Austrian Academy of Sciences

Annual Report 2011

Institute for Limnology

REPORTING PERIOD:	1.1.2011 – 31.12.2011
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Content

1. Mission Statement

Our mission is to investigate and advance scientific understanding of freshwater ecosystems, and to disseminate this knowledge through scholarly publication and education. As an ecological discipline, limnology is the comprehensive science of the biological properties of inland waters in their physical-chemical environment. We use aquatic model organisms, reaching from bacteria to fish species, to investigate patterns and processes of general ecological and evolutionary relevance. We are especially interested in understanding the proximate and ultimate factors responsible for the distribution, interactions, and specific adaptations of freshwater organisms. Our emphasis is on process oriented basic research, but our research results are also used for consulting and in the search for solutions in the management and protection of inland waters. Our present research provides the basis for the sustainable use and protection of the water quality of our fresh waters. We provide training for national and international graduate students and post-doctoral fellows within various research projects and the International Post-Graduate training programmes in Limnology. Our current research focuses on investigating the origin and maintenance of diversity of aquatic organisms and communities at various levels, ranging from molecules (genes and proteins) over organisms and populations to communities.

2. Scientific Activity 2011

2.1. Zusammenfassung des wissenschaftlichen Berichts 2011

Das Institut für Limnologie (ILIM) der Österreichischen Akademie der Wissenschaften (ÖAW) setzte seine Untersuchungen innerhalb des Schwerpunktes „*Erforschung des Ausmaßes, der Entstehung und der ökologischen Bedeutung der intra-spezifischen Diversität aquatischer Mikro- und Makroorganismen“* erfolgreich fort. Der gemeinsame Nenner aller Arbeitsgruppen von ILIM besteht unverändert darin, mikroevolutionäre (d.h. unterhalb der Artebene) Anpassungen an die gegebenen und sich ändernde Umweltbedingungen anhand von ausgesuchten Modellorganismen, die von Bakterien bis zu Fischen reichen, zu untersuchen. Dabei wird jedoch auch die Rückkopplung von Veränderungen im gesamten Ökosystem, die z.B. durch den Klimawandel entstehen, auf die Organismen berücksichtigt. Im Berichtszeitraum konnten wesentliche Fortschritte auf allen Untersuchungsebenen, von den Genen und Molekülen bis hin zu ökosystemaren Veränderungen in der Diversität, erzielt werden. Die wichtigsten Ergebnisse werden im folgenden Kapitel kurz zusammengefasst.

Die Publikationstätigkeit von ILIM erreichte mit 36 begutachteten Fachbeiträgen im Jahre 2011 einen neuen Höhepunkt. Von den insgesamt 25 zu Jahresende laufenden Forschungsprojekten wurden 21 durch Drittmittel finanziert. Es wurden 7 FWF-Projekte bearbeitet (5 davon federführend); ein FWF-Projekt wurde im Herbst 2011 neu bewilligt. Ein geplantes Kooperationsprojekt konnte aufgrund der unbefriedigenden logistischen Situation und des unklaren Schicksals von ILIM, das im Herbst 2011 mit den Planungen hinsichtlich des Institutstransfers an die Universität Innsbruck evident wurde, nicht eingereicht werden.

Der Berichtszeitraum umfasst das vierte Jahr, in dem die Aktivitäten des Instituts durch die Unterbringung der Einrichtung auf fünf verstreute Standorte mit unzureichender Infrastruktur empfindlich behindert waren. Zwei im Laufe des Jahres 2011 vakant werdende Wissenschafterstellen (Liisa Nevalainen, Maria Leichtfried) konnten wegen der prekären finanziellen Situation der ÖAW und des unklaren Schicksals von ILIM nicht nachbesetzt werden. Eine Wissenschafterstelle wurde neu besetzt (B. Sonntag, NF J. Boenigk). Das von der ÖAW zugeteilte Budget wurde im Vergleich zu den Vorjahren weiter reduziert. Als Folge davon musste z.B. die Mitarbeit wissenschaftlicher Gäste in Mondsee auf nahezu null reduziert werden (s. Tab. 11 im Anhang). Diese Gesamtsituation, die unmittelbar auf die exzellente internationale Evaluierung von ILIM Ende 2010 folgte, war für alle Instituts-angehörigen demotivierend. Das Institut für Limnologie knüpft zu Beginn des Jahres 2012 große Hoffnungen an den beabsichtigten Transfer an die Universität Innsbruck: ILIM benötigt endlich wieder eine zeitgemäße Infrastruktur, um die erfolgreiche Arbeit der letzten Jahre fortsetzen und, vor allem, sich in einem stimulierenden Umfeld seinen Fähigkeiten entsprechend entfalten zu können.

- Die Analyse der Langzeitdaten (seit 1977) zur Abundanz der toxischen und nicht-toxischen Genotypen des planktischen Cyanobakteriums *Planktothrix* im tiefen alpinen Zürichsee ergab, dass toxische, rot-pigmentierte Genotypen während des gesamten 30-jährigen Untersuchungszeitraums vorherrschten, unabhängig von der veränderten Planktongesellschaft. Lokal adaptierte Genotypen mit spezifischen ökologischen Nischen bedingen ausgeprägte räumliche Unterschiede im Anteil der toxischen Genotypen dieser Cyanobakterien (Kurmayer et al. 2011).
- Spezifische Klassen von Sekundärmetaboliten, die von diversen Cyanobakterien-Stämmen produziert werden, umfassen ganze „Familien"; das bedeutet, dass mehrere chemische Varianten einer konservierten Kernstruktur von einem einzelnen Cyanobakterien-Isolat gleichzeitig synthetisiert werden können. Während des Berichtszeitraumes konnten wir erstens nachweisen, wie einzelne prinzipiell spezifische Enzymdomänen in der Lage sind, chemisch unterschiedliche monomere Aminosäuresubstrate auszuwählen, und zweitens die evolutionäre Entwicklung dieser Diversifizierung aufzeigen (Christiansen et al. 2011).
- Wir konnten mittels vergleichenden Genomanalysen, limnologischen Untersuchungen und ökophysiologischen Experimenten mit kultivierten Stämmen belegen, dass die Allgegenwart des dominanten Süßwasser-Bakteriums *Polynucleobacter necessarius* Unterart *asymbioticus* aus seiner ökologischen Diversifizierung resultiert (Jezbera et al. 2011).
- Habitateffekte beeinflussen die Fitness von Süßwasser-Protisten; erstmalig konnten wir signifikante Effekte von Stamm (Art), Habitat und Stamm x Habitat – Wechselwirkung auf die Populationswachstumsrate von Flagellaten und Ciliaten experimentell nachweisen (Weisse et al. 2011).
- Die Analyse von Sedimentfallenproben aus hochalpinen Seen, die ultrasensitiv auf Temperaturänderungen reagieren, ergab signifikante, vermutlich Klima-induzierte Veränderungen in der Gemeinschaft planktischer Diatomeen innerhalb eines Jahrzehnts. Weitere Analysen aus Sedimentkernen derselben Seen zeigten schnelle Veränderungen in der Zusammensetzung der Chironomiden- und Cladoceren-Gesellschaften im Laufe des 20. Jahrhunderts (Nevalainen 2012, Luoto 2012).
- Konkurrenzexperimente mit dem zyklischen parthenogenetischen Rädertierchen *Brachionus calyciflorus* bestätigten eine Voraussage der Evolutionstheorie bezüglich der sog. Kosten der geschlechtlichen Fortpflanzung. Wenn zyklische parthenogenetische Stämme fortgesetzt einen hohen Anteil sexueller Nachkommen

hervorbringen, entstehen Kosten und obligat parthenogenetische (asexuelle) Stämme können einwandern (Stelzer 2011). Frequenz-abhängige sexuelle Fortpflanzung kann signifikant zur Regulation der Populationsgröße bei planktischen Rotatorien beitragen; Genotypen, die diesen Mechanismus nicht besitzen, können erheblich größere Populationen erreichen (Stelzer 2012).

- In Zusammenarbeit mit Kollegen aus mehreren europäischen Ländern konnten wir die Phyogenie und biogeografische Herkunft der karpfenartigen Fischgattung *Carassius* im Hinblick auf ihre natürliche und anthropogen verursachte Einwanderung nach Europa rekonstruieren.
- Mittels Modellen, die auf der Alters- oder Größenstruktur der Reinanken/Maränen (*Coregonus* ssp.) basieren, konnten wir ihre Populationsdynamik in voralpinen Seen sehr genau vorausberechnen.
- Die Arbeitsgruppe Fischökologie des Instituts für Limnologie veranstaltete das '11th International Symposium on the Biology and Management of Coregonid Fishes' in Mondsee.

2.2. Summary of the scientific report 2011

The Institute for Limnology (ILIM) of the Austrian Academy of Sciences (AAS) continued its successful research within the current focus, i.e. investigating the *extent, origin and ecological significance of intraspecific diversity of aquatic micro- and macroorganisms*. The common denominator of all working groups at ILIM is to investigate microevolutionary (i.e., at the subspecies level) response to particular and changing environmental conditions, using selected model organisms ranging from bacteria to fish. This also implies to consider feedback emerging from changes at the ecosystem level to the organisms, which may be caused, for instance, by climate change. During the reporting period, significant progress was made at all levels, reaching from genes and molecules to ecosystem changes in the diversity. The research highlights are briefly summarized in the following chapter.

With 36 peer-reviewed articles published in 2011, ILIM's publication record reached a new peak. Twenty-one of the 25 research projects that were under way at the end of last year were extramurally funded. Research was conducted within seven FWF projects (five as leading partner) during the reporting period; one new FWF project was granted in autumn, 2011. A planned cooperative project was not submitted, because of the unsatisfactory logistic situation and the unclear fate of ILIM; the latter became evident in autumn, 2011, when plans were made to transfer ILIM to the University of Innsbruck.

The reporting period covers the fourth year in which the activity of ILIM was significantly hindered due to the relocation of its facilities to five dispersed locations with inadequate infrastructure. Two scientist positions that became vacant in the course of 2011 could not be filled, due to the most difficult financial situation of AAS and the uncertain fate of ILIM; another position was filled with B. Sonntag (succeeding J. Boenigk). The budget provided by AAS was further reduced, relative to the previous years. As a consequence, the cooperation of guest researchers at Mondsee had to be reduced to almost non-existing (see Attachment, Tab. 11). This overall situation, which followed straight to the excellent international evaluation of ILIM at the end of 2010, was demotivating for all members of ILIM. At the beginning of the year 2012, the Institute for Limnology cherishes a hope concerning its intended transfer to the University of Innsbruck; ILIM urgently needs a competitive infrastructure to continue its successful research of the past years and, above all, to take full effect of its skills in a stimulating environment.

- Analysis of long-term abundance (since 1977) of toxic and non-toxic genotypes of the planktonic cyanobacterium *Planktothrix* in deep Alpine lake Zürich revealed that toxic, red-pigmented genotypes prevailed over the 30-y study period, irrespective of pronounced changes in the plankton community. Locally adapted genotypes with specific ecological niches lead to pronounced spatial differences in the proportion of toxic genotypes of these cyanobacteria (Kurmayer et al. 2011).
- Specific classes of secondary metabolites produced by cyanobacterial strains are composed of entire "families", implying that several chemical congeners of a conserved core structure are simultaneously synthesized by single cyanobacterial isolates. During the reporting period, we (i) have shown how principally specific enzyme domains are able to select chemically different monomer amino acid substrates and (ii) demonstrated the evolutionary development of this diversification process (Christiansen et al. 2011).
- Based on comparative genome analysis, limnological investigations, and ecophysiological experiments with cultivated strains, we could demonstrate that ubiquity of the dominant freshwater bacterium *Polynucleobacter necessarius* subspecies *asymbioticus* results from ecological diversification (Jezbera et al. 2011).
- Habitat effects influence fitness of freshwater protists; for the first time, we demonstrated significant effects of strain, habitat, and strain x habitat interaction on the population growth rates of flagellates and ciliates (Weisse et al. 2011).
- Analysis from sediment trap samples from temperature-ultrasensitive high alpine lakes revealed significant, probably climate-induced changes in the community composition of planktonic diatoms over a period of a decade. Analyses of sediment cores from the same lakes further demonstrated rapid changes in chironomid and cladoceran community composition during the 20th century (Nevalainen 2012, Luoto 2012).
- Laboratory competition experiments with the cyclical parthenogenetic rotifer species *Brachionus calyciflorus* confirmed a prediction from evolutionary theory referring to the 'cost of sex'; if cyclical parthenogens constantly produce a high proportion of sexual offspring, there is a cost of sex, and obligate parthenogens (=asexuals) can invade (Stelzer 2011). Density-dependent sexual reproduction can significantly contribute to population regulation in planktonic rotifers; genotypes lacking this mechanism reach substantially higher population sizes (Stelzer 2012).

- In cooperation with colleagues from several European countries we could reconstruct the phylogeny and biogeographic history of the cyprinid fish genus *Carassius* with focus on natural and anthropogenic arrivals in Europe.
- Using models based on the age or length structure of whitefish species (*Coregonus* ssp.) we could excellently predict their population dynamics in pre-alpine lakes.
- ILIM's working group Fish Ecology organized the '11th International Symposium on the Biology and Management of Coregonid Fishes' held at Mondsee.

2.5. Report on the scientific activity during 2011

The following pages report the results of ILIM's individual working groups. The principal investigators are listed in bold face.

Molecular ecology and physiology of cyanobacteria

(**Rainer Kurmayer**, Guntram Christiansen, Stephan Blank, Li Deng, Lieselotte Eisl, Veronika Ostermaier, Chen Qin, Philipp Trummer, Anneliese Wiedlroither)

Our research was performed in the course of FWF project P20231 (Genotype determined toxin content in cyanobacteria), a Doc-fFORTE PhD fellowship (Time in microevolution of toxin synthesis), and the two integrative ILIM projects RADICAL (Risk Analysis of Direct and Indirect Climate effects on deep Austrian Lake Ecosystems) and DETECTIVE (DEcadal deTECTion of biodIVErsity in alpine lakes). The rationale of the latter project is described in the Paleolimnology section below (p. 30).

