

## *Darwin Initiative Annual Report*

### **Darwin Project Information**

Project Ref Number	15/033
Project Title	Monitoring bat biodiversity: indicators of sustainable development in Eastern Europe
Country(ies)	Romania, Bulgaria
UK Contract Holder Institution	Institute of Zoology, Zoological Society of London (ZSL)
UK Partner Institution(s)	The Bat Conservation Trust
Host country Partner Institution(s)	The Romanian Bat Protection Association, The Green Balkans, The Nature Park Roussenski Lom, The Institute of Zoology: Bulgarian Academy of Sciences and The Bulgarian Bat Research and Protection Group.
Darwin Grant Value	£179,029
Start/End dates of Project	1 <sup>st</sup> May 2006 – 31 <sup>st</sup> April 2009
Reporting period (1 Apr 200x to 31 Mar 200y) and annual report number (1,2,3..)	1 <sup>st</sup> April 2006 to 31 <sup>st</sup> March 2007. Annual Report 1.
Project Leader Name	Dr Kate E. Jones
Project website	<a href="http://www.ibats.org.uk/">http://www.ibats.org.uk/</a>
Author(s), date	Kate Jones, Abigel Szodoray-Paradi, Colin Catto 24 <sup>th</sup> April 2007

### **1. Project Background**

Our project develops national bat monitoring programmes in two countries in Eastern Europe (Romania and Bulgaria, see fig. 1) in order to generate long-term data on biodiversity indicator species to assess the impact of national development and global change. Working with existing in-country networks, our project offers training in bat monitoring, develops suitable monitoring protocols and training materials, and monitors selected bat species using recordings of bat echolocation calls along national road networks.



**Fig. 1.** Locations of the 2006 training workshops and meetings in Romania and Bulgaria, and the Romanian monitoring surveys carried out in 2006.

## 2. Project Partnerships

*Partnership between UK lead institution and host country partner(s).*

The Zoological Society of London (ZSL) and The Bat Conservation Trust (BCT) have developed strong links with our Romanian and Bulgarian collaborators over the project's first year. We had our initial project meeting with Abigel Szodoray-Paradi from The Romanian Bat Protection Association (RBPA) at the EUROBATS Inter-Sessional Working Group meeting in London in March 2006. Here we discussed the project aims and objectives and recruitment of the personnel to take part in the monitoring program. We then co-organised a training workshop in Cefa, Romania (fig.1) in July 2006 to train the RBPA monitoring recruits in acoustic bat monitoring, designing monitoring protocols for their national surveys and we provided all the necessary monitoring equipment. With advice from RBPA we visited The Green Balkans in Plovdiv, Bulgaria to establish initial contact and whether they might be interested in becoming involved in the Bulgarian monitoring project to be started in 2007. Elena Tilova from The Green

Balkans was very interested in the project and we donated a bat detector to the organisation to help develop their interests in bat detector monitoring. In November 2006, we organised a meeting in Rousse, Bulgaria (fig.1) for all the Bulgarian stake-holders that had showed an interest in the project. At the meeting we agreed upon a working group for the Bulgarian project led by Elena Tilova from The Green Balkans and their network of volunteers with expert input from Dr. Tea Ivanova (The Bulgarian Bat Research and Protection Group and The Nature Park Roussenski Lom – our initial contact), and Dr. Ivan Pandourski (The Institute of Zoology: Bulgarian Academy of Sciences). We also invited Abigel Szodoray-Paradi from RBPA to participate, which strengthened the links between the projects and bat workers in both countries. We planned the timetable so that we could implement the project in Romania in the first year and Bulgaria in the second. This gap really was essential in order to establish the links with the Bulgarians and develop trust and interest in the project and what the project could deliver.

