



Il progetto *salamandre alpine*:
un approccio didattico
per la conservazione degli anfibi

Magdalena Meikl

Obiettivi

- raccogliere dati di distribuzione mediante segnalazioni sul sito web
www.alpensalamander.eu → “Citizen Science”
 - coinvolgere scuole in Austria, Italia e Spagna per raccogliere più dati
 - sensibilizzare i più piccoli sulla necessità di proteggere le salamandre e il loro ambiente
- uno dei modi più efficaci per conservare la natura



Il progetto

- finanziato da **Sparkling Science**, un programma di ricerca del Ministero Federale Ausriaco delle Scienze e della Ricerca
- **squadra del progetto:** 2 professori, 1 dottore di ricerca, 2 studenti, 2 tecnici, 3 borsisti
- ottobre 2010 – luglio 2014
- 43 scuole in Austria, 5 in Italia, 6 in Spagna, 2 in Germania (scuole primarie e secondarie)



Come partecipano le scuole?

Fase 1:

- gli studenti vengono informati sulla biologia delle salamandre mediante un incontro di mezza giornata con esperti
- gli studenti fanno esperienza diretta incontrando le salamandre in natura mediante una escursione con esperti

Fase 2:

- osservano da soli le salamandre
- intervistano i loro parenti sulla presenza delle salamandre nel passato (cambiamenti ambientali?)
- inseriscono le loro osservazioni su www.alpensalamander.eu



Come partecipano le scuole?

Fase 3:

- gli studenti monitorano la presenza di salamandre nei dintorni della loro città (ad esempio, larve nei ruscelli)
- fanno altre escursioni
- gli studenti di scuola secondaria visitano un laboratorio universitario



Fase 4:

- le scuole possono cercare di coinvolgere altre persone: concorsi fotografici, fumetti, racconti, rappresentazioni teatrali, filmati, disegni...



S. s. morenica

Il progetto in Spagna

- 6 scuole, 9 classi
- squadra del progetto: 2 biologi, 1 educatore
- 10 sottospecie di *Salamandra salamandra*
- molte attività e escursioni...



S. s. alfredschmidti



S. s. gallaica



S. s. bernardezi



S. s. fastuosa



S. s. crespoi



Tarragona, Spagna

Andalusia, Spagna



Il progetto in Italia

- 5 scuole, 12 classi
- squadra di progetto: 2 biologi & erpetologi
- focus su *Salamandra atra aurorae*, *Salamandra atra pasubiensis* e *Salamandra lanzai*
- aumentare la consapevolezza...





Asiago, Italia







In laboratorio...



salamandre in TV...



