TEXT
Lars Christian Adrados, Amphi Consult and Norbert Schneeweiss, Nature Conservation Station Rhinluch, Landesumwelt-amt Brandenburg.

PHOTOS
Lars Christian Adrados, Jana Albrecht, Lars Briggs, Iwona Mirowska Ibron, Renata Krzysciak-Kosinska, Merike Linnamägi, Martina Meeske, Krzystof Molevski, Mariusz Rybacki, Norbert Schneeweiss, Zyndrunas Sinkevicius, Nerijus Zablezkis.

LAYOUT
Amphi Consult

PRINT
Vija, Druskininkai, Lithuania

Save Europe's oldest Reptile and Amphibians

Layman's report

LIFE-Nature project LIFE05 NAT/LT/000094: "Protection of the European pond turtle and amphibians in the North European lowlands"

Why protect Europe's oldest reptile and amphibians?

There are three answers:

- From an ecological point of view, it's a question of securing the European biodiversity.
- From an ethical point of view, it's a question of respect for old living forms. The European pond turtle, the Fire-bellied toad and the Great crested newt have so far survived many millions of years as part of our native fauna. It is our responsibility to manage their habitats to increase the possibility that these species will survive tomorrow as natural species in the North European lowlands.
- From a legal point of view, all species are under strict protection in the European Union and is included in Annex II and Annex IV of the Habitat Directive 92/43/EEC.

THE EUROPEAN UNION, THE LIFE-NATURE PROGRAM
www.eu.europa.eu/environment/life

LITHUANIAN FUND FOR NATURE
www.glis.lt/life

ZUVINTAS BIOSPHERE RESERVE
www.zuvintas.lt

VEISIEJAI REGIONAL PARK
www.veisiejuparkas.lt

METELIAI REGIONAL PARK
www.meteliuparkas.lt

NATURE HERITAGE FUND
www.gpf.lt

POLISH SOCIETY FOR PROTECTION OF BIRDS (PTOP)
www.ptop.org.pl

BIALOWIEZA NATIONAL PARK
www.bnp.com.pl

CLUB OF NATURALISTS
www.kp.org.pl

REGIONAL DIRECTORATE OF STATE FORESTS, BRANCH OLSZTYN
www.olsztyn.lasy.gov.pl

ARBEITSGEMEINSCHAFT NATUR- UND ARTENSCHUTZ E.V. (AGENA E.V.)
www.herpetopia.de

LANDESCHAFTSFÖRDERVEREIN (LFV) OBERES RHINLUCH E.V.
www.oberes-rhinluch.de

GEORG-AUGUST-UNIVERSITY OF GÖTTINGEN (GAUG)
www.conservation.uni-goettingen.de

Discussion of project results

The projects objectives must been viewed in the light of the biology of the European pond turtle, a species which can live more than 50 years and sometimes up to 100 years in the northern range of its distribution range and more important first get reproductive when it reaches 6 to 20 years. During a project of 5 years length, where both recurring and non-recurring habitat management have been performed along with rearing of young turtles, there are no possibilities to assess the long-term effect of the project alone of that reason that eventual reproduction by the reared specimens will first occur years after project termination.

The uniqueness of the Northern area fringe populations of European pond turtle and Fire-bellied toad has to be emphasized. The habitats of these species are also inhabited by many other threatened animal and plant species. In each case, they are worth protecting. With the designation of Natura2000 areas, as well as nature reserves in national law, but also with specific protection projects for the European pond turtle and the Fire-bellied toad (e.g. the present EU LIFE-Nature project), Germany, Poland and Lithuania are getting to grips with the initial steps to protect the threatened relicts of their native amphibians and reptile fauna. Now it is a matter of expanding these projects, and of setting up the active protection of the area fringe populations and their habitats as a solid component of the nature conservation work of these countries.

The LIFE-Nature Project

Herpetologists, ecologists and conservationist from Lithuania, Poland and Germany in 2004 started cooperation and experience exchange on protection of European pond turtle. The focus was set on threatened amphibians; Fire-bellied toad and Great crested newt since they mostly occur together in the same habitats. The team was joined by herpetologists from Denmark, who have long-standing experience in habitat management and LIFE project management.

Joint work resulted in the LIFE-Nature project “Protection of the European pond turtle and amphibians in the North European lowlands”. The project areas were the current three population centers; the Region around Oder River, Masuria in North East Poland and South West of Lithuania. The project took place from 2005 to 2009 with a total budget of 2,346,185 Euro, of which 49.5 % have been financed by the European Commission’s LIFE-Nature program.