Within FWF project P20231, the transposable insertion (IS) elements (so called "jumping genes") propagated on both the plasmids and the chromosome of the toxic cyanobacterium *Planktothrix agardhii* CYA126/8 were elucidated by means of high throughput sequencing. We could show that *Planktothrix agardhii* contains only four groups of putatively active IS elements that occur in higher copy number. Notably full copy representatives or residues of these IS elements were associated with toxin synthesis gene clusters, i.e. (1) with the microcystin synthetase gene cluster in *P. agardhii*, and (2) the (homo) anatoxin gene cluster in the closely related *Oscillatoria* PCC6506. While in *Oscillatoria* numerous strains have been reported to produce anatoxin-a, only a few documented cases have been observed for *Planktothrix*. Given the close genetic relationship between benthic *Oscillatoria* sp and both benthic and planktonic *Planktothrix*, a causative role of IS element mediated transfer of the (homo)anatoxin-a synthesis gene cluster among these two genera seems possible. Such a potential transfer could be studied experimentally using the most recently constructed shuttle vectors (see below, Functional genetics).

Within the Doc-fFORTE project (Ph.D. thesis V. Ostermaier), the abundance of toxic and non-toxic genotypes in the population of the cyanobacterium *Planktothrix* occurring in deep Alpine lake Zürich was monitored over a period of 30 years. This unique approach was possible by the analysis of DNA extracted from 110 preserved phytoplankton samples that

date back to the early 1980ies (in cooperation with Dr. Ferdinand Schanz, Univ. Zürich). Since during this period the phytoplankton community composition changed and *Planktothrix* increased in abundance substantially during the mid-1980ies, this study allows insight into the composition of toxic genotypes during the transition between pre-bloom and bloom conditions. The toxic genotype abundance was strongly related to the total population abundance ($r^2 = 0.9$), constituting, on average, 43 ± 19% (SE), Fig. 1.

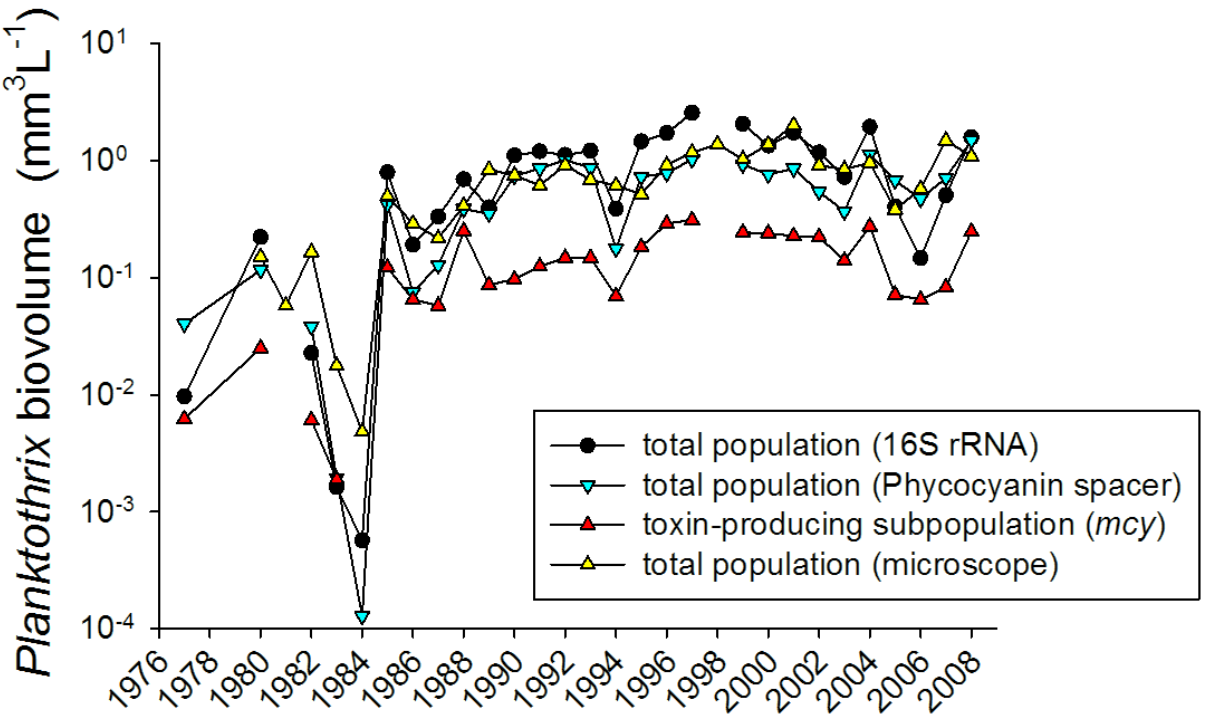


Fig. 1. Annual average *Planktothrix* biovolume (n = 4) as determined by qPCR (16S rRNA, phycocyanin) and microscopic investigation, and biovolume of the microcystin-producing genotype (mcy) in Lake Zürich (Kilchberg) from 1976 to 2008.

We also looked for the abundance of microcystin genotypes that became non-toxic due to the insertion by IS elements that further can cause the deletion of the total microcystin synthetase gene cluster resulting in non-toxic strains; none of these IS genotypes constituted > 0.1% of the total population. Two of these inactive IS genotypes showing insertions occurred over the whole observation period, while one IS genotype appeared much later towards the end of the 1990ies (Fig. 2). In contrast, a genotype that became non-toxic due to a gene deletion event (1.8 kbp) occurred in a much higher proportion (3.8 ± 5%). Although the population density changed significantly we could not detect shifts between toxic and non-toxic genotypes over time.

Planktothrix spp. occurs with both red-pigmented and green-pigmented ecotypes which are ecological diversifications in response to spectral differences in the water column between deep and shallow water bodies. In Lake Zürich, green-pigmented ecotypes occurred throughout the whole study period, but on average constituted only 0.9 ± 0.9%, while the rest of the population was comprised by red-pigmented ecotypes. Consequently, green-pigmented genotypes of *Planktothrix* (that are in general more abundant) were consistently outcompeted by red-pigmented ecotypes. As green pigmented ecotypes are often non-toxic, the competitive inferiority of green-pigmented ecotypes in Lake Zürich may explain why the population constantly was dominated by toxic (and red-pigmented) genotypes. We conclude that it is the local adaptation of genotypes with specific ecological niches that leads to a pronounced spatial difference in toxic genotype proportion between different water bodies (e.g. Kurmayer et al. 2011, Okello & Kurmayer 2011).

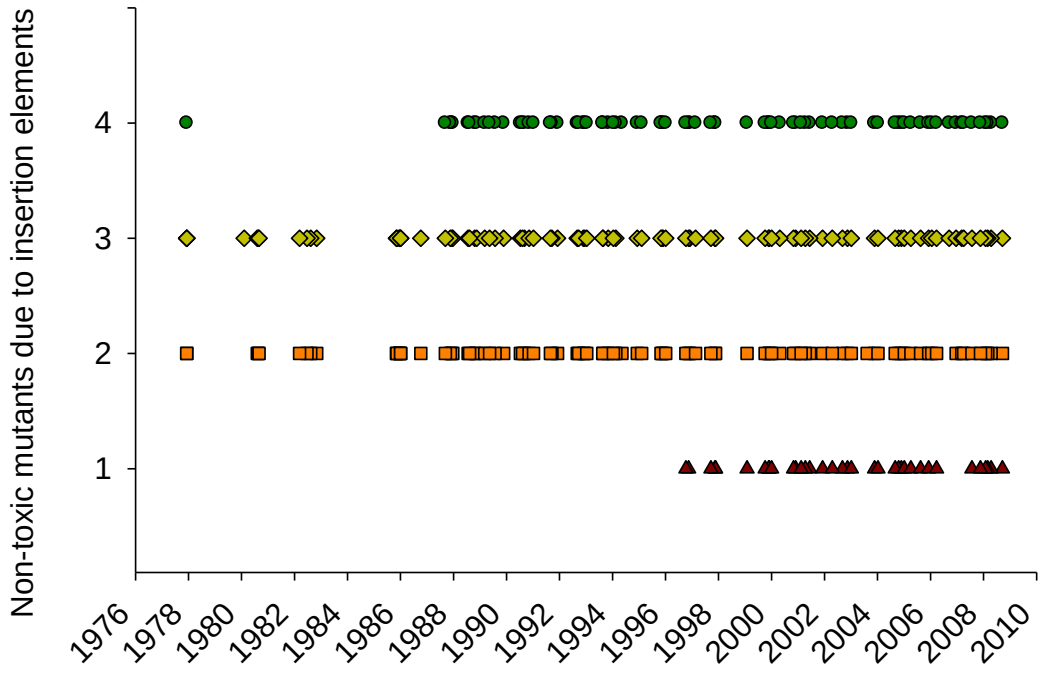


Fig. 2. Occurrence of inactive microcystin genotypes in Lake Zürich from 1976 to 2008. Mutants 1, 2, 3 carry specific insertions of IS elements (1.4 kbp) into the microcystin gene cluster. Mutant 4 has lost part of the genes (1.8 kbp) encoding microcystin synthesis.

Within ILIM's integrative project RADICAL, the abundance of toxic filamentous cyanobacteria (*Planktothrix* sp.) in Lake Mondsee was monitored between 2010 and 2011 and related to ambient physical parameters including water temperature, vertical mixing, and

light availability. For this purpose, we applied a widely used model that estimates the potential for photosynthesis and for growth (in cooperation with Prof. Tony Walsby, Univ. of Bristol). The model is based on algorithms that describe the change in photosynthesis and growth in relation to irradiance and temperature, based on measurements with clonal cultures in the laboratory. The algorithm is then used to calculate the population density from measurements of irradiance and temperature in hourly intervals and every two metres down the water column (from 0 - 20 m).

During the study period, highest *Planktothrix* densities have been observed during the relatively warm May 2010 and during the relatively dry and warm September and October 2011 (Fig. 3). Both modeled and observed growth rates were higher during summer 2011 than during summer 2010 (Fig. 4). These annual differences in *Planktothrix* growth rate could not be explained by changes in overall stratification of the water column, but rather by gradual changes in light availability and temperature between the years.

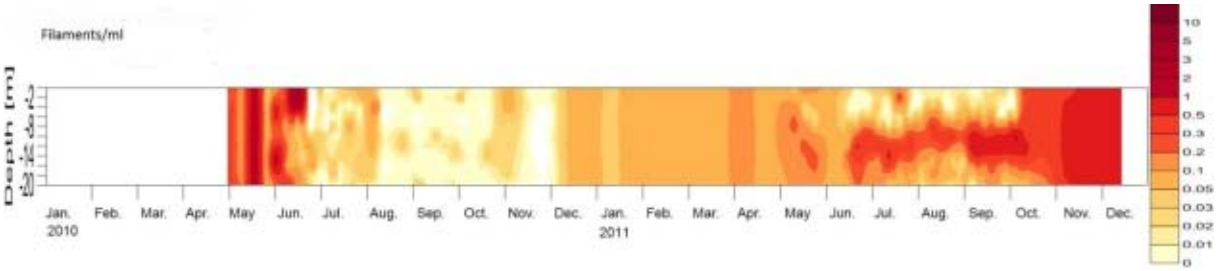


Fig. 3. Abundance of *Planktothrix* in Lake Mondsee from May 2010 – December 2011. Compared with Lake Zürich, the average biovolume is relatively low and the highest filament concentrations were observed during May 2010 and November 2011 (max. 1.6 Filament/ml).

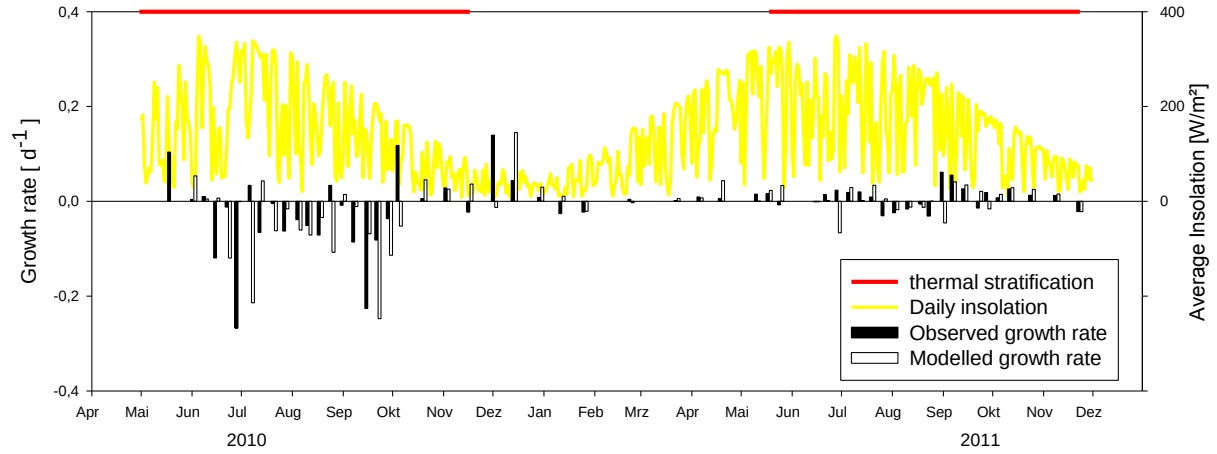


Fig. 4. Comparison of observed (black bars) and modeled (white bars) growth rates of *Planktothrix* in Lake Mondsee from May 2010 – December 2011. While growth rates were mostly negative during summer 2010, they were significantly higher during summer 2011.

