

## **“Serranella *Emys* Project” - preservation initiatives of *Emys orbicularis* populations in Abruzzo**

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### **Abstract**

“Serranella *Emys* Project” started in 1995, thanks to Cooperative COGECSTRE of Penne and Centro Studi Erpetologici *Emys* of S.I.S.N. and it was supported by Abruzzo Region; sponsorship was given also by the Regional Greens Group.

Operative phases of “Serranella *Emys* Project” are: (1) census and ecological research about *Emys orbicularis* in Abruzzo, (2) direct protection of viable populations, (3) recovery of isolated specimens, collection of specimens from severely threatened populations, (4) installation of a recovery centre in the Nature Reserve “Lago di Serranella” (Chieti) and captive breeding, (5) constitution of a protected nursery for raising the juveniles under natural conditions, and (6) study of small populations and careful selection of the right places for future reintroduction.

In this paper data on the present status and distribution of *E. orbicularis* in Abruzzo are presented and the operative phases of the “Serranella *Emys* Project” are explained.

Keywords: Testudines; Emydidae; *Emys orbicularis*; Italy, Abruzzo.

### **Zusammenfassung**

Das „Serranella *Emys* Projekt“ nahm 1995 dank der Cooperative COGECSTRE von Penne und dem Centro Studi Erpetologici *Emys* von S.I.S.N. seinen Anfang. Unterstützung erhielt das Projekt von der Region Abruzzo sowie eine Förderung von der regionalen Gruppe der Grünen.

Die Umsetzungsphasen des „Serranella *Emys* Projektes“ sind: (1) Häufigkeitserhebungen und ökologische Forschung über *Emys orbicularis* in den Abruzzen, (2) direkter Schutz lebensfähiger Populationen, (3) Aufnahme isolierter Exemplare, Entnahme von Individuen aus ernsthaft bedrohten Populationen, (4) Aufbau eines Schutz- und Zuchtzentrums im Naturschutzgebiet „Lago di Serranella“ (Chieti) und Nachzucht, (5) Errichtung eines geschützten Bereiches zur Aufzucht der Jungtiere unter natürlichen Bedingungen und (6) Untersuchung kleiner Populationen und sorgfältige Auswahl der richtigen Plätze für eine zukünftige Wiederansiedlung.

In dieser Arbeit werden Angaben zum gegenwärtigen Status und zur Verbreitung von *E. orbicularis* in den Abruzzen gemacht, und die Umsetzungsphasen des „Serranella *Emys* Projektes“ werden erklärt.

Schlagwörter: Testudines; Emydidae; *Emys orbicularis*; Italien, Abruzzo.

### **Introduction**

Our project springs from a bitter truth: among Italian reptiles *Emys orbicularis* is nowadays the most threatened species. Where a focused census has been taken, as in Piedmont (ANDREONE 1988, ANDREONE & SINDACO 1989), Liguria (DORIA & SALVIDO 1994) and Lombardy (FERRI 1992, 1996, FERRI et al. 1993), we have discovered that its status is almost alarming. In Lombardy there has been only one pair of *Emys* actually able to reproduce under natural circumstances.

Moreover, in this region there has been a complete despoiling of aquatic environments, potentiality suitable for *Emys* lifestyle, because of introduced

*Trachemys scripta* (SCHOEPPF, 1792), a North American species (FERRI & DI CERBO 1996).

The situation is not different in other Italian regions and with the rate of destruction or alteration of Italian wetlands we can suppose that without immediate initiatives of protection and conservation, the species will disappear within a ten-year period. Therefore, we consider our national strategy for the survival of the species in Italy to be vital, in cooperation with the Italian Centre CARAPAX, for the recovery of the potentially endangered populations. The "Serranella *Emys* Project" is the first concrete example of these initiatives.