The objectives of the project have been:

- To save the small and isolated populations of European pond turtle from extinction and to in crease the total population size in the extreme northern part of its distribution range;
- To save the small and isolated populations of Fire-bellied toad and Great crested newt from extinction in the project sites;
- To exchange experience among involved personnel;
- To educate local inhabitants and involve them in species protection activities;
- To write a concluding best management guide on the basis of the experience obtained.

on poor (sandy) soils, should be extensively used as a meadow and/or pasture. Combination with plant and/or insect species protection is possible. Mowing and grazing should take place in the periods outside the nesting season (May 15 – June 15) and outside the migration period of hatchlings (March 1 – April 30 and during hot summers from September 1 – October 10). Only light animals such as sheep or goats should be grazing these meadows (herded not corralled).

- When the aquatic habitat is situated in a large scale intensively managed agricultural landscape, appropriate areas of farmland such as wet or sandy plains or hill tops should be transformed into extensively used grassland. The areas surrounding the water (within 20-50 m distance) should be extensively cultivated as buffer zones, which no application of fertilizers and/or pesticides.

- The habitat have to be preserved by means of appropriate measures in the context of extensive agricultural or forest use and landscape management in a favourable condition for the target species. These are the priority measures against silt-action or shading of aquatic habitats, or the growth of wooded areas at nesting sites. The measures of care are to be realized primarily during winter months.

- The interconnection of habitats is a crucial prerequisite for the long-term survival of the Europe an pond turtle, and endangered amphibian and retile in general. Fragmentation of the habitats through road constructions, the expansion of forest tracks and country roads, or the construc tion of bicycle lanes should be avoided. There is en extremely large set of predators for the amphibian and reptile species, and particularly for the European pond turtle. In addition to the fox and wild boar, non-native species such as mink, raccoon, and raccoon dog are becoming increasingly important predators. The following measures are a prerequisite for the survival and the resettling of European pond turtle: (i) reduction of the predation losses on the nesting sites by covering the nest with guards of fencing, or weathering of clutch squares, (ii) targeted reduction of local predator populations, e.g. by installing box traps for raccoons, and (iii) prohibiting wild boar feedings or baits in the vicinity of European pond turtle water habitats and nesting sites (within 100 m radius).

- Specifically, habitat management is to be described and defined in the context of management plans. Here, a comparison is made with other species and habitat protection requirements as well as development-oriented objectives.

The Threatened Species

The project focus on the European pond turtle and the amphibian species Fire-bellied toad and Great crested newt where they occur together with the European pond turtle.

The project area, classified as the North European lowlands includes Lithuania, the northern part of Poland and North-East Germany. This area is shaped climatically by continental influence. Geographically, it belongs to the most recent period of glaciations of the Pleistocene era, Vistula glacial period.

The European pond turtle, a relict from the earliest time, represents a group of reptiles mainly distributed in warmer regions. The European pond turtle appears a rather exotic part of the North European lowlands native fauna. The northern part of its distribution range reaches from its North-Eastern border in Lithuania and Latvia over Poland to the North-Western distribution border in North-East Germany. In total there are three current separate centers of population distribution south of the Baltic Sea, separated by large gaps; the region West and East of the Oder River, around Masuria in the North East of Poland and the South West of Lithuania.

Native European pond turtles have only survived in semi-natural landscapes which are rich in wetlands and waters. They occur in fens and mires around overgrowing lakes and ponds. Light sedge-dominated vegetation, reed and sunny edges of alder swamp forests are preferred habitats. The species is depended on climatically favorable egg-laying places close to the inhabited waters.

Basically, all occurrences of the European pond turtle in the North European lowlands are today threatened by extinction.

- The western occurrences on both side of the Oder River, are very small (< 20 adult/population), over-aged, and without supplementation it is not likely to survive even short term. All these populations, at the moment, are completely isolated, and can only be linked with the help of medium-term resettlement project with neighboring populations.
- In the Masuria area, the situation is similar drastic to that around the Oder River.
- In Southern Lithuania the species is a little more widespread today. The size of the local populations here is estimated to be 30. Most occurrences consist of a few, up to a maximum 30 individuals. Only a small number of the populations have a short-term chance of survival, i.e. populations which have more than 50 individuals in each. A share of the populations shows well-balanced age structures.