ZSL also supported Abigel Szodoray-Paradi's successful application for the Cambridge University Miriam Rothschild Travel Bursary Programme for an internship at ZSL in April 2007. Abigel visited for 3 weeks, firstly attending the Cambridge University Student Conference on Conservation Science where she presented a poster on the project and then spent the rest of the internship at ZSL. Together with BCT, we evaluated the progress of the project, analysed the collected data and planned the monitoring for this year

#### *Other collaborators*

RBPA has developed links with a Habitat Management and Road mitigation planning project in Romania and Bulgaria funded by the Dutch government. This project looks at the implementation of roadside designs on biodiversity in the region. The Darwin project is nicely seen to compliment this initiative as the Darwin project would provide data on which the project could use to inform policy makers. RBPA has also managed to secure partial matched funding from the Romanian Government from the funding that the Darwin Project has spent in Romania on workshops and training (£10,000). The Darwin project has also secured partial matched funding from Bat Conservation International (\$1000) and The Rufford Foundation (£15,000) which has been spent on further development of the website and online data portal.

The Darwin project has also developed linkages with Conservation International, who have expressed an interest in developing similar bat monitoring protocols to those used in this project in their Tropical Ecology Assessment and Monitoring (TEAM) sites ([www.teaminitiative.org](http://www.teaminitiative.org)). ZSL is organising a workshop (funded by Conservation International, \$25,000) on this in Washington in May 2007. We also have interest from Dr. Richard Jenkins from Madagasikara Voakajy (Madagascar), Dr. Chanda Bennett (American Museum Natural History, New York, US) and Dr. Nyambayar Batbayar (Wildlife Science and Conservation Center of Mongolia, Mongolia) to trial the monitoring project in these countries this year. We have also made more formal linkages with the existing Bats and Roadside Mammals Survey in the UK, run by Mammals Trust UK and BCT. We are planning that the data generated throughout the UK using the same monitoring techniques, will be uploaded over the next year into the Darwin project's online portal and that the volunteers and project managers will be able to use the website next year to manage their data.

### **3. Project progress**

#### **3.1 Progress in carrying out project activities**

All activities have been carried out in the manner and the time that they were planned (except for 2<sup>nd</sup> Romanian workshop planned originally for March 2007 has been moved to May 2007 to coincide with the 1<sup>st</sup> Bulgarian workshop).

**Project Outputs:** (1) *Establishment of statistically defensible long-term monitoring protocols for Romania and Bulgaria & (2) Network of host country personnel trained in monitoring techniques, equipment and analysis*

In July 2006, we held the first workshop in Cefa, Romania (fig.1). The ZSL/BCT team trained nine volunteers from RBPA in acoustic bat monitoring and survey techniques. We also bought and transferred six sets of survey equipment over to the group, and assisted with the design of their monitoring protocols and national survey. The trained volunteers then split up into five survey groups (Paradi, Olteanu, Ifrim, Jere and Szabo) distributed over Romania, carrying out 20 transects covering 610 km from July to September (see transects plotted out in fig. 1 labelled by survey group). The initial nine volunteers recruited and trained a further 12 people in the project, who assisted them with carrying out the transect surveys. We also travelled to Plovdiv and Rousse in Bulgaria in July and November 2006. We held a series of meetings which resulted in the set up of a Bulgarian working group led by Elena Tilova from The Green Balkans and their network of volunteers with expert input from Dr. Tea Ivanova (The Bulgarian Bat Research and Protection Group and The Nature Park Roussenski Lom), and Dr. Ivan Pandourski (The Institute of Zoology: Bulgarian Academy of Sciences).

**Project Outputs:** (3) *Ongoing online international spatial and temporal database on bat species abundances and distributions alongside road networks*

We have developed and designed the pilot of the online database to host the project data. The database is hosted within an ASP.net framework and this allows users upload their car survey data and download and analyze their collected data and project leaders to manage their projects. Users can also interact with the site by registering and posting news via web blogs and other communication forums. We are hosting the site at Newcastle University Data Management Centre and the pilot survey data sonograms and associated metadata collected by the Romanian volunteers has been uploaded onto their servers. The analysis of sonograms collected from the 1<sup>st</sup> year pilot data is now complete. We have analysed 20 sonogram transects and have reported the presence and abundance of 14 species across Romania.

### 3.2 Progress towards Project Outputs

*(1) Establishment of statistically defensible long-term monitoring protocols for Romania and Bulgaria*

We have made good progress on this output as we have developed the protocol guidelines for Romania, which will be distributed to the monitoring network and translated into Hungarian and Romanian. The Bulgarian protocols will also be developed in the coming year. The protocols have been successfully trailed this year in Romania and they have delivered presence and abundances of bats across Romania.