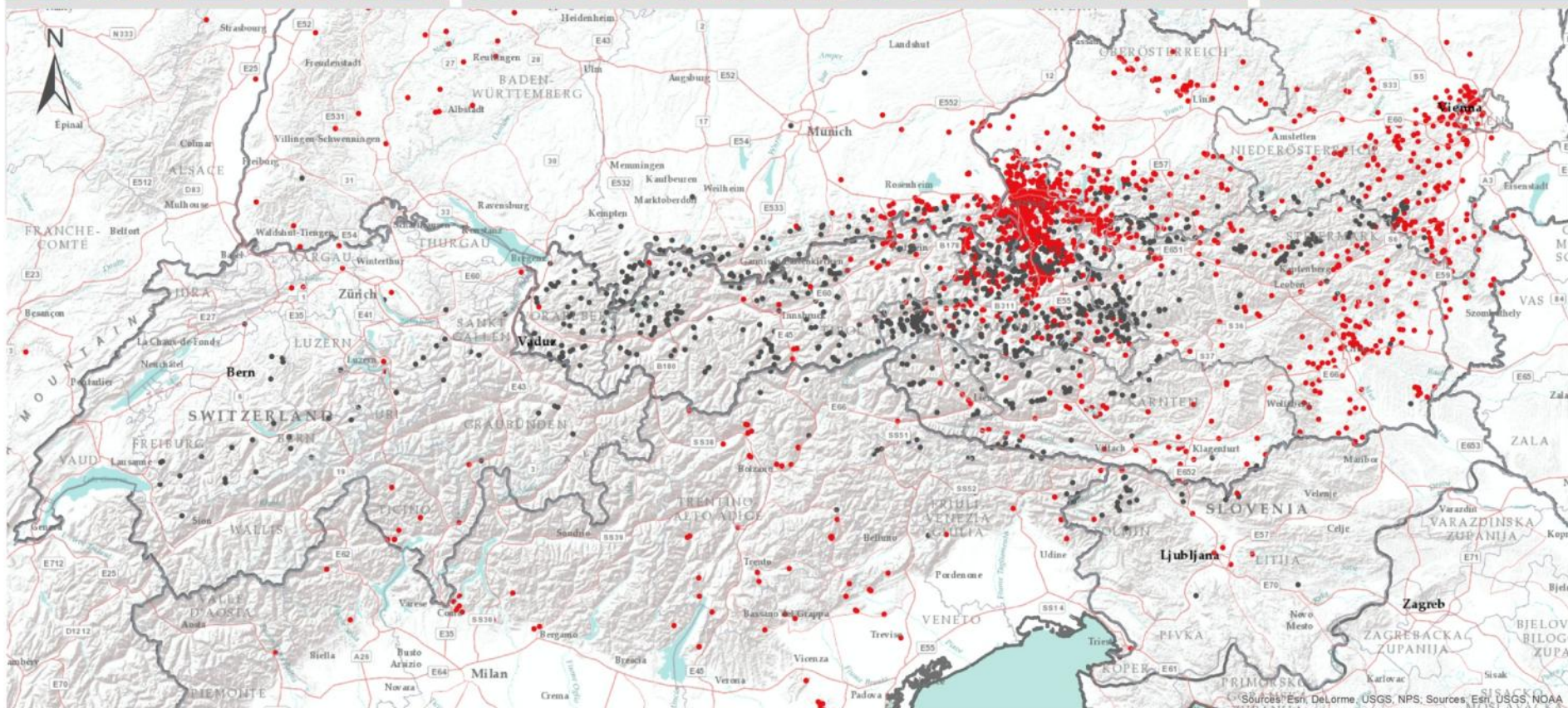
materiali per le attività



Resultati

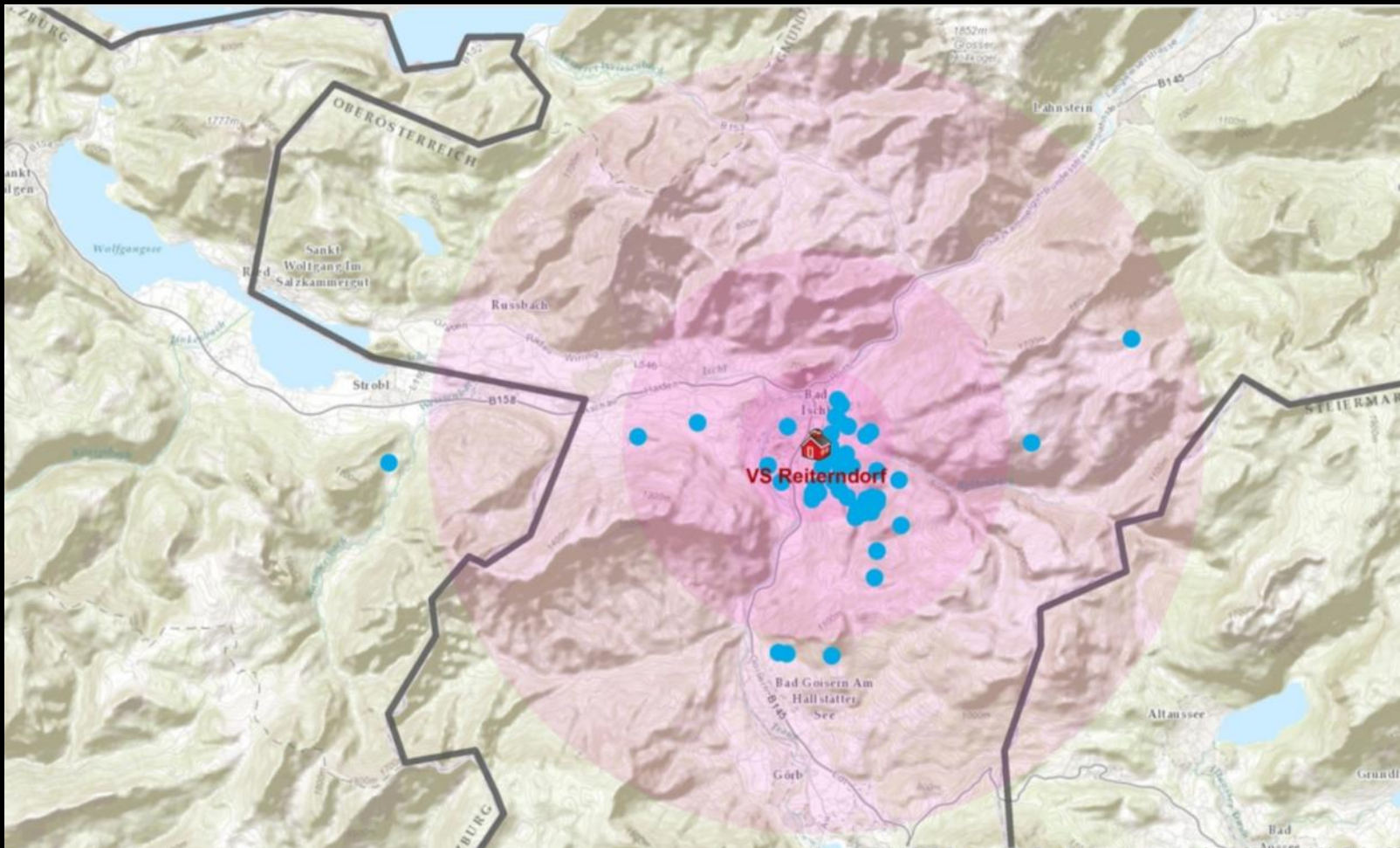
2700 osservazioni di salamandra pezzata e 1500 osservazioni di salamandra alpina nel database alpensalamander.eu 2010-2014