Within the integrative project DETECTIVE a sequence analysis pipeline has been installed that includes all the necessary steps from quality control of hundreds of thousands of sequence reads up to taxonomical classification as well as the calculation of various indices to compare diversity within and between different alpine lake samples (Fig. 5).

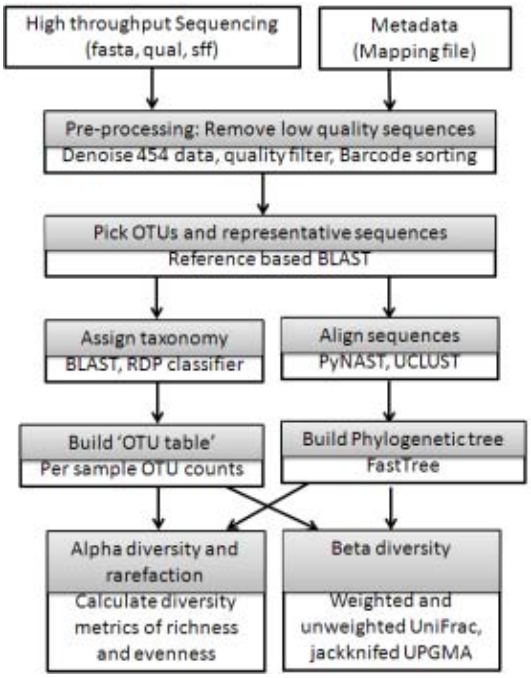


Fig. 5. Scheme of the QIIME sequencing analysis pipeline to analyze the 454 sequencing data from alpine lake samples (Caporaso et al. 2010, Nature Methods 7(5): 335). The Metadata Module contains the recorded environmental parameters. The total sequencing analysis process (> 100,000 sequences) requests a few days on a desktop PC.

Further, an amplicon preparation protocol has been systematically compared between two laboratories in terms of the recovery of the microbial fraction influenced by potentially introduced contaminations (in cooperation with Dr. Hannes Pröll, Blutzentrale Linz). Such contaminations can alter the result on the proportion of different taxa, and this potential bias is particularly relevant when the immigration of invasive species such as bloom-forming cyanobacteria as a consequence of global warming shall be investigated. The retrieved OTUs were compared (i) in proportion for abundant (> 1%) and rare (< 1%) bacterial classes, orders, families and genera, (ii) by BLASTn for specific contamination sources, (iii) by phylogenetic distances using the Unifrac metric. Compared to the reference laboratory, a highly significant correlation between abundant and rare bacterial classes, orders, families, and genera was observed suggesting that results between laboratories were reproducible. BLASTn results revealed that uncontrolled (airborne) contaminations were negligible. Finally,

statistical testing of the phylogenetic distance between laboratories revealed a highly similar, although not identical, OTU composition. The Unifrac distances were low (< 0.2) suggesting that the two OTU databases of each sample pair were nearly identical and >80% of the OTUs were represented in both databases. These results form a solid basis for inferring the microbial community composition from the alpine lake samples. The results show that 16s rRNA amplification preparation can be applied in routine monitoring of invasive and potentially harmful species in aquatic ecosystems.

A mutagenisation workshop on the toxigenic cyanobacterium *Planktothrix* was held as a deliverable of the FWF project P20231 during July 2011. Two alternative courses of lab training on the mutagenesis protocol to manipulate strain *Planktothrix agardhii* strain CYA126/8 were offered. Course 1 included a practical guide to the construction of vectors for homologous recombination, and their preparation and subsequent *Planktothrix* mutagenesis (5 days). Course 2 dealt exclusively with the *Planktothrix* mutagenesis protocol (2 days). This shorter course was meant for experienced molecular biologists that are skilled in DNA construct preparation. Since the growth of the mutants took time (12-16 weeks), participants were informed about the success of their mutagenisation experiments via photographing cultures once a week and compiling these photographs for each mutation experiment. In total 12 scientists (PhD students and Post-Docs) from nine countries participated in course I (8 participants) and course II (4 participants). A detailed protocol on each step has been delivered to each participant. The course was highly appreciated by all the participants.

<u>Research to be conducted in 2012:</u>

+) Genome sequencing, annotation and comparative genomics (structural comparison of genomes and determination of synteny), identification of IS elements as well as localization of insertions/deletions in gene clusters of *Planktothrix* sp. (new FWF project P24070).

+) Quantifying the growth rates of naturally occurring toxic and non-toxic genotypes of *Planktothrix* in competitive growth experiments (Doc-fFORTE, PhD thesis Veronika Ostermaier).

+) Integration of *Planktothrix* growth observed during the last years in Lake Mondsee into conceptual models to model population growth and toxin (microcystin) production in dependence on lake physical environmental parameters (RADICAL, PhD thesis Philipp Trummer).

+) Ultra-deep sequencing and sequence exploration of planktonic prokaryotic and eukaryotic communities in alpine lakes (DETECTIVE, PhD thesis Stephan Blank).

+) Detection of mutations in toxin synthesis in *Planktothrix* populations by means of single filament analysis (PhD fellowship Northwest A&F University, Yangling, PhD thesis Chen Qin).

Functional genetics of cyanobacteria

(**Guntram Christiansen**, Stefan Blank, Chen Qin, Sabine Ullrich)

Evolution of promiscuous adenylate-forming domains (A-domains) of cyanobacterial non-ribosomal peptide synthetases (NRPS)

It is a well described phenomenon that specific classes of secondary metabolites produced by cyanobacterial strains are composed of entire “families”. This implies that several (up to 12) chemical congeners of a conserved core structure are simultaneously synthesized by single cyanobacterial isolates. We have recently shown how specific (promiscuous) A-domains are able to select chemical different monomer amino acid substrates and are, therefore, responsible for this diversification process (Christiansen et al. 2011). In the past year, we analyzed the evolutionary background of this promiscuous A-domains and could show that promiscuity is a derived feature while monospecificity is evolutionary older. Molecular-genetic analyses showed that rather few single point mutations are sufficient to convert a monospecific A-domain into a promiscuous (evolutionary derived) enzyme; it is not recombination that is leading to the tinkering of enzymatic functions. These findings let us conclude that the production of multi-member secondary metabolite families in cyanobacteria has an evolutionary advantage.

Non-radioactive assay for substrate determination of isolated A-domains

The standard assay to determine substrate specificity of A-domains is dependent on radioactively labeled (P^{32}) pyrophosphate (“ATP-PPi assay”). Although this assay is easily established and very robust, it has the disadvantage that a dedicated infrastructure (radioactivity laboratory) is necessary. We have invested effort in comparison of different published assays which avoid utilization of radionuclides and could establish a non radioactive assay with identical results when compared to the standard ATP-PPi assay. The assay is very helpful as no expensive and/or dangerous chemicals are involved; it enables to probe A-domains in a standard laboratory environment.

Single cell/colony/filament analysis of uncultured environmental samples

The genetic analysis of single cells/colonies/filaments isolated directly from the environment bears great potential as it circumvents several shortcomings of cultivation-dependent approaches. While PCR analysis of isolated single cells/colonies/filaments is routine, we are aiming to establish dedicated protocols enabling the repeated analysis of one environmental isolate. At the moment we are able to isolate a DNA amount from one single cyanobacterial filament that is sufficient for several dozens of PCR experiments. We have succeeded in amplification of the whole gene cluster (55.5kb) responsible for the synthesis of the toxic

metabolite microcystin by using 16 specific primer pairs each amplifying 3.5kb fragments. Time dependent experiments showed that the DNA from a single filament is storable at -20°C for a minimum of 8 days. For the first time this method makes it possible to determine the genetic variation of a large operon within a natural population without the bottleneck of cultivation. We plan to analyze 1000 filaments from Lake Mondsee, record the occurring natural genetic variation, and compare it with the data of our culture collection. The results will show a much more complete picture on the evolutionary processes affecting toxin synthesis in cyanobacteria.

In vitro shuttle vector production

We are interested in genetic manipulations of cyanobacteria and have recently established a method for in-vitro production of bi-parental plasmids (shuttle vectors) which carry the genetic signals for propagation in two different hosts (Fig. 6). The advantage of shuttle vectors is that DNA recombination can be done in a fast growing and easy to manipulate primary host; upon completion, a transfer to the target organism is possible. Our shuttle vectors carry two origins of replication for *E. coli* and *Planktothrix* sp. We have successfully shuttled this vector between both organisms back and forth and could show stable propagation in both hosts (Fig. 7). Our method is independent of laborious isolation of cryptic plasmids from non-model organisms, but instead uses the information of high throughput sequencing. The in-vitro method of shuttle vector construction is applicable to virtually all prokaryotes propagating circular plasmids This technique should enable much deeper insight into plasmid mediated gene transfer processes of ecologically relevant genes.

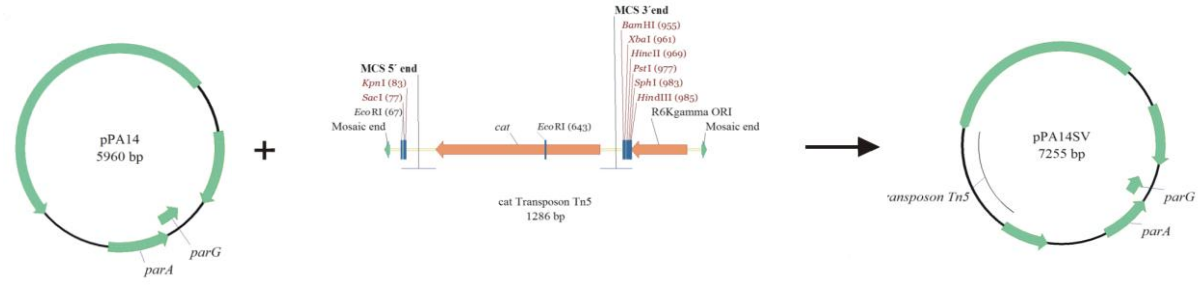


Fig. 6. Construction of the shuttle vector pPA14SV by transposition of the cat transposon Tn5 into the wild type plasmid pPA14 (isolated from the cyanobacterium *Planktothrix agardhii*).

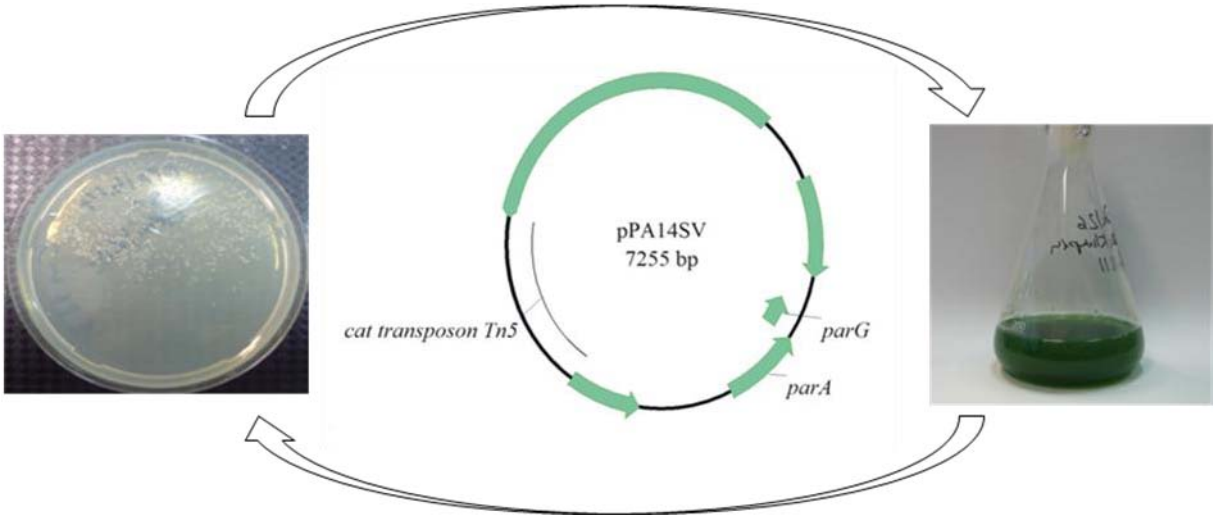


Fig. 7. Transformed *E.coli* (left) and *P.agardhii* (right) mutants both propagating the shuttle vector pPA14SV (centre).

Environmental Microbiology

(M. Hahn, U. Koll, M. Gadermaier**)**

Our research focused on comparative analyses of *Polynucleobacter* (*Betaproteobacteria*) genomes, as well as of the *Rhodoluna* (*Actinobacteria*) genome. Both genera represent planktonic freshwater bacteria. The species *Polynucleobacter necessarius* comprises on a global scale about 20% of bacterioplankton cell numbers and in particular habitats up to 70% of prokaryotic cells in the water column. We have demonstrated that the ubiquity of this taxon in standing freshwater systems is owed to a functional radiation in ecologically differently adapted ecotypes (ubiquity by diversification; Jezbera et al. 2011). This enables the colonization of ecologically distinct (pH range at least 3.5 to 9.0) habitats by *P. necessarius* (Fig. 8).

Fig. 8. Examples of habitats colonized by *P. necessarius* populations. A, acidic humic pond located in a coniferous forest; B, puddle located on a forestry road; C, a pond located on a raised bog system (Sieben Möser); D, Lake Hallstättersee, an oligotrophic alkaline hardwater lake; E, small acidic humic pond surrounded by a quacking bog located close to the timber line.

European Science Foundation (ESF) project FREDI

The project FREDI integrates research of five groups from different European countries (Switzerland, Germany, Czech Republic, Sweden, and Austria) on freshwater bacteria. The part of the project conducted by the Environmental Microbiology group aims on analysis of the ecological diversification within the subspecies *Polynucleobacter necessarius* ssp. *asymbioticus*. In a first step, we have compared the genome of a *Polynucleobacter* strain with genomes of its closest relatives outside of the genus *Polynucleobacter*, i.e. *Ralstonia* and *Cupriavidus.* This analysis revealed a reductive genome evolution (genome streamlining) resulting in a highly passive lifestyle of the investigated *Polynucleobacter* strain (Hahn et al., in press). One of several features emphasizing a highly passive lifestyle of this planktonic freshwater bacterium is the small number of signal transduction genes encoded by the genome (Fig. 9).

