

The Mohamed bin Zayed Species Conservation Fund



Intermediate Report

31.12.2018

Promoting long-term persistence of the endangered Apennine yellow-bellied toad in Northern Italy by dynamic habitat creation and meta-population management

Project number: 172516417

Target species: *Bombina pachypus*

Participating organization: CeSBiN - spin-off of Genoa University



Bombina pachypus (Bonaparte, 1838)

The fundamental objective of our project is to ensure the persistence of *Bombina pachypus* in Liguria (NW Italy) through habitat restoration and the establishment of new populations. The project is a continuation of the funded project n. 152510524, that was highly successful, achieving all stated objectives: we clarified the causes of the species' decline, identified new populations, developed and tested a sustainable reintroduction method, carried out releases and habitat management and provided grants to trainee students.

In particular, we have now the following set of specific objectives: 1. At regular intervals create or replace ephemeral natural habitat favoured by the species, enlarging roadside ditches, areas trampled by cattle, temporary ponds 2. Maintain and upscale the current head-starting program, rearing eggs in captivity to obtain individuals for releases. 3. Release the animals thus produced (after pre-release disease screening) to assist the initial colonization of newly created habitat and to reinforce extant populations, managing harvest and release in a unique multi-population system. 4. Maintain monitoring of extant populations, including disease surveillance. 5. Carry out additional surveys at recently discovered populations, to maintain updated knowledge of the species status and potentially modifying the species IUCN RL status when needed. 6. Continue our successful student training grant awards and maintain communication with the public and local communities.

The activities of the project started on February 2018, while the first field surveys were carried out starting from April to September. This date corresponds to the approximate start of evident activity of *Bombina pachypus*, although the reproductive season starts usually later.

1. Creation of ephemeral natural habitat favoured by the species, enlarging roadside ditches, areas trampled by cattle, temporary ponds, etc.

We identified with the collaboration of the Montemarcello-Magra-Vara Natural Park the intervention area (Centocroci) for the 2018. The site consists of a grazing area where there is a concrete water tank for livestock. The excess of water is dispersed in the ground forming a small wet area. Exploiting the morphology of the area we have modeled it in order to create small water system suitable for the ecological needs of *Bombina pachypus* in area not trampled by cattle.



2. Maintain and upscale the current headstarting program, rearing eggs in captivity to obtain individuals for releases.

We maintained the indoor facility (see funded project n. 152510524 report) in the off-season and replaced UV-B neon lights and plastic tanks. We purchased tadpole food and water plants. In July, we collected a total of 200 eggs from one extant wild populations of *Bombina pachypus* in Liguria. We transferred the eggs to the captive breeding facility, where they were housed in separate aquaria and reared to late stages of tadpole development. To avoid the potential transmission of pathogens, we maintained quarantine measures and only used water from the source sites in the aquaria. Extensive monitoring over the past five years has essentially ruled out the presence of amphibian chytrid fungus in the source sites (see funded project n. 152510524 report). We fed tadpoles a diet of boiled lettuce, fish flakes and, in later stages of development, protein supplements. Lighting was ensured by 3% UVB lamps specific for amphibians. Approximately five weeks later, when tadpoles were approaching metamorphosis, showing rear and front legs, they are transferred to the selected area.



We carried out periodic management of the outdoor ex-situ breeding center (vegetation cutting, water refill, etc) during the winter. In this occasion we dried up the artificial ponds to ensure the breeding habitat is predator-free for the next reproductive season.



3. Release the animals thus produced to assist the initial colonisation of newly created habitat and to reinforce extant populations, managing harvest and release in a unique multi-population system.

In August 2018 we released 100 tadpoles in the selected area (point 1). In August and September, weekly survey of the release site was carried out by team members and the student (point 6).



4. Maintain monitoring of extant populations, including disease surveillance.

We carried out periodic monitoring of six extant populations to estimate population parameters (abundance, survival rate of different life stages, etc). We improved our photographic database (2010- 2018) because individuals could be easily identified through a photo ID software. These data will be used for a paper on *Bombina pachypus* ecology and conservation where will be highlighted the Mohamed Bin Zayed species conservation fund contribution.

We carried out periodic visit on past release sites (Agnola and Chiappa) to evaluate the success of restocking activities.

Agnola		
Year	N° tadpoles restocked	Observations
2012	50	
2013	25	4 froglets
2014	40	3 froglets
2015	10	
2016	-	Adults
2017	-	Adults and tadpoles
2018	-	6 Adults
Chiappa		
2017	50	15 froglets
2018	-	3 froglets
Centocroci		
2018	125	tadpoles

5. Carry out additional surveys at recently discovered populations, to maintain updated knowledge of the species status and potentially modifying the species IUCN RL status when needed.

We found a new site within an European Protected Area (directive 92/43/CEE) managed by the Aveto Regional Natural Park.



6. Continue our successful student training grant awards and maintain communication with the public and local communities.

We planned to update our web page dedicated to the project (see <http://www.cesbin.it/progetti/progetto-ululone.html>) and we announced the start of the new project via our facebook account and our web-page (<https://www.cesbin.it/news/77-riparte-il-progetto-ululone.html>). We selected a undergraduate student from the University of Genoa who is trained in field surveys and habitat management. We submitted to *Biological Conservation* a manuscript “*Adaptive management for amphibian recovery programs: a real-world application*” about results of our project.