#### *Emys orbicularis* in Italy

The alarming status of the Po River population is luckily not pervasive, and at least along the Northern Adriatic coast we can observe this species. Good populations live in lagoons near Venice and along the Po Delta, (a census has been carried out in the Riserva Boscone of Mesola, in the Commune of Bosco Mesola of Ferrara, ZUFFI & GARIBOLDI 1995). Going up the Po River we find other good populations near Ravenna (Alfonsine, MAZZOTTI 1990, Argenta, Punta Alberete) and near Bologna. To find other important populations it is necessary to follow the Tuscan coast (via Pisa, to Massa Marittima, along the Ombrone, in the Mounts of Uccellina Natural Park, DI TRANI 1989, DI TRANI & ZUFFI submitted).

In central Italy the species is almost absent on Adriatic versant, apart from colonies in Abruzzo and Molise and some quite good populations in Puglia (LISENDA 1988), and is more or less widespread along the Tyrrhenian and Ionian coasts (there are fairly good populations in Latium and in Basilicata, whereas in Campania and in Calabria the species is rather threatened).

*E. orbicularis* populations exist in Sardinia and Sicily, too, where it is unfortunately threatened by destruction of its favoured habitats.

#### *Emys orbicularis* in Abruzzo

For *Emys* we have the same problem as for herpetofauna in general: there are a very few historical reports or data about its distribution in Abruzzo and Central Italy.

Some authors of the last century describe the species as common in the larger rivers and streams of the region. Others considered the species as probably present in Abruzzo but did not pinpoint its presence. We suspect that widespread population decrease took place in the 1960's, when a lot of marshes were reclaimed, and more recently with the canalization of some watercourses causing the fragmentation of favoured habitats of this species, especially in areas of coastal woodlands. For these reasons *Emys* had to take refuge in ponds, pools, or in irrigation canals in cultivated lands, as confirmed by people living in the Sangro and Trigno Valleys.

*Emys* is present in small, isolated populations in the province of Chieti. In the 1980's individuals were observed in small artificial lakes for irrigation near the "Lago di Serranella" Nature Reserve, while another individual was taken by a fisherman in the Aventino River. Two individuals were found in 1990 at the mouth of the Alento in a canalized stream close to the town of Francavilla al Mare.

The only important populations are located near Vasto and S. Salvo. In spring 1989, 25 individuals (adults and young) were saved by taking them from a stream which was going to be canalized and then releasing them in a nearby stream where the species remains undisturbed. Some individuals used as breeding stock in the new *Emys* centre in Serranella come from this place.

### The "Serranella *Emys* Project"

In 1994 the authors asked the regional Assessorato of Ecology and Cooperative COGECSTRE (administrator society of the Nature Reserve "Lago di Serranella") for their support for some initiatives to help this species. Now there is a budgeted and fully authorized program for the species' recovery (FERRI & DI CERRO 1995a). In fact, in Abruzzo Regional Law n° 50/1993 is in force, which forbids the killing, capture and keeping of all native amphibians and reptiles.

Thanks to Dr. GIOVANNI DAMIANI, the Regional Greens Group assumed part of the necessary expenses to make a Recovery and Breeding Centre in the Regional Nature Reserve "Lago di Serranella". Thanks to the organization and scientific support of Cooperative COGECSTRE, and according to the management plan a cost recovery is proposed and assured. In spring 1995 the "Serranella *Emys* Project" officially started.

### Operative Phases

"Serranella *Emys* Project" uses the plan of our Centro Studi Erpetologici of S.I.S.N.:

- 1) census of viable and reproducing populations;
- 2) promotion of the ecological study of known populations;
- 3) provision of an area where isolated individuals found or given by public donation are concentrated for captive breeding in a natural setting (establishment of a protected "genetic backup" of the species);
- 4) to designate and protect selected natural habitats (because viable or reproducing populations survive there or because reintroduction is planned).

The first and the second points began at the end of 1994. Special forms were distributed and potential collaborators were sought (W.W.F. volunteers, naturalists, environmental operators, fishermen, etc.). Field research marked potential habitats and old sites, centred in Vasto territory (Chieti) where the only viable populations were found. The census will continue during 1997.