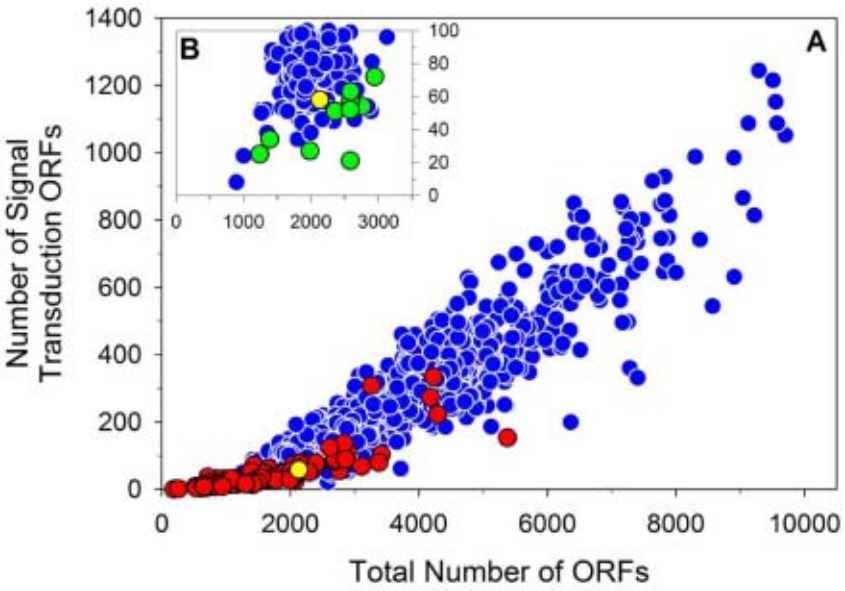


Fig. 9. Gene number of bacterial genomes versus number of encoded signal transduction genes. The plot depicts the total number of annotated signal transduction genes in particular bacterial genomes versus the total number of genes of the respective genome. Strain *P. necessarius* QLW-P1DMWA-1 is highlighted as a yellow dot. (A) Entire data set consisting of 904 analyzed bacterial genomes. Red dots indicate bacteria obligately associated as symbionts or pathogens with a host; blue dots indicate free-living or facultative host-associated bacteria. (B) Plot of genomes of bacteria classified as free-living or facultative host-associated (shown in (A) as blue dots) with ≤ 100 signal transduction genes. All blue dots represent bacteria either facultatively associated with hosts (e.g., dwelling in the oral cavity or in the intestinal tract) or dwelling as free-living organisms in extreme environments (permanently anoxic, low or high temperature, low pH). The yellow (strain QLW-P1DMWA-1) and the green dots represent the only exclusively free-living taxa inhabiting non-extreme systems. Almost all of them are phototrophic (*Synechococcus* and *Prochlorococcus*) or predominantly heterotrophic taxa (*Pelagibacter* and *Puniceispirillum*) dwelling as planktonic bacteria in marine systems (Hahn et al., in press).

Based on genome analysis, limnological investigations, and ecophysiological experiments with cultivated strain, we could reveal a detailed picture of the ecology of a persistent *Polynucleobacter* population (F10 lineage population) represented by the genome-sequenced strains (Fig. 10).

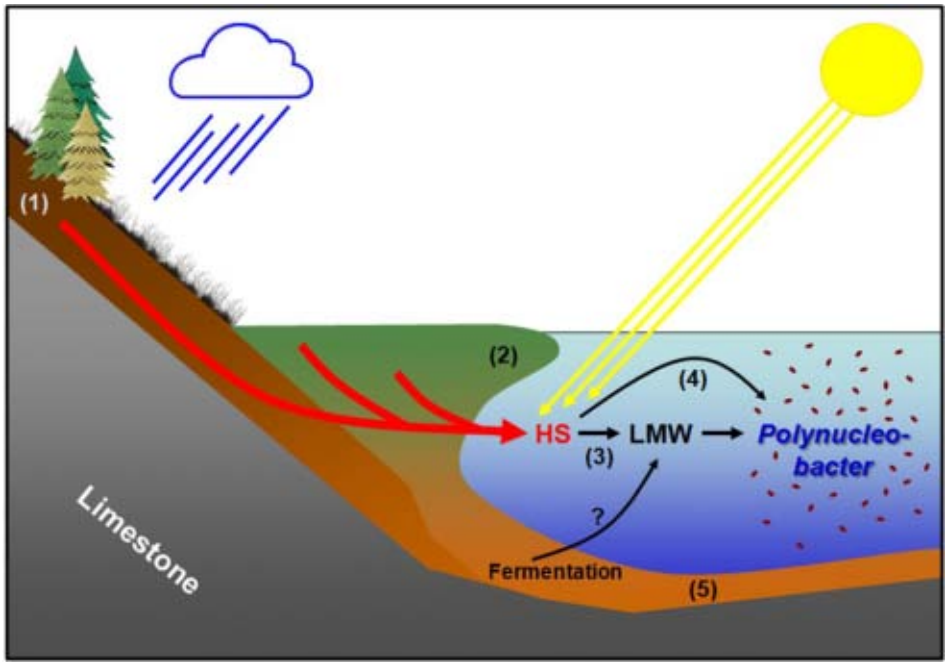


Fig. 10. Conceptual model on carbon fluxes utilized by the F10 lineage population in dystrophic Pond-1 located in the Austrian Alps at an altitude of 1300 m. The model suggests origin and transformation of major carbon sources utilized by the persistent F10 population. Humic substances (HS) leached from soils (1) and floating mats (2) (Schwingrasen, formed mainly of *Sphagnum* and *Carex*) are transported by percolating water to the pond. *P. necessarius* bacteria affiliated with the F10 lineage mainly utilize low-molecular-weight (LMW) photooxidation products of HS (3). Direct utilization of aliphatic residues of HS by enzymatic cleavage is also expected to take place (4). Another potential substrate source could be fermentation products released by bioturbation and other processes from the sediment (5) into the water column of the pond (Hahn et al., in press[1]).

Other activities

[1] **Hahn, M.W., Scheuerl, T., Jezberová, J., Koll, U., Jezbera, J., Šimek, K., Vannini, C., Petroni, G., and Q. L. Wu** (in press). The passive yet successful way of planktonic life: genomic and experimental analysis of the ecology of a planktonic *Polynucleobacter* population. PLoS ONE.

i. Cooperation with colleagues from Germany and Japan resulted in the description of two novel *Polynucleobacter* species (Hahn et al., 2011a,b).
ii. Cooperation with Finnish colleagues resulted in unique insights in the carbon flux in a stratified boreal lake (Taipale et al., 2011).
iii. An interesting cooperation with Chinese and UK colleagues compared diversity patterns of macro- and microorganisms along salinity gradients formed by Tibetan lakes (Wang et al., 2011).

Research in 2012 will focus on comparison *Polynucleobacter* genomes representing differently adapted ecotypes.

Plankton ecology and ecophysiology

(**Thomas Weisse**, Peter Stadler, Ulrike Scheffel, Martina Hebein, Michael Moser)

Synoptic representation of horizontal and vertical phytoplankton distribution in Lake Mondsee

The objective of this project is the synoptic lake-wide representation of the phytoplankton distribution in different water layers of Lake Mondsee, with emphasis on cyanobacteria (Dissertation M. Hebein). The project is related to ILIM's RADICAL project (Dissertations by P. Trummer, p. 10-13, and H. Ficker, p. 41) and performed by an interdisciplinary collaboration with the Institute for Geographic Information Science (GIScience of the AAS and Univ. Salzburg). The capabilities of Geographic Information Systems (GIS) for the 2D and 3D visualization and analysis of variations in the lake environment over time will be evaluated. The aim is to identify differences in the vertical and horizontal phytoplankton distribution and abundance in relation to ambient key variables (nutrients, temperature, light). The seasonal phytoplankton abundance is determined by lake-wide biweekly to monthly field surveys using a multi-parameter fluorescence probe. Water samples for nutrient analysis are taken and the underwater light climate is assessed. A GIS modeling approach is then used to visualize and evaluate the effects of these variables on the vertical and horizontal distribution of phytoplankton in the lake. A first result, the average phycoerythrin concentration (in Relative Fluorescence Units, RFU) that is indicative of cyanobacterial abundance is shown in different water layers (epi-, meta-, and hypolimnion) of Lake Mondsee (Fig. 11).

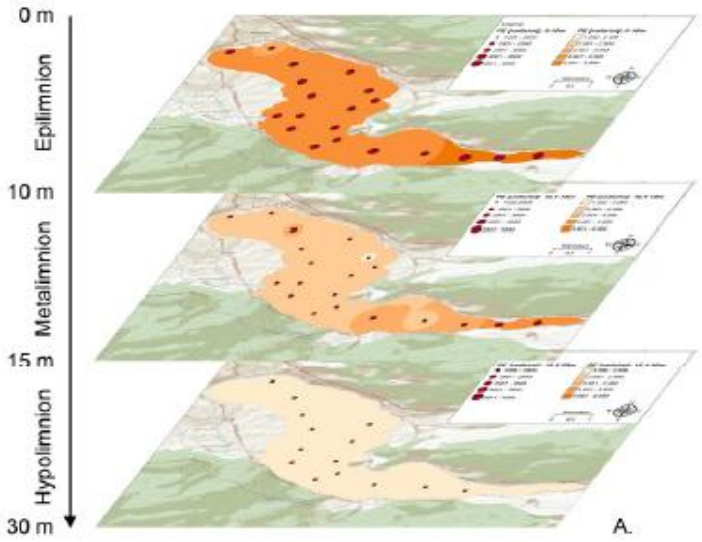


Fig. 11. Synoptic representation of the average phycoerythrin concentration in three different water layers in Lake Mondsee during October 2010. Data were interpolated by Inverse Distance Weighting (IDW).

A future perspective of this project is the simulation of the physical, chemical and biological dynamics of Lake Mondsee. A fundamental base for adequate future modeling approaches (e.g. hydrodynamic modeling) is the availability of the bathymetry of Lake Mondsee. Therefore, a bathymetric survey of the lake was conducted during June 2011 (in collaboration with J. Wanzenböck); a 3D view of the lake bottom will be developed in collaboration with colleagues from the German Research Centre for Geosciences (GFZ) in Potsdam.

We have also continued the successful, long-term cooperation with the GFZ with respect to assessing the environmental responses to late glacial and more recent climatic fluctuations recorded in the sediments of Lake Mondsee (Lauterbach et al. 2011). Two dissertations supervised by the GFZ focus on the impact of flooding during the past ~2,000 y (L. Kämpf) and on the conditions promoting genesis of extreme flooding (P. Müller). We have assisted GFZ with the sampling program, deploying of moorings and buoys, etc. during the reporting period. Results from these two dissertations and the dissertation by M. Hebein shall be integrated and lead to a joint research project between GFZ, ILIM and IGIS. The kick-off and a progress meeting were held at Mondsee during the past two years. However, due to the uncertain overall situation of ILIM that became evident in autumn, 2011, the project application (to be submitted to FWF) could not be prepared as intended. Another drawback for the future project resulted from Martina Hebein's leaving ILIM in October 2011 to accept a position in Carinthia. Yet, we will continue the collaboration with GFZ during 2012 and intend to pursue the joint project once the fate of ILIM has been settled.

Habitat selection and local adaptation in acid mining lakes

We finished our investigations on the adaptation of planktonic species (flagellates, ciliates, and rotifers) to and their microevolution in acidic mining lakes (AML) within FWF project P20118-B17. AML are extreme aquatic habitats with strongly reduced biodiversity, providing a rare case of suitable ecosystem models to test for the significance of strong habitat selection. The rationale of this project and the main hypotheses to be tested were described in detail in ILIM's Annual Report 2010. A PhD thesis (Moser 2011) was successfully completed during the reporting period. The final project report was submitted to the Austrian Science Fund (FWF) by the end of June 2011. This report received a positive evaluation in October 2011.

With respect to the specific project goals, we demonstrated that

- acidotolerant species may benefit from competitive release under conditions of acid stress (Moser & Weisse 2011a)
- combined stress effect of pH and temperature narrows the niche width of flagellates (Moser & Weisse 2011b) and rotifers (Laufenstein 2010) in acid mining lakes (Fig. 12)
- species richness in Lake Langau is extremely low, even in comparison to other AML with pH <3 (Weithoff et al. 2010, Moser & Weisse 2011c)

and described the new rotifer species *Cephalodella acidophila* (Jersabek et al. 2011)

General conclusions resulting from this project are that

- habitat effects influence fitness of freshwater protists; for the first time, we demonstrated significant effects of strain, habitat, and strain x habitat interaction on the population growth rates of flagellates and ciliates (Weisse et al. 2011). Corollaries of these findings are that (1) the same habitat may affect strains of the same species differently and that (2) similar habitats may harbor ecophysiologically different strains or species. These results contradict the ‘everything is everywhere’ paradigm.