*(2) Network of host country personnel trained in monitoring techniques, equipment and analysis*

We have also made good progress on this output as we have trained a total of 21 volunteers this year in Romania, with more recruits planned in the next workshop in Romania this year. The Bulgarians also have their first training workshop this year and have been successful in recruiting volunteers for this. We are finalising the training material for the surveys and analysis of sonograms which will be uploaded to the website and translated. One of the recognised risk factors in this output was the ability of the host country to recruit enough volunteers. However, Romania has already recruited twice as many as originally planned. We were concerned about the lack of a similar setup in Bulgaria and the availability of volunteers for this project there. However, by linking up with The Green Balkans, we have been able to use their established network of biodiversity volunteers and we will be able to train these individuals in bat monitoring techniques to deliver the surveys needed.

*(3) Ongoing online international spatial and temporal database on bat species abundances and distributions alongside road networks*

Roadside survey data has been collected from 610km in Romania and uploaded to the pilot online database. Further surveys are planned for this year in Romania and initial data collection in Bulgaria. The data collected have all been checked in quality and their position has been verified with simultaneous GPS recordings.

*(4) Knowledge on how road design and the change in human development and climate impacts bat biodiversity*

Analysis of the habitat associations of bats will be ongoing over the coming year.

### 3.3 Standard Output Measures

**Table 1 Project Standard Output Measures**

Code No.	Date Due: Description	Year 1 Total
Established codes		
5	March 2008: Key personnel and a minimum of twenty volunteers trained to survey and monitor bats, interact with the online database, extract and interpret data	1 key person and 20 volunteers trained in Romania and discussions with 3 key personnel from Bulgaria.
7	Sept 2007: Training manual and material (x2), monitoring protocol manual (x2), 1 database design and analysis manual	These are in draft form.
8	May 2009: 30 weeks leading in-country workshops and field work	5 weeks each for K. Jones (ZSL) and Colin Catto (BCT)
10	Mar 2009: Identification guide to bats along roadsides using echolocation calls	This is in draft form.
12A	Sept 2007: Online database of bat distributions from transect data and echolocation calls	A pilot database has been developed and the data from 610km Romania 2006 has been uploaded and analyzed.
13A	May 2009: Echolocation call libraries for roadside species (x2)	These are in draft form for Romania
14A&B	May 2009: Workshop at end of project (x1), international conference presentations	Project presented at Cambridge University International Student Conference
15AB,D	May 2009: Annual national and local press releases in each host country and UK local press release at start of project.	2 Romanian and 1 Bulgarian press release
17A&B	May 2009: Development and enhancement of biodiversity monitoring network (x2)	Recruitment of 21 Romanian volunteers and the development of a project team in Bulgaria
20	May 2007: Computer equipment, detectors and software £20,000	£6000 spent on 6 sets of equipment to Romania. The project agreed with Darwin to shift the remaining £4000 into salaries for the development of the web database
23	May 2009: Matched funding: Confirmed £134,439 (Zoological Society of London), Proposed £20,000 (Rufford Foundation), £5,000 Bat Conservation	Matched funding for ZSL; £15,000 from Rufford Foundation; \$1000 from Bat Conservation International; £10,000 from Romanian

	International Global Grass Roots Fund), £5,000 (Fauna and Flora International Flagship Species Fund), £5,000 (People's Trust for Endangered Species Fund)	Government from RBPA; £1000 for Abigel Szodoray-Paradi internship and conference attendance from Cambridge University; \$25,000 from Conservation International for monitoring workshop
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**Table 2 Publications**

Type * (eg journals, manual, CDs)	Detail (title, author, year)	Publishers (name, city)	Available from (eg contact address, website)	Cost £ (if applicable)

### 3.4 Progress towards the project purpose and outcomes

The project's purpose is to generate long-term population data on biodiversity indicators to assess the impact of global change by developing bat biodiversity monitoring programmes for two countries in Eastern Europe. We are on target to deliver this as the progress of our measurable indicators are as planned or have been more successful than planned (online database, development of monitoring personnel maintaining a long-term monitoring program, and manuals of good practice on roadside design). For example, in the first year the project has surveyed 610 km of Romanian roads (originally estimated at 200km over 3 years) with all bat encounters analysed and stored in the purpose-built database. This demonstrates that good progress has been made on the projects purpose of generating data through a network of trained monitoring personnel, which will be developed into a monitoring programme over the subsequent years.