Feuer- und Alpensalamander in den Alpen



Results

l' 80% delle osservazioni di salamandre pezzate a Reiterndorf sono nel raggio di 1,5 km dalla scuola



Magdalena MEIKL, Ana GIMENO, Stefanie MOHL, Alexandra PITT, Martina WINKLER und Ulrike BERNINGER

Alpen- und Feuersalamander in Österreich und Europa: Ein Sparkling Science-Projekt der Universität Salzburg in Zusammenarbeit mit Schulen

Alpine and fire salamanders in Austria and Europe: a Sparkling Science project conducted in collaboration with schools at the University of Salzburg

Zusammenfassung

Alpen- und Feuersalamander sind in Österreich und Deutschland streng geschützt. Eine Gruppe der Universität Salzburg arbeitet gemeinsam mit Partnerschulen aus ganz Europa an einem Forschungsprojekt zu Verbreitung und Schutz dieser Arten. Zentrales Werkzeug ist die Website www.alpensalamander.eu, auf der Verbreitungsdaten beider Salamanderarten gemeldet werden können. Die Schülerinnen und Schüler lernen in Workshops und Exkursionen die Biologie der Salamander kennen und werden anschließend selbst im Freiland aktiv. Durch das Projekt konnten bereits mehr als 11.000 Salamander-Daten gesammelt, aktuelle Verbreitungskarten erstellt und regionale Schutzmaßnahmen umgesetzt werden.

Summary

Alpine and fire salamanders are protected animals in Austria and Germany. A research group from the University of Salzburg is working together with partner schools from all over Europe on a project to study the distribution and protection of these species. A primary tool of the project is the website www.alpensalamander.eu, in which distribution data of both salamander species could be collected in a database. The children learn about the biology of salamanders through workshops and excursions and afterwards, became more active in nature. During the project, more than 11,000 salamander data points were collected, updated distribution maps were produced, and local protection measurements could be implemented.



Abb. 1: Der Alpen- und der Feuersalamander (Fotos: Robert Schwarzenbacher und Magdalena Meikl).