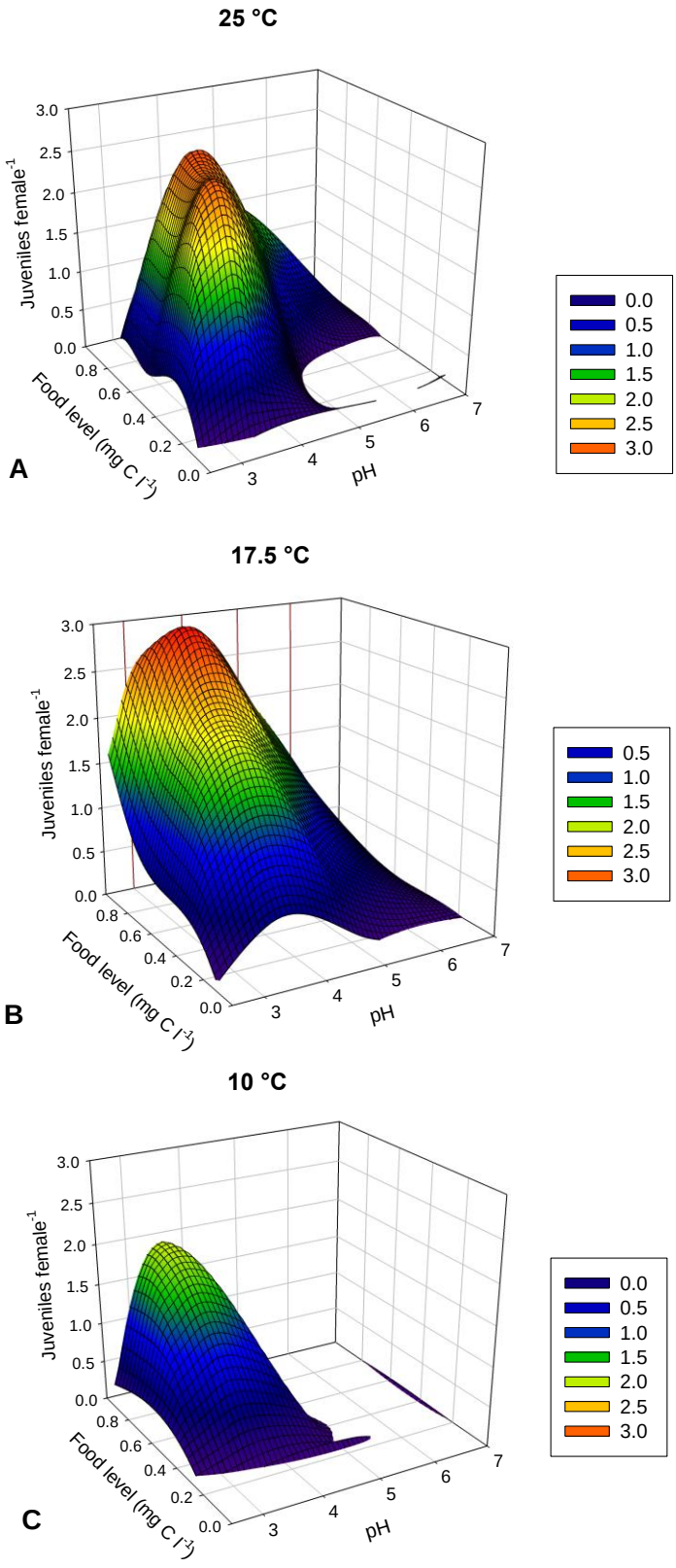


Fig. 12. 3D mesh plots of the net reproductive rate (juveniles female^{-1}) of the rotifer *Cephalodella acidophila* in response to pH, food level and temperature (Weisse et al, in prep.).

Ecology of endemic ciliates from bromeliads (FWF project P20360-B17, in cooperation with the project leader W. Foissner, Univ. Salzburg)

We investigated the ecophysiology of the recently described colpodid ciliate *Bromeliothrix metopoides* in a series of laboratory experiments. This ciliate was regularly found in the reservoirs of tree bromeliads from Central America, the Caribbean, and South America, but was never encountered outside of its original habitat. Earlier investigations had shown that *B. metopoides* grows rapidly, forms resting cysts, and can be maintained easily in culture with an array of food organisms. Our goal was, therefore, to reveal the environmental factors that constrain this species to its peculiar habitat. Our laboratory experiments with *B. metopoides* and different food organisms (bacteria, heterotrophic flagellates) demonstrated that this ciliate has specific demands in terms of food quality and quantity. In particular, it needs an unusually high food threshold (~1.4 mg C L-1) in order to thrive (Fig. 13). Further, *B. metopoides* was sensitive to competition by another, potentially sympatric ciliate species. The pH niche of *B. metopoides* was relatively wide (pH ~4 to >9), provided that food supply was optimal. Food quality also affected the ability of *B. metopoides* to form resting cysts when the experimental containers dried out. Under optimal conditions, *B. metopoides* reached maximum growth rates (μ_{max} = 4.71 d^{-1}, or 6.8 doublings d^{-1}) that belong to the highest ones recorded thus far for any freshwater ciliate. However, its high sensitivity to unfavorable environmental conditions let the population size collapse within several hours. We conclude that *B. metopoides* is a boom and bust ciliate that is specifically adapted to its peculiar habitat but virtually unviable in other environments (Weisse et al, in prep.).

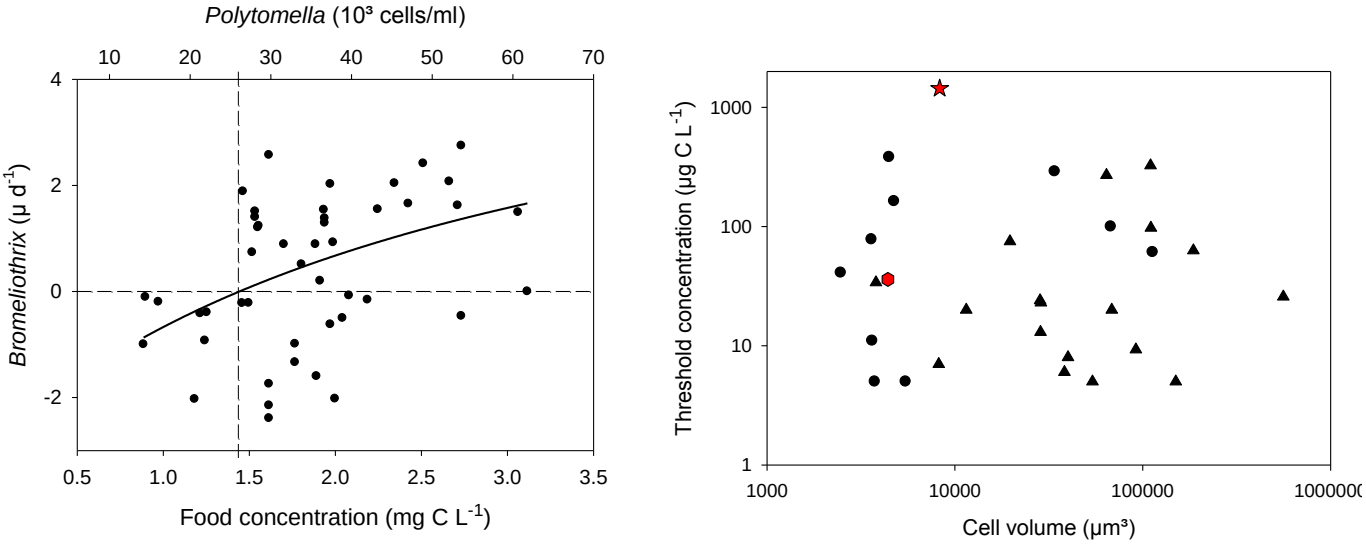


Fig. 13. Left: Population growth rate (μ) of *Bromeliothrix metopoides* vs. abundance (top X-axis), respectively biomass (bottom X-axis) of the prey flagellate *Polytomella* sp.. A rectangular hyperbola was fit to the data (solid curve). The horizontal dashed line indicates zero population growth (μ=0); the intercept of the vertical dashed line with the X-axes indicate threshold prey biomass (bottom), respectively prey abundance (top) at μ=0. Right: Threshold food concentrations of various freshwater (circles) and marine (triangles) ciliates reported in the literature and the two ciliates used in this study, i.e. *Bromeliothrix metopoides* (red star) and an as yet unidentified sympatric species (red hexagon).

Ecology and taxonomy of planktonic ciliates

(**Bettina Sonntag**, Barbara Kammerlander, Geoffrey Ong'ondo, Daniela Pöll, Claudia Grubbauer, Ulrike Scheffel)

Since June 2011, BS is employed at the Institute of Limnology (ILIM) and in November, she started to work physically at Mondsee. During the transition period, several experiments and sampling campaigns in the course of her ongoing FWF project on 'Ultraviolet radiation effects on planktonic freshwater ciliates: an assessment of photoprotection and repair strategies' were still carried out at her former working place, the Leopold-Franzens-University at Innsbruck (Austria; LFUI). As technical assistants, Claudia Grubbauer (LFUI) and Ulrike Scheffel (ILIM) supported the research.

In experiments, the research group investigated the photoprotective potential of diverse planktonic ciliates such as the heterotrophic *Balanion planctonicum* and the mixotrophic *Pelagodileptus trachelioides*, *Stokesia vernalis* and *Vorticella chlorellata*. These ciliates are commonly detected in the uppermost meters of the water column of a subalpine lake suggesting efficient strategies to avoid damage caused by ultraviolet radiation (UVR; Sonntag et al. 2011a). In contrast, in the alpine Gossenköllesee, which is highly transparent to UVR, the vertical distribution pattern of especially *B. planctonicum* is different to what is found in the subalpine lake (Fig. 14). To understand the potential role of incident UVR on the distribution of this species, its photoprotective strategies were experimentally tested in the master thesis of Daniela Pöll (LFUI). Overall, for all the ciliates observed, effects of UVR were species-specific (see also Sonntag et al. 2011a, b).

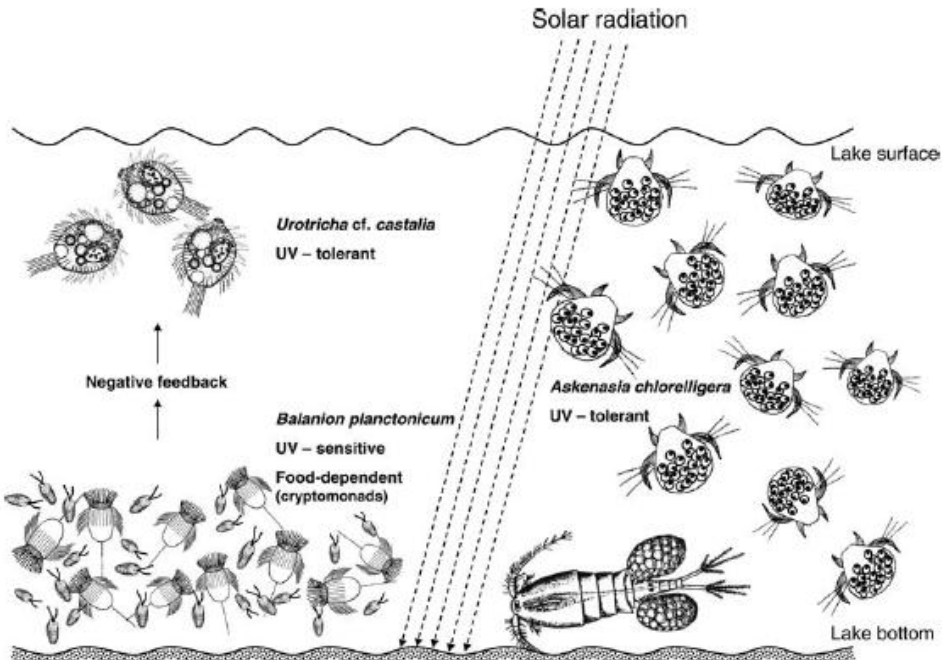


Fig. 14. Scheme of the distribution of *Askenasia chlorelligera, Balanion planctonicum* and *Urotricha* cf. c*astalia* in the alpine lake Gossenköllesee during the ice-free summer period indicating the main factors involved. For details see Sonntag et al. (2011b).

In her Ph.D.-thesis, Barbara Kammerlander focuses on ciliate assemblages in turbid and transparent remote alpine lakes (DOC-fForte fellowship, co-supervisor Ruben Sommaruga, LFUI). Therefore two lakes in the western Austrian Central Alps were sampled twice in summer to investigate potential factors such as water transparency/turbidity, light regime or nutrients that influence the species-specific distribution patterns of the ciliates in these lakes. Further, to identify intraspecific patterns in morphologically identical ciliates from several lakes, the research group cooperates with Michaela Strüder-Kypke (University of Guelph, Canada) by investigating different gene sequences (e.g., COI, ITS). Additionally, to test for the compatibility of ciliate morphology, species sequences and pyrosequencing, cooperation with Thorsten Stoeck and Hans-Werner Breiner (University of Kaiserslautern, Germany) has been established.

In another cooperation with Jens Boenigk (University of Duisburg-Essen, Germany), BS co-supervises the Ph.D.-student Geoffrey Ong'ondo (Egerton University, Kenia) working on the alpha-taxonomy and ecology of planktonic ciliates from East African Soda lakes. During his stay at the LFUI from March through August, GO was introduced and trained in basic methods and techniques how to study planktonic ciliates from morphology (financed through an APPEAR-fellowship of the ÖAD). After an extensive sampling campaign in Kenia from August through December, the Ph.D.-thesis is continued in 2012 in the laboratory of Jens Boenigk on the molecular identification of the ciliates (supported by a DAAD-fellowship).

The direct integration of this research group at the ILIM started in autumn 2011 with the participation at the ongoing project DETECTIVE. To get an overview over the ciliate communities in the five target lakes of the project, two sampling campaigns were carried out and ciliates identified from live and preserved samples (Fig. 15). Ciliates are known to be highly sensitive to changes in their environment such as temperature, nutrient fluctuations or UVR. Therefore, to identify changes in species-specific patterns in a habitat it is a prerequisite to know the lake-specific ciliate assemblages. In 2012, specific questions in the context of global warming will be addressed.