### 3.5 Progress towards impact on biodiversity, sustainable use or equitable sharing of biodiversity benefits

The first stage of measuring impact on biodiversity is to establish where the relevant biodiversity is currently present. Good progress has been made on this, as evidenced by the successful survey of 610 km of Romanian roads and the transference of necessary skills, knowledge and equipment to Romanian volunteers. This also demonstrates good progress towards sustainable long term monitoring.

## 4. Monitoring, evaluation and lessons

The monitoring and evaluation have already been covered in the above.

Important lessons learnt in this first year include the importance of building this project into the activities of an existing country NGO that has access to a network of potential volunteers and is stable within that country. This is the only way of developing sustainable monitoring networks that can deliver long-term monitoring data. Designing suitable cyber infrastructures for these types of biodiversity monitoring projects is also critical in order to adequately store and manage data and projects.

## 5. Actions taken in response to previous reviews (if applicable)

NA

## 6. Other comments on progress not covered elsewhere

*Has the design of the project been enhanced over the last year, eg refining methods, or exit strategy?* The original methods as proposed have proved robust and successful. We have made small enhancements to equipment as a result of feedback from surveyors and a more objective method of identifying bats encountered in the recorded sonograms has been developed. This refinement should enhance long term monitoring sensitivity as it reduces background "noise" in the dataset.

*Discuss any significant difficulties encountered during the year and steps taken to overcome them not already discussed elsewhere.* At the start of the project, we were concerned about the possibility of insufficient volunteers in Bulgaria to implement the project. Our approach was to discuss the difficulty with our Romanian colleagues who identified an appropriate Bulgarian NGO (The Green Balkans) to approach. We arranged and had meetings with The Green Balkans who agreed to become a partner in the project and provide volunteers while our original contact remained onboard as a scientific advisor. This was a successful approach that overcame the difficulties we faced. More details in section 2 above – Project Partnerships.

## **7. Sustainability**

The project has raised the profile of bat biodiversity monitoring at governmental levels through both the RBPA securing some matched funding from the Romanian Government to contribute to this project, and the links developed with a Habitat Management and Road mitigation planning project. The project has increased the capacity of trained biodiversity monitoring personnel in Romania (above expectations) through our workshops and equipment. We also gave The Green Balkans their first bat detector and have stimulated their interest in bat biodiversity monitoring. Because we are working with large established NGO's in both Romania and Bulgaria we hope that this makes the monitoring project sustainable to deliver long-term monitoring data.

## **8. Dissemination**

RBPA presented the project at the Cambridge University Student Conference in Conservation Science in March 2007. This reached an international conservation student audience and one which was also well attended by international conservation organisations. RBPA also presented the work at research bat conference in Romania in November 2006, reaching a national scientific and conservation audience. Two local press releases were also put out in Northern Romania at the start of the project at the time of the July workshop and one in Bulgaria when the team met up in November 2006 in Rousse, Bulgaria. ZSL published an article in the Darwin Newsletter about this project which will be coming out in May 2007, which is circulated to all Darwin projects. Another write up also went into the Institute of Zoology, ZSL newsletter which reaches all ZSL employees and the Zoology Department at the University of Cambridge. We also put a short note about the project in Bat News, the quarterly national bat conservation magazine of The Bat Conservation Trust.

**10. OPTIONAL: Outstanding achievements of your project during the reporting period (300-400 words maximum). This section may be used for publicity purposes**

I agree for ECTF and the Darwin Secretariat to publish the content of this section

This project uses existing NGO's to deliver monitoring at a national and an international level, using a novel monitoring technique. We have used the past year to trial out the technique and build a state-of-the-art online web data portal within which the project can be managed and the data stored and analyzed. We have managed to generate matched funding for the project from National governments and transferred our biodiversity skills and equipment. We have also generated interest from other countries and conservation organisations around the world in using this technique to develop monitoring projects. We also have developed an excellent working relationship with the Romanian NGO, and enhanced the Bulgarian biodiversity monitoring network through developing a new partnership with The Green Balkans.



