your email message eg Subject: 17-075 Darwin Half Year Report**