1. Alpen- und Feuersalamander

Alpen- und Feuersalamander (Abbildung 1) gehören zur Ordnung der Schwanzlurche (Urodela). Der glänzend schwarze Alpensalamander (*Salamandra atra*) wird 8–14 cm groß und etwa 15 Jahre alt. Lebend gebärend bringt er alle zwei bis vier Jahre ein bis zwei Jungtiere zur Welt, wodurch er völlig unabhängig von Gewässern

ist. Der Alpensalamander kommt im Alpenraum und in den Dinarischen Alpen in Höhen von 600–2.600 m vor. Der durch seine schwarz-gelbe Färbung sehr bekannte Feuersalamander (*Salamandra atra*) ist in ganz Europa in Höhen von 200 bis etwa 1.600 m verbreitet. Die bis zu 20 Jahre alt werdenden Feuersalamander leben in Laubmischwäldern mit kleinen Bächen oder Quel-

Testing of Fire Salamanders around Salzburg for *Batrachochytrium salamandrivorans* within a school project

Ana Gimeno, Magdalena Meikl, Alexandra Pitt, Martina Winkler & Ulrike-Gabriele Berninger

Keywords: *Salamandra salamandra*, *Batrachochytrium salamandrivorans*, chytridiomycosis, Red List, lethal fungus infection

Abstract

Amphibians are declining worldwide. Recently an alarmingly steep decline in abundances of Fire Salamanders was reported in the Netherlands. In 2013 a unique fungus, *Batrachochytrium salamandrivorans*, was isolated and shown to be responsible for the observed mortality in the Fire Salamander populations. In a project funded by the relevant Austrian ministry, we are cooperating with schools to study the distribution and encourage the protection of Alpine and Fire Salamanders. Consequently we decided to test some of the Fire Salamander populations around Salzburg for the presence of *B. salamandrivorans* within the framework of this project. In addition, we involved the school children in collecting samples in order to introduce them to a current topic and to sensitize them to issues of amphibian protection. Of the 58 skin samples of Fire Salamanders from 8 different locations collected in autumn 2013, none tested positive for the presence of *B. salamandrivorans*. These results suggest that there is no evidence for infected Fire Salamanders in the study areas around Salzburg.



Figure 1 – A female Fire Salamander in a stream. © M. Meikl

Introduction

Amphibians are more threatened and are declining more rapidly in numbers than either birds or mammals. 43.2% of amphibian species are experiencing

in some populations and 100% mortality in others (Whittaker & Vredenburg 2011).

In Austria all of the 20 autochthonous amphibian species described are registered on the Red List (Gollmann 2007), in which the Fire Salamander (*Salamandra atra*) is categorized as *near threatened*.

In a project funded by the Austrian ministry BMFWF we are cooperating with schools to study the distribution and encourage the protection of Alpine (*Salamandra atra*) and Fire Salamanders (Meikl et al. 2014) (Figure 1). The children get to know these species in the course of workshops and field trips. The main aim is gathering data about the distribution of both species in a publicly available database (www.alpensalamander.eu).

Recently an alarmingly steep decline in abundances of Fire Salamanders was reported in the Netherlands. Since 2008, dead animals have been found in the field without external signs of injury. A monitoring programme revealed a 96% decrease in the population between 1997 and 2012 (Spitzen-van der Shuijs et al. 2013). In 2013 a unique fungus, *Batrachochytrium salamandrivorans* sp. nov. was isolated and characterized from these salamander populations (Martel et al.

Larval monitoring of fire salamanders within a Sparkling Science Project

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Keywords: *Salamandra salamandra*, salamander larvae, monitoring, larval detectability, environmental education

Abstract

The mixed forest of the locally protected Aigner Park in the city of Salzburg, Austria, is a good example of a perfect fire salamander habitat. It provides ideal habitat conditions for the aquatic and terrestrial life of this threatened amphibian species. It was therefore chosen as the study site for long-term larval monitoring and for defining the best conditions for larval detectability. Monitoring started in 2010 in the Schwarzenbach first-order stream and is still in progress. In 2012, it was possible to show for the first time the dependence of larval detection rates on the time of day and on weather conditions. Hence, nightly counts in the main larval season (April–May), in combination with dry weather conditions, can be recommended for future larval monitoring studies. Involving local school children in the field work raised and increased their awareness of this amphibian species and nature protection in general. Once more it was shown that successful conservation is only possible by involving the public, starting with the children, who are responsible for future protection. Altogether, the Sparkling Science Project turned out to be a perfect way to attain this goal.