## Annex 1 Report of progress and achievements against Logical Framework for Financial Year: 2006/07

Project summary	Measurable Indicators	Progress and Achievements April 2006 - March 2007	Actions required/planned for next period
<p><b>Goal:</b> <i>To draw on expertise relevant to biodiversity from within the United Kingdom to work with local partners in countries rich in biodiversity but constrained in resources to achieve</i></p> <p><i>The conservation of biological diversity,</i></p> <p><i>The sustainable use of its components, and</i></p> <p><i>The fair and equitable sharing of the benefits arising out of the utilisation of genetic resources</i></p>		<p>We have started to map out the bat biodiversity in Romania and build a network of trained personnel that can deliver long term monitoring data and sustainable development.</p>	<p><i>(do not fill not applicable)</i></p>
<p><b>Purpose</b> To generate long-term population data on biodiversity indicators to assess the impact of global change by developing bat biodiversity monitoring programmes for two countries in Eastern Europe</p>	<p>Online database of abundances and distribution of roadside bats in Romania and Bulgaria</p> <p>Network of monitoring personnel maintaining a long-term programme in each country</p> <p>Production of manuals of good practice in road design to enhance biodiversity and effect of development</p>	<p>Pilot online database completed holding data on Romanian monitoring data in 2006.</p> <p>Trained network of 21 Romanian volunteers plus 3 key personnel from Bulgaria.</p>	<p>Full launch of online database with data collected from Romania and Bulgaria in 2007</p> <p>Further workshop in Romania and first training workshop in Bulgaria</p> <p>Analysis of the distribution and abundance data collected</p>
<p>Output 1. Establishment of statistically defensible long-term monitoring protocols for Romania and Bulgaria</p>	<p>Protocol guidelines manual for each host country</p>	<p>Developed protocol guidelines for Romania in draft form and developing the Bulgarian protocols this year. Protocols have been successfully trialled this year and have delivered presence and abundances of bats in Romania</p>	

Output 2. Network of host country personnel trained in monitoring techniques, equipment and analysis	Key personnel and 10 volunteers trained in survey methods Further workshops run by host countries Training materials produced	We have trained 21 volunteers in Romania in monitoring techniques and equipment with more recruits planned for the next workshop. The Bulgarians have their first workshop this year. We are finalising training material for the surveys and analysis which will be translated and put up onto the website.
Activity 2.1. Workshop in July 2006 in Cefa, Romania		
Activity 2.2. Meeting with The Green Balkans in July 2006, Plovdiv Bulgaria		
Activity 2.3. Meeting with all Bulgarian stakeholders in Rousse, Bulgaria in November 2006.		
Output 3. Ongoing online international spatial and temporal database on bat species abundances and distributions alongside road networks	Roadside survey data from 200km of transect collected from each host country and uploaded to database  Website and database are developed	Roadside survey data has been collected from 610km of roads in Romania and uploaded to the developed pilot online database.
Activity 3.1. July – September 2006 monitoring by Romanian volunteers		
Activity 3.2. Ongoing – development of the online data portal		
Output 4. Knowledge on how road design and the change in human development and climate impacts bat biodiversity	Statistical analysis of quantity and quality of roadside bat biodiversity along a range of road side types in host countries  Statistical analysis of time series	Statistical analyses will be carried out in the forthcoming years.

	survey data with change in development and climate Annual report on roadside biodiversity index.	
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## Annex 2 Project's full current logframe

