



Liebe Aktive im Muschelschutz,

Im aktuellen Newsletter 2/2019 der bayerischen Muschelkoordinationsstelle möchten wir Sie über verschiedene Themen und Veranstaltungen im Muschelschutz informieren.

Aktuelle Veranstaltungen

- Ausbildung zum Muschelberater, 17.7.-19.07.2019, Erkheim (Lkr. Unterallgäu)
(Programm im Anhang)
https://www.anl.bayern.de/veranstaltungen/anzeige_anl.php?id=35509

Das Programm zum Kurs finden Sie im Anhang an den Newsletter.

- International pearl mussel conference in Hof
Restoration of pearl mussel habitat, breeding and natural food sources
19.-21. November 2019
www.bund-naturschutz.com
- International restitution symposium
Conservation of freshwater bivalves and restoration of upstream catchment habitats
5.-8. November 2019 Perigueux, Dordogne, France
<https://life-haute-dronne.eu>

Muschelschutztagung Rückblick

Die diesjährige Muschelschutztagung vom 12.03.2019 zum Thema Muschelnachzucht fand bei Anwendern wie Forschern, Naturschutzbehörden und privaten Muschelinteressierten, mit mehr als 100 Teilnehmenden, wieder sehr guten Anklang.

In Anbetracht der aktuellen Zustände der Populationen von Flussperlmuschel und Bachmuschel kommt der Muschelnachzucht eine große Bedeutung im Rahmen des Muschelschutzes und der Erhaltung der Arten zu. Die Vortragsthemen schlossen einen thematischen Bogen von Aufzucht bis Ansiedelung von Muscheln.

Neben einem internationalen Erkenntnis-Austausch von Muschelzüchtern und Mitteilung von wissenschaftlichen Erkenntnissen zur Wiederansiedelung von Flussperlmuscheln wurden auch genetische Aspekte in der Muschelzucht, sowie der Austausch von Beteiligten am praktischen Muschelschutz und Behörden diskutiert und gefördert.

Großes gemeinsames Ziel ist der Schutz von Muschelbeständen und die Wiederansiedelung von Muscheln, im Speziellen der Flussperlmuschel in den Gewässern, in denen noch Restpopulationen zu finden sind. Am Schluss der Veranstaltung und der Diskussionen bestand auch weiterhin der breite Konsens, dass die Muschelnachzucht nur eine

vorrübergehende Hilfestellung zur Arterhaltung, auf dem Weg zu einer natürlichen Reproduktion der Muschelbestände in funktionstüchtigen Habitaten sein kann.



Internationaler Muschelworkshop in Dresden 25.-27. 03.2019

Beiträge des Lehrstuhls für Aquatische Systembiologie

Keynote Speaker/Opening Speech Prof. Dr. Jürgen Geist

Conservation of European Freshwater Pearl Mussel – current knowledge and future directions

Geist J

The key roles of freshwater mussels in the functioning of freshwater ecosystems are increasingly recognized and there is a large number of projects addressing their conservation. This is particularly true for European freshwater pearl mussel (*Margaritifera margaritifera*) which is one of the main target species of mussel conservation in Europe, at the same time fulfilling the criteria of indicator, flagship, umbrella and keystone species. Restoration of mussel habitats and populations depends on accurate information concerning the habitat requirements throughout the different stages of the entire life cycle to mitigate bottlenecks most efficiently and to ensure sustainable populations in the future. This contribution summarizes current knowledge on the ecology and genetics of freshwater pearl mussel in Europe and North America. It also suggests future directions of research and applied conservation. In contrast to most other Unionoids, the distribution and the life cycle of *Margaritifera margaritifera* are well understood. The early post-parasitic phase in the streambed has been identified as the main bottleneck in most European populations. There is also an increased understanding of the importance of locally adapted fish hosts that co-evolved with freshwater pearl mussels as well