Generel recommendations for habitat management

The following recommendations valid for the European pond turtle as well as amphibians, specifically the Fire-bellied toad and Great crested newt, have been outlined based on the practical experience gained with habitat management:

- The habitat management must seek to increase the constancy of ponds. Above all this is to be achieved by improving water retention in the drainage basin. Even today a far-reaching network of drainage ditches has an adverse effect on the landscape's water levels. Therefore targeted interventions in the melioration system in the form of dams or low weirs are required. Drainage ditches should be filled as far as possible or completely dammed. In addition, small overgrown and/or silted-up ponds should be revitalized and new ponds should be created at appropriate locations. In case a pond is part of a complex (group) of ponds the minimum size of a pond should be 200 m^2, and in case of a single pond the surface area should be a least 500 m^2.

- Conservation and restoration of complexes (groups) of various types of ponds is especially important. Such groups should include preferably more than 3 multifaceted ponds, shallow structured bays, water-alder swamps, etc. At least 50% of the shallow lost and riparian zones should be well exposed to the sun. Dead wood, bunches of sedges and willow thickets provide European pond turtle places for sun-basking. Such structures should be preserved or created.

- Before undertaking any water infrastructure works (including renovation) an investigation of the habitat and site conditions should first be carried out. Interventions in vulnerable biotopes (e.g. a wet meadow) should be avoided.

- Anthropogenic influence on the aquatic species communities should be limited. Fisk stocking in smaller water bodies should be prohibited. The stock of fish in larger water bodies should be reduced where appropriate, or the fish should be taken away entirely by harvesting or pumping. Fishing and the use of fish traps should not be permitted in waters occupied by European pond turtle. Temporary drying out of ponds in late summer or autumn promotes amphibian popula tions.

- In the vicinity of the aquatic habitats of European pond turtles (within 300 m around the water bodies) there should be some open plains, especially on south-facing slopes (if possible sheltered from wind), for the turtles to have a location to recreate. These open plains, preferably located

The Fire-bellied toad, a representative from the Jurassic period, is the oldest amphibian group still exsting in Europe. Its earliest relatives are known from the end of the Jurassic period some 150 million years ago, when the dinosaurs inhabited the Earth.

The distribution samples of the Fire-bellied toad and European pond turtle are comparable in the area of their North West area limits, although the former penetrates the West more, up to the River Elbe, in the North, to the East of Denmark and the South of Sweden. In contrast to European pond turtle, the Fire-bellied toad even today has vital populations at its Northern limits. However, for some decades drastic decline of populations was marked here also. In the meantime numerous occurrences are likewise isolated and are under immediate threat to become extinct. To the south of the Baltic Sea the spreading gaps in the area of the fire-bellied toads are increasing.

In Lithuania and Poland the Fire-bellied toad is a declining and threatened species. Locally it is till common and in Poland viable populations occur among others in places where also the European pond turtle exists. However, the last 10 years of monitoring in the agriculture landscape around Bialowieza Forest show much local extinction as agriculture intensifies on moraine soils.

In Germany, the Fire-bellied toad is in danger to go extinct in several states as Schleswig-Holstein and Niedersachsen, and is in decline in all former states of East Germany (e.g. Brandenburg). The loss and overgrowing of ponds and intensive agriculture are the main causes.

The Great crested newt, a representative from the Eocene epoch, is a rather old amphibian form, as the *Triturus* genus is known from the Eocene epoch some 40 million years ago.

The Great crested newt occurs mainly in northern and central Europe, north of the Alps. In the north, the distribution area stretches up to the southern part of Finland. Nearly everywhere populations are declining, mainly due to anthropogenic habitat deterioration, however the species seems not quite as vulnerable as the Fire-bellied toad in the North European lowlands.

In Lithuania and Poland the Great crested newt is a declining and threatened species. Locally it is still common, among others in places where also the European pond turtle exists. The last 10 years monitoring in the agricultural landscape around Bialowieza Forest in eastern Poland has shown a few local extinctions but more stable population trends in forested areas.

In Germany, the Great crested newts are in decline. Loss of ponds, overgrowing of ponds and intensive agriculture are the main causes.

Project activities

Preparatory actions, elaboration of management plans and/or action plans

MONITORING METHODS FOR TURTLES AND AMPHIBIANS
Researchers in Lithuania, Poland and Germany used different monitoring methods, the results were thus difficult to compare. Consequently, a common monitoring methodology was elaborated in the course of the project, and it can be applied in other countries as well.

EVALUATION OF PONDS
To ensure that the management activities was planned in the most efficient way, the restoration of ponds for the target species was preceded by determining a number of factors influencing the occurrence of the species in ponds. To that end, 323 ponds were inventoried for Eruopean pond turtle and 139 for amphibians in Lithuania, Poland and Germany during study tours in 2005-07.