Project summary	Measurable Indicators	Means of verification	Important Assumptions
<b>Goal:</b> <b>To draw on expertise relevant to biodiversity from within the United Kingdom to work with local partners in countries rich in biodiversity but poor in resources to achieve</b> <ul style="list-style-type: none"> <li>• the conservation of biological diversity,</li> <li>• the sustainable use of its components, and</li> <li>• the fair and equitable sharing of benefits arising out of the utilisation of genetic resources</li> </ul>			
<b>Purpose</b>			
To generate long-term population data on biodiversity indicators to assess the impact of global change by developing bat biodiversity monitoring programmes for two countries in Eastern Europe.	<p>Online database of abundances and distribution of roadside bats in Romania and Bulgaria.</p> <p>Network of monitoring personnel maintaining a long-term programme in each country.</p> <p>Production of manuals on good practice in road design to enhance biodiversity and effect of development.</p>	<p>Website and database available online and continuing annual data entry from host countries.</p> <p>Training manuals and reports and research results published in peer reviewed journals.</p>	<p>Host countries can recruit and maintain a sufficient volunteer network.</p> <p>Host countries willing to share data.</p>
<b>Outputs</b>			
Establishment of statistically defensible long-term monitoring protocols for Romania and Bulgaria	Protocol guidelines manual for each host country.	Distribution of manuals to monitoring network.	Protocols will deliver monitoring (risk reduced based on previous successful surveys carried out in the U.K. and Republic of Ireland).
Network of host	Key personnel and 10 volunteers trained in	Contact details of volunteers and workshops	Ability of host countries to

country personnel trained in monitoring techniques, equipment and analysis.	survey methods.  Further workshops run by host countries.  Training material produced.	recorded.  Training material available for download from project website.	recruit volunteers (risk reduced as Romania has already recruited some volunteers).
Ongoing online international spatial and temporal database on bat species abundances and distributions alongside road networks.	Roadside survey data from 200 km of transect collected from each country and uploaded to database.  Website and database are developed.	Verification of the quality and quantity of survey data. GPS log can be used to verify position of recordings.	Survey data is collected correctly.  Website can be accessed by host countries.
Knowledge on how road design and the change in human development and climate impacts bat biodiversity.	Statistical analysis of quantity and quality of roadside bat biodiversity along a range of road side types in host countries.  Statistical analysis of time series survey data with change in development and climate.  Annual report on roadside biodiversity index.	Production of peer-reviewed papers and production of annual report to policy makers.	Sufficient data is collected for analysis
<b>Activities</b>	<b>Activity milestones (summary of project implementation timetable)</b>		<b>Assumptions</b>
Protocol & Equipment Development	Monitoring protocols designed and equipment procured. Yr 1: Romania, Yr 2: Bulgaria		Equipment is obtained and protocols work.
Training/Workshops	Yr 1: 1 <sup>st</sup> workshop to initially train key Romanian personnel in survey techniques, call analysis, volunteer recruitment. 2 <sup>nd</sup> workshop run by Romanian personnel offering training to survey		Volunteers are willing and capable of being trained.

	volunteers. Development of training material. Yr 2: 3 <sup>rd</sup> workshop run to train key Bulgarian personnel in survey techniques and volunteer management methods. 4 <sup>th</sup> workshop run by trained Bulgarian personnel to train Bulgarian volunteers. Yr 3: Joint Romanian/Bulgarian/UK workshop to provide feedback and identify future funding	
Field Research Programme	Yr 1: Pilot survey data collected by Romanian key personnel. Yr 2: Survey data collected by network of Romanian volunteers and pilot data collected by Bulgarian key personnel. Yr 3: Survey data collected by Romanian and Bulgarian volunteers.	Volunteers are trained and collect the required data.
Database Development & Spatial Analysis & Modelling	Yr 1: Development and design of online database to host project data. Romanian pilot data uploaded and initial analysis. Yr 2: 2 <sup>nd</sup> Yr Romanian data uploaded and analysed. Bulgarian pilot data uploaded and analysed. Yr 3: 3 <sup>rd</sup> Yr Romanian, 2 <sup>nd</sup> Yr Bulgarian data uploaded and analysed. Examine 3 years of data for Romania to examine effect of global change on bat biodiversity.	Website and online database are established correctly and maintained.
Project Reporting	Yrs 2-3: Production of guidelines to maximize biodiversity for roadside managers in Romania and Bulgaria. Report effect of human development on bat biodiversity in Romania using three years of data.	Sufficient data is collected for the spatial analysis and modelling.