as of how temperature and climate change effects may affect the fish host – mussel interaction. The recently developed European CEN standard on pearl mussel provides guidance on internationally agreed monitoring protocols as well as on assessing potential impacts of any action in the stream or catchment on populations and habitats. A large number of pearl mussel populations from the entire distribution range has already been genetically analysed revealing useful information on post-glacial colonization patterns, population history, the identification of conservation units, priority populations for conservation and captive breeding. There is also increasing experience on the captive rearing of freshwater pearl mussels and the use of juveniles as bioindicators for assessing habitat quality before their release. In contrast, there is limited experience in successful habitat restoration in the wild, except for the Lutter in Northern Germany where holistic catchment management resulted in population recovery. Conservation of the most intact pearl mussel populations that remain and that are genetically unique should always be top priority. Second, habitat restoration and population augmentation by captive breeding need to go hand in hand, following pre-defined criteria of prioritization. Conservation management decisions need a more rigorous discussion and evaluation of the effects of population augmentation and assisted migration, both of which would in turn benefit from the development and validation of more advanced tracking methods of released mussels. Ecological niche models and spatially explicit approaches can help identify conservation conflicts with other species and help take decisions on assessing management of protected areas. Such approaches can also be useful in predicting trends in extant populations as well as in predicting the most suitable habitat areas under future climatic change. Generally, a more evidence-based conservation approach and more rigorous reporting of both failures and successes in conservation attempts of habitat restoration and rearing are essential.

Habitat assessment as a prerequisite in Freshwater mussel conservation: Methodologies and implications using the example of the painter's mussel (*Unio pictorum*, Linnaeus 1758)

Helmut Bayerl, Juergen Geist

Freshwater bivalve mollusks provide a number of valuable ecosystem services, including turbidity reduction by filtration, nutrient recycling and storage, substrate and food web modification, and their use as environmental indicators. However, many species recently have experienced dramatic declines and freshwater mollusks worldwide are among the most endangered taxa. Habitat restoration and mussel propagation are two ways to mitigate this situation but they require a profound understanding of habitat requirements of individual species in order to take the appropriate measures. In Europe, research has so far been mainly focused on two highly endangered freshwater bivalves, the freshwater pearl mussel (*Margaritifera margaritifera*) and thick shelled river mussel (*Unio crassus*), but much less is known about habitat preferences of species like the painter's mussel (*Unio pictorum*). This species is classified as species of national responsibility in Germany and is found in stagnant as well as in flowing waters. The spectrum of different habitat types, where it occurs, suggests a wider tolerance towards environmental conditions than that of highly specialized species as the freshwater pearl mussel. We assessed density and age structure of *U. pictorum* in relation to substrate and water quality in 10 water bodies (rivers, backwaters, and lakes) in the catchment area of the Danube in Bavaria. Sediment quality was characterized by penetration resistance, texture analysis and redox potential measurements in 5 and 10 cm depth compared to the free flowing water. Water quality was assessed by measuring temperature, oxygen concentrations, pH, specific conductivity, current velocity and depth. Physicochemical measurements were conducted for free flowing water and interstitial water from 5 and 10 cm depth. Our results indicate that *U. pictorum* tolerates high proportions of fine sediment and that the species is associated with low current velocity. They also suggest that the species has a comparatively broad ecological niche. Analyses will be continued for additional catchment areas to cover the greatest possible range of ecological tolerance, and to compare the results

to current data which were mostly collected during the exceptionally warm and dry summer 2018. Findings of this study will help to characterize the range of habitat parameters which is needed for the development of conservation measures, management plans, and river restoration action related to *U. pictorum*.

A spatial conservation prioritization approach for two endangered freshwater mussel species in Bavaria, Germany

Andreas H. Dobler, Kentaro Inoue, Katharina Stoeckl, Juergen Geist

Freshwater mussels are among the most imperiled species worldwide and strong population declines were detected in the last decades. An implementation of effective conservation strategies also requires an accurate determination and management of protected areas to minimize possible adverse effects on remaining populations and their habitat. The goals of this study were to model the potential distribution of two endangered mussel species (*Margaritifera margaritifera* and *Unio crassus*) in Bavaria, Germany, and to assess how well these areas are currently under some sort of legal protection status.