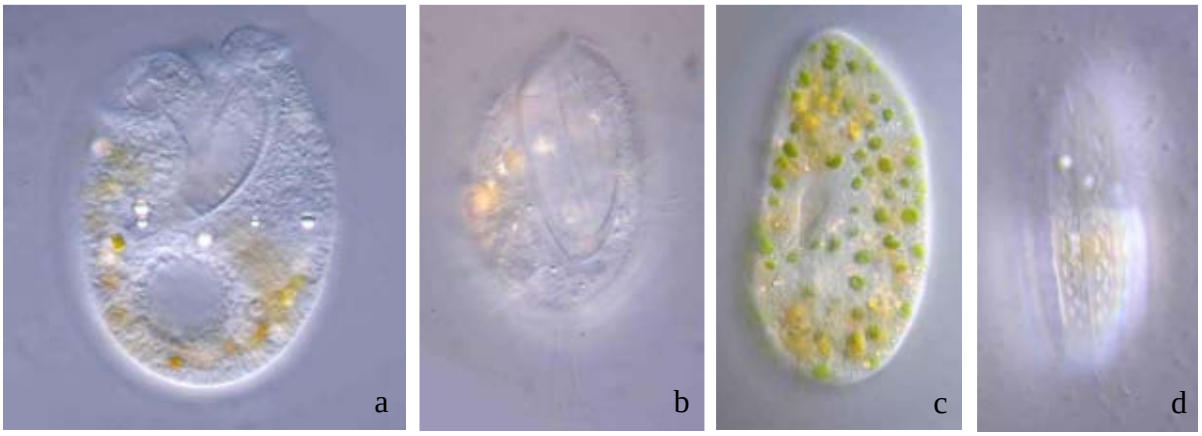


Fig. 15. *Bursaridium* sp. (undescribed species) from Moaralmsee (a) and *Lembadion lucens* (b), *Paramecium bursaria* (c) and *Coleps nolandi* (d) from Wirpitschsee. Pictures from living ciliates (DIC).

Cited references:

Sonntag B, Summerer M, Sommaruga R (2011a) Are freshwater mixotrophic ciliates less sensitive to solar UV radiation than heterotrophic ones? J Euk Microbiol 58:196-202

Sonntag B, Summerer M, Sommaruga R (2011b) Factors involved in the distribution pattern of ciliates in the water column of a transparent alpine lake. J Plankton Res 33:541-546

Evolutionary Paleolimnology

(**Liisa Nevalainen**, Tomi Luoto, Hans Knoll, with contribution by Roland Schmidt)

The work of this research group started in July 2010 with sediment core sampling of five ultra-sensitive Alpine lakes in the Niedere Tauern region as part of the DETECTIVE project (DEcadal deTECTion of biodIVErsity in alpine lakes).

The rational of this integrative project is that global warming is occurring at much greater speed in the Alps when compared with the global situation. The DETECTIVE project aims to link the changes in plankton composition of alpine lakes to climatic variation, as the discovery of the ecophysiological and ecological adaptations will be fundamental to conservation of these unique habitats in the Alps. Plankton community composition is analyzed in five alpine lakes (1700-2118 m a. SL) using (i) conventional (paleo)limnological tools such as the analysis of diatom frustules, chrysophyte resting stages or invertebrate remains collected in the sediment (traps), (ii) high-throughput sequencing to describe the genetic diversity of abundant plankton groups and to follow the (im)migration of key planktonic taxa (see above, p. 14). The DETECTIVE project takes advantage from a detailed record of diatom frustules, chrysophyte resting stages or invertebrate remains that has been performed from the same alpine lakes one decade ago (in 1998/99). First results indicate that significant changes in planktonic diatoms occurred, i.e. opportunistic species such as *Asterionella formosa* were observed for the first time (Fig. 16). Apparently some of the lakes (e.g., the extremely cold Lake Moaralmsee, 1700 m a SL.) passed an ecological threshold which was determined by a shorter duration of ice cover and earlier mixing in spring. In the same lake paleolimnological analyses indicated that an on average higher water level occurred during the 20th century when compared with the average water level during the Little Ice Age. Despite the stable high water level in the 20th century rapid changes in chironomid and cladoceran community composition occurred during the same time period (reported in detail below). These results suggest that significant changes in plankton community composition are not necessarily directly related to average water temperature but rather to indirect factors such as the duration of ice cover, the date of spring mixing or the run off influence from the catchment. Consequently alpine lakes can be regarded as sentinels for global warming effects that take place considerable time before changes in average water temperature become apparent.

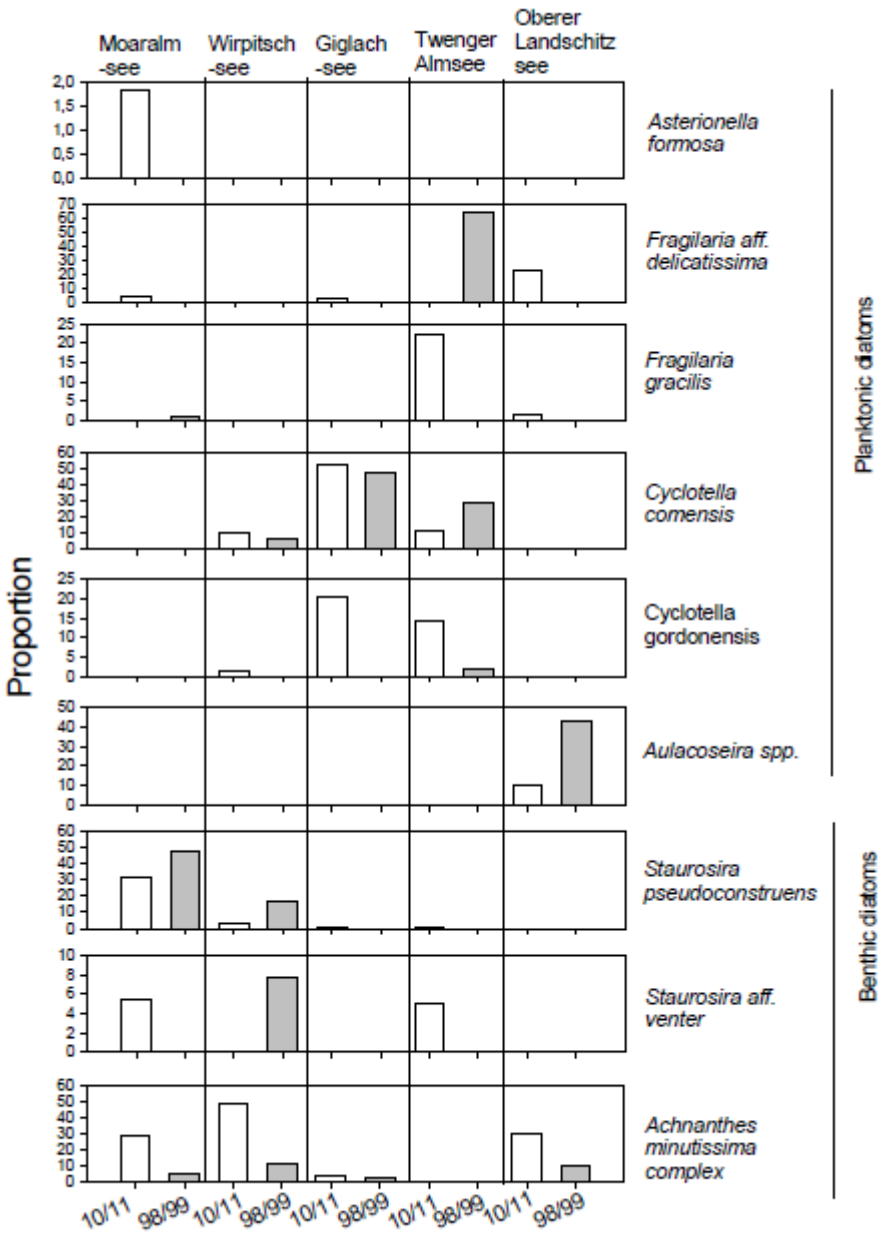


Fig. 16. Comparison of the abundance distribution of dominant diatom taxa in the sediment trap samples from 1998/99 and 2010/11 in five lakes of the Niedere Tauern (R. Schmidt, unpubl.).

During the reporting period, distribution of benthic Cladocera was investigated with a paleolimnological approach by using their fossil surface sediment assemblages within the thermally extreme Lake Moaralmsee in the Niedere Tauern, Austrian Alps. The results from

20 surface sediment samples suggested that the spatial distribution of chydorids is clearly heterogeneous along the water depth gradient (1.8–6.1 m); *Alona quadrangularis* dominated in shallow (warm, minerogenic) habitats, *Chydorus sphaericus*-type succeeded at intermediate depths, and *Alona affinis* dominated in deep (cold, organic) sites (Fig. 17). Apparently, these benthic cladocerans exhibit clear habitat and resource segregation. The distributional patterns revealed local community thresholds at approximately 2.5 and 4.5 m water depths and these thresholds were likely to be forced by variances in habitat quality (minerogenic–organic), food resources (periphyton/detritus), thermal properties (warm–cold), and UV-exposure (high–low). The results emphasize the usability of the paleolimnological approach in distributional investigations and its applicability in providing information on species–environmental relationships for environmental change evaluations and paleoecological interpretations.

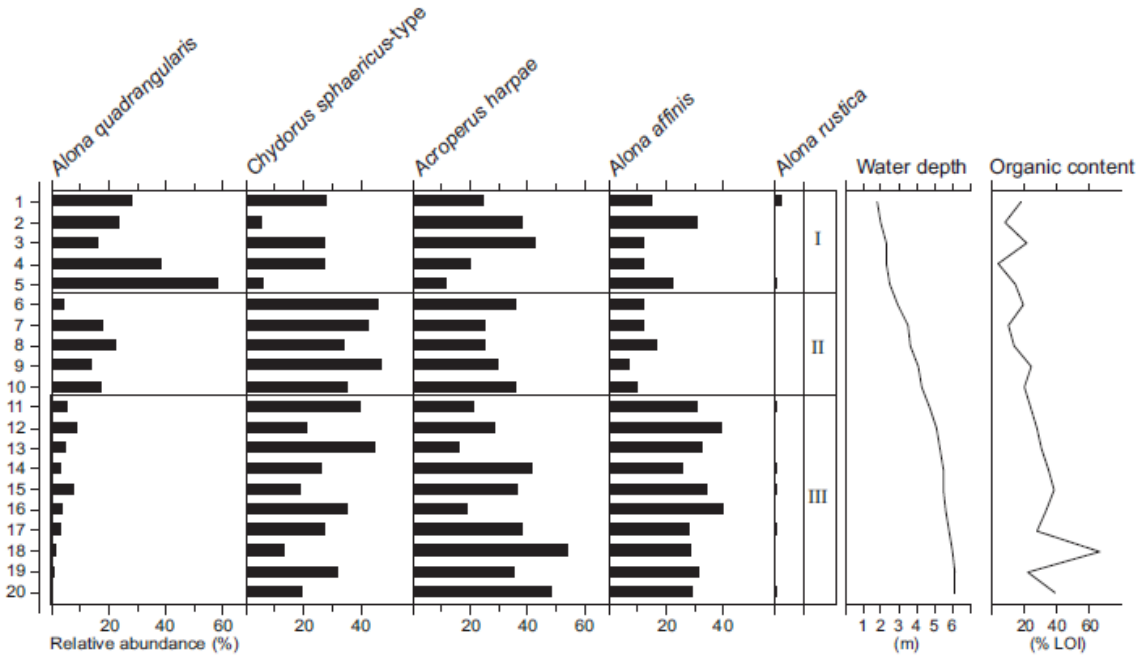


Fig. 17. Relative abundance of Chydoridae in the surface sediments from Lake Moaralmsee along the water depth and organic content gradients. The horizontal lines indicate local community thresholds and the Roman numerals (I-III) illustrate sample groups according to the water depth (<2.5 m, 2.5-4.5 m, >4.5 m), which were separated by cluster and similarity analyses (Nevalainen 2012).

The Evolutionary Paleolimnology working group at ILIM was terminated with the return of the principal investigator to her home country in autumn, 2011. However, the paleolimnological work within the DETECTIVE project will be continued on a collaborative basis with all three scientists involved (L.N., T.L., and R.S.) in 2012.

Molecular & Cytogenetic Evolution of Asexual Aquatic Organisms

(**Dunja Lamatsch**, Maria Pichler, Manuel Deinhardt)

The paradox of sex remains the queen of problems in evolutionary biology. Sexual reproduction is widespread throughout the animal and plant kingdoms, but under certain conditions remains costly compared to asexual reproduction. Sex creates a wide variety of genotypes on which natural selection can act, but it also breaks up favourable gene combinations. Asexuals have the ability to preserve their genome and to propagate genotypes that have a previous history of success. In addition, asexuals can reproduce twice as fast as sexuals, because all, rather than half, of their offspring are themselves capable of reproduction (=females). Although asexual reproduction offers several clear short-term advantages, ruling evolutionary theory dictates that the absence of a mechanism for rapid genetic change will direct clones persisting over long time frames into evolutionary dead ends. Several animal and plant groups nevertheless show a large incidence of asexual reproduction and some lineages might have been fully asexual for many millions of years.

After a maternal leave in 2010, the PI (D.L.) returned to work on March 3, 2011. Due to our difficult situation during the reconstruction works of the institute, the PI had to perform large parts of her research at several research institutions within Europe kindly supported by several collaborators:

- Cell culture (Prof. Manfred Schartl, Institute for Physiological Chemistry, Biocenter of the University of Würzburg, Germany) (6.4.-8.4., 28.4.-2.5., 8.6.-11.6., 8.12.-21.12.)
- Microdissection (Prof. Stefan Müller, Institute for Human Genetics, LMU, University of Munich, Germany) (18.10.-22.10.)
- Flow cytometry, microsatellite analyses (Prof. Jukka Jokela, EAWAG, Zurich, Switzerland) (26.6.-12.7., 1.12.-15.12.)

The interim space needed for the aquaria during the reconstruction works of the institute was generously provided by HR Dr. Albert Jagsch of the Bundesamt für Wasserwirtschaft, Scharfling (http://www.baw-igf.at/).