Regarding ecological studies, these include reproductive ecology and ethology, climatology and possible botanical correlations in places where *Emys* is reported. In fact, these studies are aimed towards a better knowledge about the ecological requirements of the pond turtle in Abruzzo, its habitat, the chemical-physical qualities of the water, etc. The choice of recovery and breeding centre has been strategic. The lower and middle Sangro River Valley is actually one of the potential habitats for *E. orbicularis* in Abruzzo: here isolated individuals have been observed or taken. The Nature Reserve "Lago di Serranella" is the only reserve in Abruzzo that protects a wet river valley bottom environment, almost "coastal", and here is the faunistic area.

Regarding the protection of places populated by the species in Abruzzo, we draw attention to Regional Law n°50 of 1993 which protects this species and other reptiles, but doesn't prevent anthropogenic alterations of habitats. Denunciations have already began to halt the destruction of the two sites where *Emys* is present.

### The Recovery and Breeding Centre of Abruzzian *Emys* in Serranella

After the planning (1995) and necessary provincial and regional authorizations (regarding works in the Regional Nature Reserve), between the months of March

and July 1996 materials were brought and the construction of a recovery and breeding centre for *E. orbicularis* has followed these guidelines. We have three points:

1) "Tame" *Emys* enclosure:

This is used for some individuals of doubtful origin or come from public donation of breeders and entrusted to Centro Studi Erpetologici S.I.S.N. and it is the only enclosure open to the public. In fact the *Emys* that are here have lived in captivity for years and are used to being seen by people and are cared for by people, so they may remain in a fenced pond in front of the visitors' route.

Moreover, all the individuals present within this fence have the "Po" phenotype, because they are from North Italy (especially Lombardy and Veneto). For this reason in future we could use them for a similar project in North Italy.

2) Enclosure of Abruzzian *Emys* breeders:

Considering the size of the pool, the breeders could number up to a dozen, and actually the number is still under this limit. These animals are from Abruzzian populations extremely at risk and it was impossible to restore their own natural environment.

Entrusted to "Forestate" guards, to the Reserve or found directly by researchers during the census, these *Emys* will be used as breeders and as genetic "back-up" for the species. They preserve their original wildness, and contacts with guards and operators are few. Moreover, to prevent visual contact with the outside world, the fence has been covered with a thick shrubby barrier.

3) Juvenile enclosure - nursery:

This is the head-starting site for young *Emys* that hatched from Abruzzo breeders. This area must be specially protected and so a light nylon net has been put over the structure with stitches of 4-5 cm to prevent predation by birds or carnivores.

Moreover, by favouring the growth of a thick shrubby barrier which divides this area from the other two fences, the growth of the young in absolute "mistrust" and wildness is facilitated. Within this enclosure the intervention of operators will be reduced to a minimum in order to avoid any possible form imprinting.

### Pond Structure

Artificial ponds have been dug no more than 10 m long, no more than 2 m wide, half a metre deep at one end and at the other end no more than 80 cm deep (they are steep on one side and on the other slightly sloping); at the bottom of each tank a zinc-plated metallic and fine-mesh plastic net has been put down as an anti-micromammals barrier, covered with a layer of coarse sand. For the levelling, PE sheets have been put upon it. They have been secured to the bottom of each tank by a layer of sand and gravel and on the sides by rocks and stones. Once filled with water, tanks have been equipped with plants of genera *Potamogeton*, *Myriophyllum* and *Phragmites* in order to re-create an environment as similar as possible to a natural habitat of *Emys* in Abruzzo. Inside the breeding enclosure, near one of the sides, small heaps of sandy mulch (maximum distance of a metre from the tank) have been placed in order to orient females towards egg deposition places. The

external fences have been made with metallic net (19 × 19 mesh) and chestnut stakes 50 cm high in order to avoid both the escape of pond turtles and the entry of predators from above. Moreover, the net has been buried 50 cm deep with an L-shaped lower edge on the outside to prevent access of predators from underneath. Everything has been hidden from the outside by a hedge along the structure perimeter. The inside fences that divide the single tanks are constructed with metallic fine-mesh net (12.7 × 12.7). In the juveniles' area, a further anti-escape net with 1-2 cm mesh has been installed; this net has been buried for 15-20 cm or deeper and has been bent towards the inside of the structure. All around the structure a thin cane fence has been placed to protect the animals from being seen from outside. Observation points for the public have been arranged at only one pond site: these observation posts resemble a blind for bird-watching (with some loopholes at different heights). Finally for the animals, some shady corners have been created by using agricultural shade sheets and hedges in strategic places. On one side of the structure there is a small door for entry to check the animals and water.