Ecological niche models (ENMs) were calculated for both mussel species based on presence-only data using MaxEnt. Binary maps served as species distribution layers for a subsequent GIS-based gap analysis in which we distinguished between different categories of protected areas of different level of protection, including 'nature conservation areas' and 'special areas of conservation' and 'protected landscapes'.

Results of the ENMs show that *M. margaritifera* has a spatially restricted distribution whereas the distribution of *U. crassus* is wider, extending to calcareous areas. Calculation of the protection state showed, that a high percentage of suitable habitat of *M. margaritifera* is already under protection, although mainly at low protection level. In contrast, only half of the suitable habitats of *U. crassus* are under any sort of protection.

In conclusion, our results suggest that different priorities in the management of protected areas for *M. margaritifera* and *U. crassus* should be set: *M. margaritifera* requires an increase in protection status of already protected areas, whereas *U. crassus* may mostly benefit from expansion of protected areas along its distribution.

Impact of fish ponds on sediment deposition and habitat quality of freshwater pearl mussels

Rebecca Höß, Jürgen Geist

An oxygenated stream bed and high exchange rates between open and interstitial water are considered key requirements for successful recruitment of the highly endangered freshwater pearl mussel *Margaritifera margaritifera*. Understanding the processes of fine sediment deposition and colmation are therefore essential both in conservation of intact sites as well as in restoration of degraded sites inhabited by this species. In this contribution, we examined the spatio-temporal patterns of stream bed quality and fine sediment deposition in pearl mussel habitats in the border area between Bavaria, Saxony and the Czech Republic with a focus on analyzing the effects of fish ponds which are hypothesized to result in degradation of habitats for juvenile mussels. Redox potentials, substrate surface compaction, as well as differences in physicochemical variables between open and interstitial water were measured throughout the year and in high spatial resolution as indicators of habitat suitability throughout the catchments as well as in areas below fish ponds. In addition, sediment traps and temperature loggers were employed to test for possible sediment and temperature regime modifications by the ponds. The first results reveal a deficient stream bed quality at the majority of sites, particularly during low-flow conditions. Also, high spatio-temporal variation of substrate quality and fine sediment

deposition within and among streams was evident. Even during low flow conditions in summer, higher mean fine sediment deposition rates were found at pond outflows compared to upstream and downstream sites. Our findings suggest that conservation of freshwater pearl mussel populations in this area should focus on improving stream bed habitat quality. Based on a better understanding of the processes and management practices that affect stream bed conditions, this project aims at developing management guidelines that minimize conflicts between fish farming and pearl mussel conservation.

The Bavarian Mussel Coordination Office: Bridging the Gap between Science and Applied Mussel Conservation

Matthias Hasenbein, Helmut Bayerl, Juergen Geist

The Bavarian office of freshwater mussel conservation at the Aquatic Systems Biology Unit, Technical University of Munich, bridges the crucial gap between scientific knowledge on freshwater mussels and applied conservation aspects. It is financed by the Bavarian Environment Agency and the Bavarian State Ministry of Environmental and Consumer Protection. The aim of this poster is to present examples of this work, giving insights to applied mussel conservation spanning all work levels of conservation, ranging from volunteers in the field to policies and decision makers on a governmental level.

Important is the increase of awareness related to freshwater mussels and their ecosystem services as well as the transfer of knowledge to policy makers, governmental agencies, non-governmental organizations, and private people with conservation aims. In addition, education and publicity work is conducted to sensitize groups of interest. Further the education of trained assistants who function as experts on the local level is performed in order to build a network of volunteers helping with conservation efforts in the field. Together with ANL, the mussel coordination office also organizes an annual information conference on actual topics with an audience of 100-150 people.

Another crucial task is consultation work, where the coordinator functions as an independent expert to help resource managers making informed decision in favour of mussel conservation. In this role the coordinator is the main go-to person regarding all freshwater mussel relevant questions for communities, associations, agencies, as well as private fishermen and pond owners. Along with that the coordinator helps to develop concepts and reviews proposals for freshwater mussel conservation efforts. This is often combined with reviewing and drafting proposals for crucial research questions. The involvement in research is another essential part. Due to the applied type of work and the strong connections to the volunteers in the conservation network, emerging problems and research questions can be identified very early on and furthermore can be easily transferred into research projects. Thus questions to open problems can be addressed quickly and the knowledge gained from the research project can be directly communicated to the application level.