Profile

Protected area

Aigner Park

Mountain range

Alps

Country

Austria

Introduction

Amphibian populations are declining worldwide. The fire salamander *Salamandra atra* (Figure 1) is cited on the IUCN Red List and is considered a near threatened species in Austria and a vulnerable species in Salzburg (Kyek & Maletzky 2006). The first step to achieve effective protection is to analyse the exact distribution of the fire salamander. The Alpine Salamander Project was founded in 2009 with the main aim of collecting distribution data on fire and Alpine salamanders in Austria with the help of the public and of schools (Meikl & Reinthaler-Lottermoser et al. 2010). In the context of a Sparkling Science Project, 30 schools from all over Salzburg province were involved in field work as well as in research and the design of protection measures for salamanders. By now the database on www.alpessalamander.eu is the most comprehensive collection of fire salamander observations and has registered more than 4000 entries all over Austria since 2009. Based on the datasets, the



Figure 1 – Adult fire salamander (bottom) and fire salamander larva (top).
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Updating the range of the narrowly distributed endemites *Salamandra atra aurorae* and *S. atra pasubiensis*

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Abstract. Within the Alpine-Dinaric range of distribution of the Alpine salamanders (*Salamandra atra*), the genetically and phenotypically distinct *Salamandra atra aurorae* and *S. atra pasubiensis* are isolated in the south-eastern Prealps, but their precise distribution is only known incompletely. During 2012 we searched potentially suitable areas for a total of 155 hours during 48 days, and collected and evaluated occasional reports from people visiting these areas. *S. atra aurorae* was found on the northern part of the Sette Comuni and Vezzena plateau, at an altitude between 1200–1800 m, from Val Postesina to just north of Gallio and to Monte Fossetta (new site, more than 5 km from those previously known), within an estimated area of occupancy of 26 km². *S. atra pasubiensis* was confirmed with a single population on the Pasubio massif, at 1450–1800 m, with an effective range of less than 2 km². Previous reports of alpine salamanders from the Carega massif have remained unconfirmed.

Keywords: area of occupancy, endemic, extent of occurrence, *Salamandra atra*, southern Prealps.

Isolated and genetically distinct populations of alpine salamanders (*Salamandra atra*) have been discovered in the last decades along the southern Prealps, between Trento and Vicenza, in north-east Italy (Bonato and Grossenbacher, 2000; Riberon et al., 2001; Bonato and Steinfartz, 2005). As the genetic differentiation is coupled with peculiar colour features, these lineages have been separated taxonomically, at least at the subspecies level: *S. atra aurorae* Trevisan, 1982, on the Sette Comuni and Vezzena plateau, with individuals invariably broadly yellow-patched, and *S. atra pasubiensis* Bonato and Steinfartz, 2005, on the Pasubio massif, with individuals much less patched (Bonato, Fracasso and Luiselli, 2007). Since the distribution range is extremely restricted, both taxa have been acknowledged a high level of attention for

conservation, in particular *S. atra aurorae* is listed among the priority taxa in the annex II of the Habitat EU Directive. However, especially *S. atra aurorae* populations have been impacted negatively by human activities, above all common operations of wood harvesting (AA.VV., 2012). As a consequence, these taxa have been assessed from vulnerable to critically endangered according IUCN criteria in global, national and regional red lists (Bonato et al., 2007; Andreone et al., 2013; Comitato Italiano I.U.C.N., 2013).

Despite of the great naturalistic value of these endemites, their precise distribution is only partially known, due to the lack of extensive surveys and their elusive behaviour, which lowers the detection probability of these animals strongly (Bonato and Fracasso, 2003). After a synthesis of the known records compiled more than ten years ago (Bonato and Grossenbacher, 2000), only a single new site has been reported (Beukema and Brakels, 2008). In order to improve this situation, we provide here an update of the distribution of both subspecies based on the integration of three different approaches and

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Conservazione degli Anfibi con le scuole in 3 paesi europei

Come tutto è cominciato...



Incontri internazionali



Salisburgo, Maggio 2013



Ungheria, Agosto 2013

Grazie per l'attenzione!