Despite these difficulties, two papers were published in 2011 (Lamatsch et al. 2011, Bruvo et al. 2011), and 3 were submitted [1-3]. Our research results were presented at the 7th Eurpopean ostracodologists´ Meeting (25.-28. 7. Graz, Austria) and the 13th Congress of the European Society for Evolutionary Biology (20.-25.8., Tübingen, Germany).

Concerning teaching, the PI successfully offered practical courses (“basic molecular laboratory techniques” and “basic cytogenetic techniques”) for undergraduate students as well as for interested pupils financed by the Austrian Research Promotion Agency (FFG) (http://www.ffg.at/praktika2011). Manuel Deinhardt (University of Jyväskylä, Finland; co-

supervised by D.L.) finished his bachelor thesis and started his master thesis on the gynogenetic invasive Gibel carp.

From Sex to Asex: A case study on interactions between sexual and asexual reproduction in a non-marine ostracod

Biological systems with asexual reproduction have often attracted research on parasites and host immune defence, because parasites are expected to be better able to exploit genetically less diverse populations. In addition, maternally inherited parasitic microorganisms such as *Wolbachia* (Fig. 18) can directly alter the reproductive systems of their hosts and induce parthenogenesis. In the freshwater ostracod *Eucypris virens* (Fig. 19), both sexual and asexual reproduction is known, and we speculated that parasite pressures might help to explain their co-existence. We surveyed natural populations of *E. virens* throughout its Europe-wide range for natural parasites, and particularly tested for the presence of intracellular *Wolbachia* bacteria. Surprisingly, the results indicate that very few *E. virens* populations support parasite infections. We also found no evidence for the presence of *Wolbachia* in the populations screened. The results therefore show that parasitic infections do not play a role in the maintenance of sex in this system.

Fig. 18. *Wolbachia* infected cell

Fig. 19. *Eucypris virens*

Paternal introgression in the sperm-dependent parthenogen *Poecilia formosa*

In the asexual all-female fish species *Poecilia formosa*, the Amazon molly, supernumerary chromosomes have frequently been found in both laboratory-reared and wildcaught individuals (Figs 20, 21). While wild-caught individuals with B chromosomes are phenotypically indifferent from conspecifics, individuals carrying B chromosomes from recent introgression events in the laboratory show phenotypic changes. Former analyses showed that the expression of a pigment cell locus is associated with the presence of these B chromosomes. In addition, they contain a so far unidentified locus that confers a higher susceptibility to tumor formation in the presence of pigmentation pattern. Isolation by

microdissection and hybridization to metaphase chromosomes revealed that they contain one or severa sequences with similarity to a highly repetitive pericentromeric and subtelomeric sequence in A chromosomes. Isolation of one particular sequence by AFLP showed that the B chromosomes contain atleast 1 copy of an A-chromosomal region which is highly conserved in the whole genus *Poecilia* , i.e. more than 5 million years old. We propose it to be a single copy sequence.

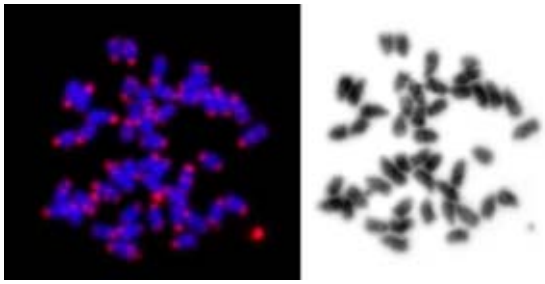


Fig. 20. Microchromosome-specific probe

Fig. 21. Amazon molly carrying the cancer causing microchromosome

Manuscripts in review

[1]Sofia Adolfsson, S., **Lamatsch, D.K**., Paczesniak, D., Michalakis, Y., Martens, K., Schön, I., Butlin, R.K., Jokela, J.: Mitochondrial cluster-specific genome size variability among sexual and asexual lineages of the ostracod *Eucypris virens* species group.

[2]Rylková, K., Kalous, L., Bohlen J., **Lamatsch, D.K.**, Petrtýl, M.: Phylogeny and biogeographic history of the cyprinid fish genus *Carassius* (Teleostei: Cyprinidae) with focus on natural and anthropogenic arrivals in Europe.

[3]Schlupp, I., **Lamatsch, D.K.,** Teege, K., Parzefall, J.: Triploid Amazon mollies (*Poecilia formosa*) find food faster than diploids.

The PI (D.L.) is currently involved in four projects: In 2012 the research will focus on these projects as well as application for further funding (FWF Elise-Richter http://www.fwf.ac.at/de/projects/richter.html), and otherwise depend in large parts on the fate of the institute.

- EROS in Ostracods (Evolution of Reproduction with Oversized Spermatozoa in Ostracods) with Dr. Renate Matzke-Karasz, LMU Munich, Germany, Grant of the German Research Foundation (2011-2013), (DL Co-PI).

Recent cypridoidean ostracods (Podocopa) are living mainly in fresh or brackish water environments. They reproduce with filamentous giant sperm, reaching up to ten times the body length of the animal. A common origin of their reproduction with giant sperm is well supported by fossil evidence from the lower Cretaceous, speaking for an evolutionary success of this reproductive mode.

Considering the energetic costs related to production, transport and storage of giant sperm, the question about the advantages stands to reason. Hypotheses that have been put forward for other groups with giant sperm *(e.g.* copulatory plug, female cryptic choice or zygote nutrition) must be seen as approximations, which are each applicable for at least a few of the regarding taxa. However, none of the existing hypotheses can be satisfactorily assigned to the situation on ostracods.

The present project features two hypotheses: (A) male freshwater ostracods developed giant sperm in order to fill the female receptacles and thus to prevent other males from inseminating the female (aim: optimization of fertilization success) and (B) giant sperm help female freshwater ostracods to reduce the sperm transfer rate per time unit (aim: diversification of paternities).

Evolution of extraordinary long female sperm ducts and a complex female reproductive system may have caused a selective pressure on males towards the evolution of giant sperm.

- Quantifying Individual Fitness with Trojan Sex Chromosomes: an Ultimate Conservation Tool (with Drs. Shinichi Nakagawa & Closs Lokman, University of Otago, New Zealand) Grant of the Marsden Fund, New Zealand (2010-2012), (DL Co-PI).

With an alarming decline in biodiversity, conservation biologists have been facing two pressing tasks: 1) protecting and recovering the populations of endangered species, and 2) controlling invasive pest species which threaten native biota. These two tasks usually require different theoretical and/or methodological frameworks.

Recently, the introduction of individuals, carrying 'Trojan' sex chromosomes (i.e. hormone-treated individuals whose sex has been reversed from their genotype), into wild populations has been proposed as a potential way of *not only* exterminating invasive pest species *but also* of saving endangered species. However, the ecology of individuals carrying Trojan sex chromosomes (i.e. sex-reversed individuals) and their offspring is virtually unknown. Thus, empirical work on the use of Trojan sex chromosomes is urgently required.

We will conduct the first comprehensive investigation quantifying the fitness of sex-reversed individuals and their offspring, using an invasive fish species. We will use three different approaches: morphological, endocrinological and behavioural measurements. We will develop sex specific molecular markers to identify Trojan individuals. This work will extend our knowledge of the intricate relationships among genes, hormones and phenotypic characters. Importantly, it will explore the feasibility of introducing Trojan individuals into wild populations for conservation proposes. Therefore, our project will ensure that New Zealand remains a front runner in the field of conservation biology.

- Gynogenesis as a dispersal in invasive prussian carp (*Carassius gibelio*) (with Dr. Jouni Taskinen, University of Jyväskylä, Finland; Dr. Jukka Jokela, EAWAG Zürich, Switzerland), funds from EAWAG (2008-2012), (DL PI).

The Prussian carp, *Carassius gibelio,* was introduced to Europe from East Asia, probably as a triploid all-female gynogenetic lineage whose clonal reproduction relies on sperm from related species inducing the asexual egg development. Since its introduction, the Prussian carp invaded most of European fresh water systems and started developing diploid and tetraploid forms, males and sexual modes of reproduction. The mechanism of the observed changes is not well understood. Distribution patterns suggest that the Prussian carp is invasive and displaces its sexual sperm-donor, the European crucian carp (*C. carassius).*

We investigate the parasite community, ploidy and genetic structure of several European populations of successfully spreading gynogenetic Prussian carp, as well as of their sperm donor, the indigenous Crucian carp. Crossing experiments will give insights into the mechanism of gynogenesis.

- in collaborations with colleagues from ILIM (Dr. Josef Wanzenböck, Dr. Martin Hahn) we investigate the risks of the fish and human pathogenic *Mycobacterium marinum* mediated by climate change (internal funds from ILIM).

Mycobacteria of the *Mycobacterium marinum* species complex (mainly *M. marinum, M. ulcerans, M. pseudoshottsii*) are opportunistic fish pathogens causing skin infections in humans ("swimming-pool granuloma") that are difficult to cure. *M. marinum* has traditionally been regarded as a warm-water pathogen which predominantly cause infections in tropic and subtropic fishes (fresh water and marine). In Austria this would mainly predict an infection risk for fish dealers and breeders of these fishes (e.g. in aquaristics). Recent studies, however, document infections in temperate and coldwater species (e.g. in aquaculture systems) and therefore doubt the dependence on higher water temperature.

Hence there is an urgent need to assess the prevalence of Mycobacteria in natural and artificial water systems in Austria. Climate change/global warming and increasing water temperatures in lakes and water bodies may enable better conditions for the pathogens and lead to an increased infection risk for humans. Temperature adapted Mycobacteria imported with ornamental fishes from tropical or subtropical climates may spread into natural waters via sewerage.

In the present pilot study we will asses the prevalence of bacteria of the *M. marinum* species complex in natural and artificial aquatic systems, as well as in autochthonous and allochtonous fishes (i.e. lake vs. ornamental fishes). We will prepare the ground for a more comprehensive project assessing the increasing risks for infection in fish and humans in the light of global warming. Together with medical staff we will provide change/adjustment management strategies.

Experimental Evolutionary Ecology

(**Claus-Peter Stelzer**, Simone Riss, Thomas Scheuerl, Sabine Ullrich)

Our research activities in 2011 involved several long-term experiments with the rotifer *Brachionus calyciflorus*. All these experiments are part of the FWF- Project P20735-B17 (*Evolution of asexuality in experimental rotifer populations*, PI: C-P Stelzer). These experiments - each spanning several months (i.e. tens of rotifer generations) - addressed important general problems in ecology and evolutionary biology, namely

i. **Population-dynamic consequences of obligate asexuality**. This experiment is an advancement of earlier work on "eco-evolutionary feedbacks of transitions to obligate asexuality" (e.g., Stelzer 2012). Using single-stage chemostats, we studied the predator-prey dynamics of cyclically parthenogenetic (sexual) vs. obligate parthenogenetic (asexual) rotifers and their prey (the algae *Chlorella vulgaris*). The experimental populations exhibited a wide array of dynamical behaviour (stable equilibria, damped and sustained oscillations; e.g., Fig.22) depending on reproductive mode and the nutrient regime (60, 120 and 240 µM concentration of nitrogen in the medium). This experiment forms one part of the PhD thesis of Thomas Scheuerl.

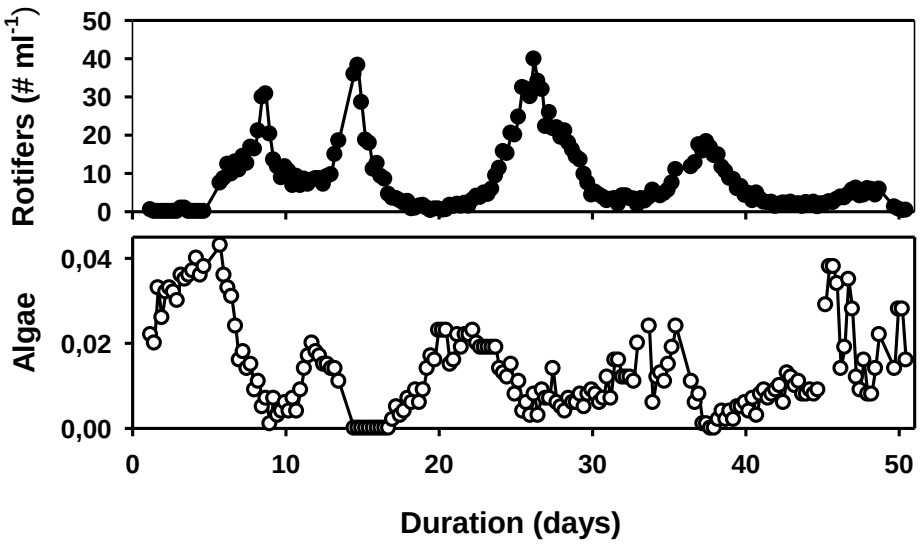


Fig.22. Example of a chemostat population showing sustained oscillatory predator-prey dynamics. Rotifer abundance was estimated with an automated image analysis system developed by CPS. Algal dynamics were estimated using an absorbance colorimeter (wavelength: 470nm), which was connected to the rotifer image analysis system.

ii. **Mutation-accumulation in males vs. females**. Recent evolutionary theory suggests that males might be more sensitive to the effects of deleterious mutations than females,

which offers a potential mechanism for sexual selection to purge mutational load from (sexual) populations (Whitlock & Agrawal 2009[b]). This mechanism might be especially relevant for rotifers, because males are haploid, allowing recessive mutations to be exposed to selection. In our experiments we provided conditions favouring the accumulation of deleterious mutations by propagating 30 clonal lineages through "single-female population bottlenecks" for 25 generations. The endpoints of our study were various fitness-related traits in female rotifers (e.g., fecundity, survival) and in male rotifers (e.g., swimming speed, survival). This experiment was mainly conducted by Simone Riss (who had to go on maternal leave shortly after completion of the lab experiments), with help from Sabine Ullrich. The data are currently being analyzed.

iii. **Experimental "local" adaptation using rotifers as model organisms**. We studied adaptation of rotifer genotypes isolated from nature in experimental microcosms. Two contrasting "local" conditions were used: (1) growth medium with increased salinity (SM, salt medium), (2) growth medium with reduced food algae and nitrogen concentrations (FM, Food-limited medium). We used five replicate populations for each environmental condition, and each population initially consisted of the same clonal genotypes. Within only a few weeks we observed adaptation to the new environmental conditions, as can be inferred from the asymptotically increasing population growth rates over time (Fig. 23a). Moreover, a separate bioassay showed that populations were adapted to their specific environmental conditions, since they obtained the highest population growth rates in their "local" environment (Fig. 23b). This experiment forms another part of the PhD thesis of Thomas Scheuerl.