Since there is still a great lack of data on distribution and autecological aspects of multiple freshwater mussel species in Bavaria and Germany, the coordinator aims to gather and archive the data on mussel populations.

Overall the conservation of freshwater mussels takes place at multiple levels that need to be coordinated which will remain a major challenge in the future. The main aim is to create a network of all stakeholders, who work together in order to address major challenges in mussel conservation and achieve major long term goals.

Pressebericht über den Workshop in Dresden

<https://www.dnn.de/Dresden/Lokales/Muschelforscher-aus-aller-Welt-tagen-in-Dresden>

Eröffnung Perlmuschel-Zuchtstation Huschermühle: Montag 20.5.2019 Bericht

Am 20.05.2019 wurde an der Huschermühle bei Rehau Landkreis Hof die neu gebaute Flussperlmuschelzuchtstation feierlich eröffnet. Im Rahmen einer Veranstaltung zum 30-jährigen Jubiläum des grünen Bandes waren 4 Umweltminister darunter auch Bayerns Umweltminister Thorsten Glauber zu Gast. Nach der feierlichen Enthüllung einer Infotafel am Dreiländereck wurde eine Wanderung entlang der südlichen Regnitz zur Huschermühle gemacht. Dort wurde im Beisein von Ehrengästen die Flussperlmuschelzuchtstation feierlich eröffnet. Hier können in Zukunft Flussperlmuscheln von allen Restpopulationen aus dem Landkreis Hof sowie Tirschenreuth nachgezüchtet werden, um die stark überalterten Bestände in der Natur zu stützen. Wichtig für den Flussperlmuschelschutz ist neben der Aufzucht und Ausbringung von Jungmuscheln zur Verjüngung der Bestände, die Renaturierung der Einzugsgebiete, um möglichst zeitnah wieder geeignete Bedingungen für eine natürliche Reproduktion der Populationen zu schaffen.

Der Bayerische Rundfunk berichtete ebenfalls von der Eröffnungsfeier.

<https://www.br.de/nachrichten/bayern/30-jahre-gruenes-band-flussperlmuschel-zucht-in-hof,RR6Hk2W>

<https://www.br.de/nachrichten/bayern/30-jahre-gruenes-band-deutschland,RQzDJ38>

Hinweise

- **Sie haben Fragen oder Anregungen zu bestimmten Themen im Muschelschutz?**
Wir möchten das Angebot der Koordinationsstelle kontinuierlich optimieren. Wir freuen uns daher über Ideen, schreiben Sie uns einfach eine Mail oder kontaktieren Sie uns persönlich! muschel@tum.de ; Tel.: 08161/ 71 34 78



Anfahrt

[Nähere Informationen zur Anfahrt sowie einen Lageplan finden Sie unter:](#)

<http://www.infohaus-isarmuendung.de/Lage.131.0.html>

Kooperation

Lehrstuhl für Aquatische Systembiologie
TUM, Koordinationsstelle für Muschelschutz

Hinweis

Die Exkursion findet bei jedem Wetter statt!

Bitte bringen Sie wetterfeste Kleidung und Gummistiefel mit.

Titelbild

Muschelberater im Einsatz / Hans Buxbaum

Lehrgang 56 /19

Tagungsort

Erkheim Lkr. Unterallgäu

Leitung

Stefanie Riehl, ANL

Dr. rer. nat. Matthias Hasenbein, Lehrstuhl für
Aquatische Systembiologie

Kosten

Teilnehmerbeitrag: entfällt
Übernachtung mit Frühstück/Mittagessen
(inklusive einem Freigetränk): werden
übernommen

Bitte beachten Sie unsere Kostenregelung:

www.anl.bayern.de/veranstaltungen/kostenregelung/langfassung/index.htm

Veranstalter

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Anmeldung

Ihre Anmeldung erbitten wir schriftlich
per Post, Fax oder E-Mail.