#### Project Costs

Apart from the anticipated sponsorship sought by the Regional Greens Group (thanks to the interest of Dr. GIOVANNI DAMIANI) about L. 5,000,000 of the costs up to now have been supported by the Cooperative COGECSTRE using management funds of the Serranella Preserve Faunistical Area. Economic involvement at this stage has been considerable (more than L. 20,000,000), spent to acquire all materials for installation of three enclosures and three artificial ponds and having to support the hand work, planning and scientific counsel costs. Installation costs are not, however, finished: the necessary landscaping around the fences (purchase of shrubs and small native trees) remains to be done, the construction of the protective part of the net has to be built on the nursery-fence. Moreover, it is necessary to buy an incubator with adjustable thermostate and a pair of aquaterraria with accessories for the housing of neonates or treatment of run-down, wounded or ill specimens. The latter, and specimens in quarantine will also need small, plastic molded tanks for temporary housing. Finally, educational panels have to be set up in order to give information about the species and this project: brochures have to be printed. Afterwards these costs will be followed by those for the husbandry of the animals (the periodic purchase of fresh or dry foods and veterinary costs for possible treatment or supportive therapies), for the upkeep of fences, of tanks and of equipment, for the publicity and for staff. Awards for researchers engaged in ecological studies will have to be taken into consideration (already put into action from summer 1995) and with feasibility studies for future reintroductions. These studies are considered very important for our project and therefore for the future of Abruzzian *Emys*. A secure and brilliant future looms if we have the right funds in the coming years.

#### The Future of "Serranella *Emys* Project"

Our project does not intend to achieve immediate results; in fact these animals have such biological needs that it is impossible to push their reproduction in captivity (BALLASINA 1995) and, from the existing number of breeders, at best it would be possible to retain from thirty to fifty juveniles. Their development, even by the

logic of intensive husbandry (without hibernation), will enable them to reach a suitable size for release in nature, relatively safe from predators, after four years. There are potential neonates in 1997 (from which year, in fact, "production" officially begins) which will be released in nature in spring of 2002. Meanwhile the project will have to reach other goals:

- complete knowledge of the *Emys* distribution in Abruzzo;
- knowledge of its general biology and its needs;
- designation of key habitat sites or study of wild population to be developed.

For this work we need continuous economic support and the commitment of all who are interested to encourage private and public groups in favour of the project. We can estimate that it is necessary to have about L. 90,000,000 for the future management (at least for the next five years) and for completing the essential research of the "Serranella *Emys* Center". This amount of money may appear excessive, but unfortunately is due to present and incontestable necessities, and could even increase in the Italian economic future. Certainly the achievements that the Serranella Reserve, the Cooperative COGECSTRE in Penne, our Centro Studi Erpetologici S.I.S.N., accruing from this project, the "Serranella *Emys* Center" and its results, will have regional, national and even European reverberations (in light of the present excellent international touristic promotion of the Abruzzo Region as a European Green Region).

It is, certainly, the first project on behalf of pond turtles in Italy which not only serves as a refuge, for breeding and intensive reproduction (in this case Center Carapax of Massa Marittima, BALLASINA 1995, takes the lead in Italy). Moreover, it promotes conservation at wild populations by eco-ethological studies and feasibility studies for future reintroductions in Abruzzo wetlands and also proposes environmental publicity and education (managed by COGECSTRE Edition).

Thanks to our ongoing and future experiences, we shall be able to promote similar programs in other strategic Italian sites.

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