EVALUATION OF TURTLE HIBERNATION SITES AND FINDING AND EVALUATING NESTING SITES
Prior the project knowledge on nesting site location and the condition of favourable hibernation sites were sparse in all project areas. By the use of telemetry on 47 turtles, interviews with 134 local people and visual observations, 43 hibernation sites were found and evaluated and 53 potential and existing nesting sites inventoried and described.

GENETIC INVESTIGATION
In total 64 genetic samples from turtles was collected from 18 populations, (5 in Lithuania, 2 in North Eastern Poland, 6 in western Poland and 5 in Brandenbrug). Analysis of the samples provided general overview of gene purity within population, and helped evaluating potential risks of inbreeding.

DEFINING THE FAVOURABLE CONSERVATION STATUS FOR TURTLES AND AMPHIBIANS
The project defined the favourable conservation status of the target species, which allow assessing a population's status – whether it is viable or not.

ACTION PLANS AND LOCAL PLANS
In Lithuania one national action plan were elaborated for each species, discussing the species' status and providing measures for the emergence and survival of viable populations. In Poland regional action plans for the species were elaborated, and in Germany national action plans for European pond turtle and Great crested newt in Brandenburg were made. For the detailed implementation 20 local plans was prepared.

PRINTED EDUCATIONAL MATERIAL AND WEB-SITE

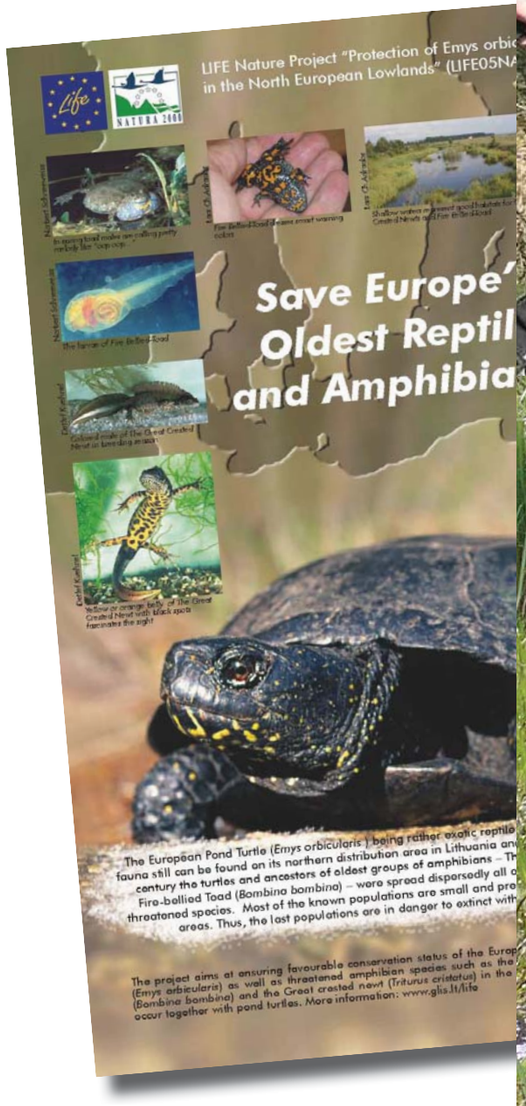
To increase local involvement in and understanding of the project, a number of printed materials have been made:

- Poster on European pond turtle in Lithuanian, German and English (the later version targeted not local involvement, but presentation of the project on inter national events),
- Folder on European pond turtle and its habitats in Lithuanian, Polish, German and English (the later version targeted not local involvement, but presentation of the project on international events),
- Folder on habitat restoration in Lithuanian

To communicate the experience gained through the project to other experts, conservation specialists and nature managers, a “Best practice guideline – on European pond turtle, Fire-bellied toad and Great crested newt” was created at the end of the project.

To communicate the project and its results to a broader audience, the “Layman’s report” was created at the end of the project.

And through the whole project the Lithuanian Fund for Nature have offered the main project web-site www.glis.lt/life providing information about the project, pdf’s of project publications and news about project progress. During the project period, more than 50,000 visits have been made to the web-site. Many project partners has for local or regional purpose offered own web-sites in their native language.



LAND PURCHASE

Most of the German project sites are situated in areas with intensive land use, especially intensive agriculture. It was therefore necessary to purchase land in order to secure the water levels in ponds with the target species and to protect these species against fertilizers, manure and pesticides. In total 119 Ha was purchased in the German project sites.