Ausbildung zum Muschelberater

17.-19.7.2019

Erkheim Lkr. Unterallgäu



Süßwassermuscheln wie die Flussperlmuschel und die Bachmuschel zählen zu den akut vom Aussterben bedrohten Tierarten in Bayern. Aktive Schutzmaßnahmen und ein effektives Muschelmanagement sollen helfen, den Bestandsrückgang aufzuhalten. Um die Erhaltung der Arten und ihrer Habitats praktisch umzusetzen, hat die bayerische Koordinationsstelle für Muschelschutz ein Betreuernetz amtlicher und ehrenamtlicher Muschelschützer ins Leben gerufen. Der Lehrgang dient der Ausbildung von ehrenamtlich tätigen Muschelberatern. Muschelberater übernehmen in enger Abstimmung mit den Landratsämtern bzw. Muschelgebietsbetreuer/-innen für eine oder mehrere Muschelpopulationen Verantwortung und vertreten die Belange des Muschelschutzes in der Region. Fachliche Themenschwerpunkte sind Artenkenntnisse, Gefährdungsursachen sowie Schutz- und Managementmaßnahmen. Außerdem werden die Grundlagen der Kommunikation und rechtliche Belange theoretisch und anhand von Übungen vermittelt.

Mittwoch, 17. Juli 2019

10:00 Uhr

Begrüßung und Einführung

Stefanie Riehl, ANL

10:15 Uhr

Großmuscheln: Systematik, Biologie und Ökologie

Dr. Matthias Hasenbein, Koordinationsstelle für Muschelschutz

11:00 Uhr

Status und Gefährdungsursachen von Flussperlmuschel und Bachmuschel

Dr. Matthias Hasenbein
Koordinationsstelle für Muschelschutz

Muschelschutz in Bayern – Zuständigkeiten und Organisation

Dr. Matthias Hasenbein

12:00 Uhr Mittagessen

13:15 Uhr

Heimische und invasive Krebse in Bayern

Dr. Michael Effenberger LfU, Außenstelle Wielenbach

13:45 Uhr

Bestimmungsübungen: Muscheln, Wirtsfische und Krebse

Dr. Matthias Hasenbein
Dr. Michael Effenberger

15:00 Uhr Kaffee/Tee

15:30–17:00 Uhr

Rechtliche Grundlagen und Fallbeispiele aus der Praxis

Klaus Möller, Regierung von Schwaben

18:30 Uhr

Möglichkeit zum gemeinsamen Abendessen auf eigene Kosten

Donnerstag, 18. Juli 2018

09:00 Uhr

Einführung in die Kommunikation, Überzeugen durch Sprechen, Umgang mit schwierigen Gesprächssituationen

Martha Selbertinger, Coaching Chiemgau

10:30 Uhr Kaffee/Tee

10:45 Uhr

Kommunikationsübungen

Marta Selbertinger, Coaching Chiemgau

12:00 Uhr Mittagessen

13:15 Uhr

Die Muschel im Tätigkeitsbereich eines Wasserberaters: Beispiele vom Kühmoosgraben Lkr. Deggendorf

Wasserberater Alois Dorfmeister, Amt für Ernährung, Landwirtschaften und Forsten Straubing

14:15 Uhr

Aufgaben eines Muschelberaters

Dr. Susanne Hochwald, Regionalbetreuerin Muschelgewässer, Hans Buxbaum, Muschelberater

Muschelfilm

16:00 Uhr

Bestimmungsübungen: Muscheln

Dr. Matthias Hasenbein

Freitag, 19. Juli 2018

08:00 Uhr – 11.00 Uhr

Exkursion

Abfahrt Bus: Hotel , Erkheim

1. Exkursionsziel: Falchengraben

Michael Schneider, Landespflegeverband Unterallgäu
Olav König Wasserwirtschaftsamt

12:00 Uhr Mittagessen

13:15 Uhr Weiterfahrt

2. Exkursionsziel: Weiherbach

Michael Schneider, Landespflegeverband Unterallgäu

14:30 Uhr Rückfahrt zum Hotel Erkheim

15:00 Ende der Veranstaltung