RECURRING BIOTOPE MANAGEMENT

MANAGEMENT AGREEMENTS
In each case of nature management, management agreements have been initially been made with the respective land owner.

REARING OF TURTLES
To secure reproduction success of small populations of European pond turtle, 61 juveniles were reared from eggs on Poland and 151 were reared in Germany.

MANAGEMENT OF FORAGING HABITATS
The target species do forage in ponds during spring and summer. But in order to promote larger populations of all three species, it is important that juveniles European pond turtles and Fire-bellied toads can disperse into moist and swampy areas for foraging in small pools and puddles and juvenile Great crested newts can disperse into semi-natural grasslands for foraging. Therefore 250 Ha of moist areas and 100 Ha of grassland were mowed during the project.










PUBLIC AWARENESS AND DISSEMINATION OF INFORMATION

INTERNATIONAL EDUCATION OF EXPERTS / WORKSHOPS, STUDY TOURS, FINAL SEMINAR

In the course of the project, two study tours were held, the first in North East Germany, the later in West Poland, North East Germany and Denmark. The participants were the project's experts and nature conservation specialists from the participating organizations. The aim was to introduce project actins, gather experience and generally broaden the mind.

Further three international workshops including the final seminar were organized. The first workshop took place in Lithuania and North East Poland, the second workshop took place in North East Germany and the final seminar took place in Meteliai, Lithuania and Olsztynek, Poland. Participants were besides the project's experts and conservation specialists, herpetological experts from all over Europe including representatives from other LIFE projects.

EDUCATION OF LOCAL COMMUNITY

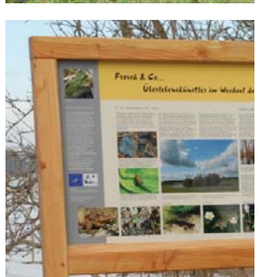
A broad range of local communication activities have been carried through:

- 8 turtle days, mainly in Lithuania,
- 8 amphibian days in Poland and Germany,
- 15 local educational seminars, mainly in Germany but also in Poland and Lithuania,
- 4 grazer exhibitions days, all in Lithuania

ON SITE EDUCATION

In the project sites, the onsite educations have included:

- Installment of 1 information board on each project site, in total 21 information-boards.
- Establishment of educational trail in western Poland,
- Yearly amphibian rescue actions in eastern Poland, where mobile amphibian fence with trap buckets on the nature side were put up along trafficked road. Local pupils regularly carried the trapped amphibians over the road.



NON-RECURRING BIOTOPE MANAGEMENT

POND RESTORING / DIGGING AND WETLAND RESTORING

Most of the populations of European pond turtle have become fragmented, and only single isolated populations have remained due to the disappearance of suitable pond complexes. Similarly, the meta-populations of Fire-bellied toad and Great crested newt have become fragmented due to the loss of appropriate water habitats.

To stop the decline of existing populations, in total 83 ponds have been restored or dug, of which 54 in Lithuania, 10 in Poland and 19 in Germany. In Poland wetland restoration have been carried out through construction of dams (1,715 m) and filling of ditches (4,281 m).

IMPROVEMENT AND CREATION OF NESTING AREAS FOR TURTLES

Open, sun-exposed nesting sites are vital for the turtles. However in many project sites, their nesting sites have become overgrown or there were too few nesting sites available. To increase the nesting possibilities for European pond turtle, in total 73 nesting sites have been improved or created

CREATING HIBERNATION SITES FOR TURTLES AND AMPHIBIANS

In the northern distribution range of European pond turtle, they spend half the year hibernating. Lack of suitable hibernation sites, i.e. sites with inadequate oxygen availability and/or high risk of frost can reduce the turtle's survival. Amphibian hibernation sites far away from breeding site, force the specimens to migrate far out in fields leading to reduced populations. Therefore the project created in total 48 nesting sites for European pond turtle and 43 hibernation sites for amphibians.

INSTALLING A SUSTAINABLE GRAZING REGIME WITH A HARDY GRAZER

Natural succession will by time overgrow the shore of breeding ponds, creating shadow and reduce water temperature. Fire-bellied toad is in its northern distribution range very sensitive to water temperature and will not succeed breeding where shore is shaded. To secure long-term management of their breeding localities, grazing was introduced on three sites in Lithuania with total 6 Galloways (two project sites) and 16 Hereford.

REMOVAL OF UNWANTED VEGETATION

Securing open conditions around new or restored ponds by removal of unwanted vegetation, has been done around 93 water-bodies in 15 project sties.