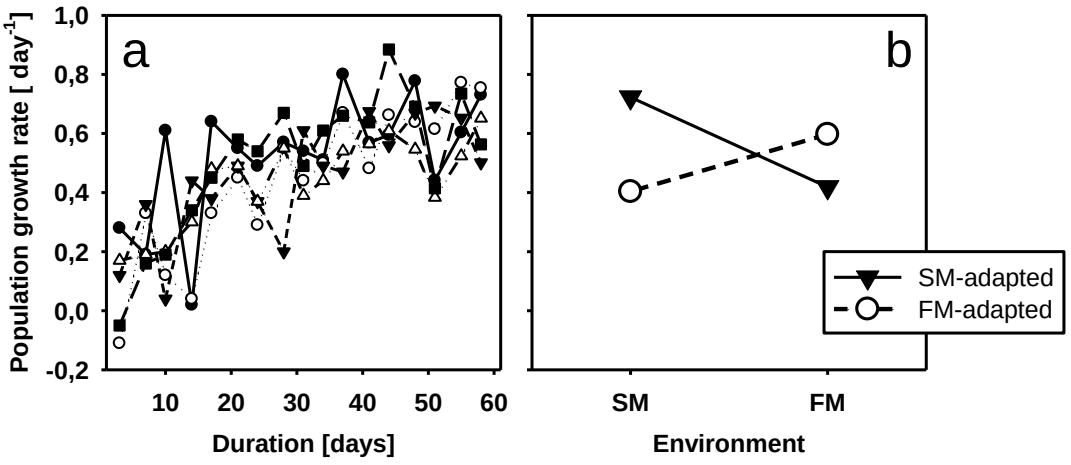


Fig. 23. Preliminary results of the "local" adaptation experiment. a) Population growth rates of five experimental populations adapting to the SM-condition, b) Mean population growth rates SM-adapted and FM-adapted populations in their "local" and "foreign" environment, respectively.

[b] Whitlock, M.C., Agrawal, A.F. (2009) Purging the genome with sexual selection: reducing mutation load through selection on males. Evolution 63: 569-582.

Other activities. Claus-Peter Stelzer submitted his habilitation thesis to the University of Salzburg in November 2011 (Title: *Evolutionary ecology of rotifers*).

Our **research in 2012** will address intraspecific genome size variation in the saline rotifer *Brachionus plicatilis*, as well as the possible implications of such variation on microevolution. First hints to the existence of such variation were provided in one of our recent publications (Stelzer et al. 2011). We will also continue and advance our research on the evolution of (a)sex in rotifers.

Stream Ecology

(**Maria Leichtfried**, Anneliese Wiedlroither)

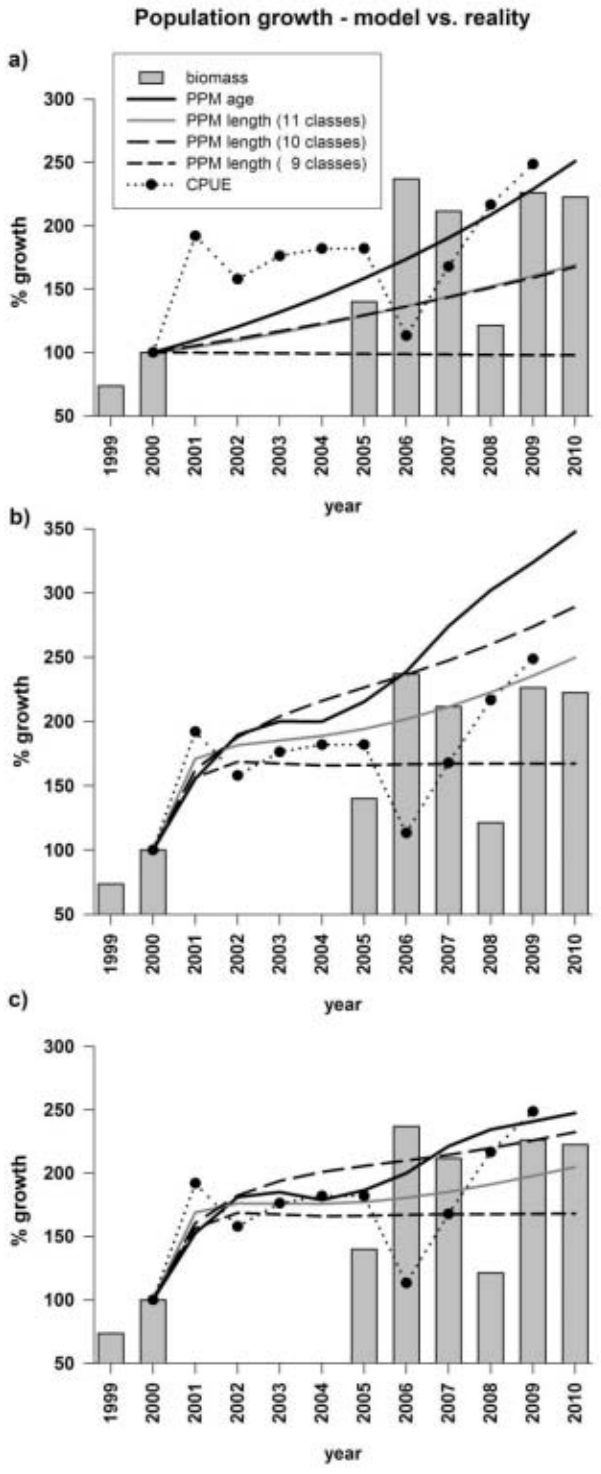
This small working group was transferred to ILIM upon the closing of the former Department at Lunz in 2003. With the retirement of the responsible scientist (M.L.) in autumn 2011, this research is now terminated at ILIM.

Results from an extension of the former project “Initiative in River Ecology in Sri Lanka: from Science to Application” (IRESA), i.e. ecological experiments on leaf decomposition processes were published (Walpola et al. 2011).

Ecology of Freshwater Fish

(**Josef Wanzenböck**, Harald Ficker, Stefan Mayr, Thomas Mario Oberlercher, Florian Keil)

The PhD project of B. Pamminger-Lahnsteiner dealing with population genetics of Austrian whitefish was successfully finished at the University of Salzburg in Feb. 2011 (part of FWF Project L229, Pamminger-Lahnsteiner et al. (in press)[1] Wanzenböck et al. (in press)[2]). Analysis of experimental crossing experiments undertaken within this project were continued in 2011, with focus on quantitative genetic aspects of embryonic and larval traits.



Within the project RADICAL (Risk Analysis of Direct and Indirect Climate effects on deep Austrian Lake Ecosystems, project leader J.W., PhD thesis Harald Ficker, see also p. 10 and 23), our work focused on the development of different population models for native and introduced whitefish species (*Coregonus* ssp.) in pre-alpine lakes of the Austrian Salzkammergut Lake district. Models were based on the age structure or on length structure of populations whereby various numbers of classes for length were used. Results were compared to empirical measurements of population development (Fig.). These models excellently predicted population dynamics. Nevertheless, there is room for refinement by adding environmental and demographic stochasticity to the models which will be the main task for 2012 (the final year of the RADICAL project).

Fig. 24. Comparison between population model predictions and empirical measures of population development for whitefish of Lake Irrsee. Matrix models based on age or size (various numbers of classes) were contrasted with “Catch per Unit Effort (CPUE)” data indicating fish abundance and hydroacoustic assessments of biomass. Models using a stable, i.e. average, age or size distribution (a), using the empirical starting distributions, i.e. including the transient dynamics of the matrices (b), and introducing a carrying capacity, i.e. density dependence of vital rates (c).

A cooperation project with colleagues from the Hydrobiological Institute of the Czech Academy of Sciences (J. Frouzova & J. Kubecka) financed by the Austrian Academic Exchange Service was launched. This included the development of hydroacoustic reference regressions for the relationships between echo-strength and fish size, specifically for whitefish and for various echosounder frequencies. This work was conducted in net-cage experiments. Analysis of the experimental data is currently under way.

Two MSc students started their thesis in 2011:
Thomas Mario Oberlercher: " Fishing with electricity: effects on reproductive success in whitefish (*Coregonus* sp)"

Florian Keil : "Comparing two hydroacoustic analysis methods for fish abundance and biomass: Sv/TS scaling vs. fish tracking"

A major activity of this working group (assisted substantially by Sabine Wanzenböck and supported by the department of International Affairs of the AAS) was the organization of the "11th International Symposium on the Biology and Management of Coregonid Fishes", held during Sept. 26-30, 2011, in Mondsee. More than 120 participants from 11 countries made this symposium a great success. The publication of the proceedings as a special issue of an international journal, edited by J. Wanzenböck & I.J. Winfield, is a continuing activity well into 2012.

[1] Pamminger-Lahnsteiner, B., Winkler, K., Weiss, S., and **Wanzenböck, J**. (in press) Does segregated spawning time prevent the introgression of stocked whitefish species into native species? A morphometric and genetic study in Mondsee (Austria). Fundamental and Applied Limnology.

[2] **Wanzenböck, J.**, Pamminger-Lahnsteiner, B., Winkler, K., and Weiss, S. (in press) Experimental evaluation of the spawning periods in a native Alpine whitefish population versus an introduced population of whitefish (Coregonus lavaretus complex) in Mondsee, Austria. Fundamental and Applied Limnology.

International Post-Graduate Training Programmes in Limnology (IPGL)

(Gerold Winkler, Regina Brandstaetter, plus several national and international partners)

21 young professionals in aquatic ecology and water resource management attended academic training courses organized and implemented by IPGL. Five M.Sc. research projects were facilitated by IPGL and successfully finished in April 2011. Six program participants started their M.Sc. projects in October 2011. The results of two IPGL M.Sc. theses (Ms M. Kaggwa; Mr. F. Degefu) were published in peer reviewed journals. The M.Sc. program “Environmental Sciences, specialization Limnology & Wetland Ecosystems” was implemented successfully and further developed towards a joint-degree program, which is expected to start in October 2012 (Joint-degree M.Sc. program in Limnology and Wetland Management). The operationally and financially supported “Aquatic Science Laboratory” and “Water Resource Centre” at Egerton University were officially opened by representatives of the Austrian and The Netherlands Development Cooperation. Several training programmes/ workshops on project management, academic quality assurance and teaching methods were organized for lecturers and technical-staff contributing to the IPGL-programs.

2.6 . Publications/talks/poster presentations 2011

A) Books (Institute members in bold face)

Bass, D. and **Boenigk, J.** (2011) Everything is Everywhere: a twenty-first century de-/reconstruction with respect to protists, in: Fontaneto, D.: Biogeography of Microscopic Organisms. In: Systematics Association Special Volume Series; Cambridge: Cambridge University Press.

B) Peer-reviewed journal articles (Institute members and associates in bold face)

[c]**Christiansen, G.,** Philmus, B., Hemscheidt, T.**,** and **Kurmayer, R. (**2011) Genetic variation of adenylation domains of the anabaenopeptin synthesis operon and the evolution of substrate promiscuity. Journal of Bacteriology 193, 3822-3831.

[c]**Jezbera, J., Jezberová, J., Brandt, U.,** and **Hahn, M.W. (2011)** Ubiquity of *Polynucleobacter necessarius* subspecies *asymbioticus* results from ecological diversification. Environ. Microbiol. 13, 922–931.

[c]**Stelzer, C.P**. (2012, online: 2011) Population regulation in sexual and asexual rotifers: an eco-evolutionary feedback to population size? Functional Ecology 26, 180-188.

[c]**Stelzer, C.P.** (2011) The cost of sex and competition between cyclical and obligate parthenogenetic rotifers. The American Naturalist, E43-E53.

[c]Wang, J., Yang, D., Zhang, Y., Shen, J., van der Gast, C., **Hahn, M.W.** and Wu, Q.L (2011) Do patterns of bacterial taxon richness along salinity gradients differ from those observed for macroorganisms?. PLoS ONE 6, e27597.

Babanazarova, O. V., **Kurmayer, R**., Sidelev, S. I., Aleksandrina, E. M., and Sakharova, G. E. (2011) Phytoplankton structure and microcystine concentration in the highly eutrophic Nero Lake. Water Resources 38, 229-236.

Bruvo, R., Adolfsson, S., Symonova, R., **Lamatsch, D.K**., Schön, I., Jokela, J., Butlin, R.K., Müller, S. (2011, online :2010) Few parasites, and no evidence for *Wolbachia* infections in a freshwater ostracod inhabiting temporary ponds. Biological Journal of the Linnean Society 102, 208-216.

Hahn, M.W., Lang, E., **Brandt, U**., and Spröer, C. (2011) *Polynucleobacter acidiphobus* sp. nov., a representative of an abundant group of planktonic freshwater bacteria. International Journal of Systematic and Evolutionary Microbiology 61, 788-794.

Hahn, M.W., Lang, E., **Tarao, M**., and **Brandt, U.** (2011) *Polynucleobacter rarus* sp. nov., a free-living planktonic bacterium isolated from an acidic lake. International Journal of Systematic and Evolutionary Microbiology 61, 781-787.

Jersabek, C., Weithoff, G., and **Weisse, T.** (2011) *Cephalodella acidophila* n. sp. (Monogononta: Notommatidae), a new rotifer species from highly acidic mining lakes. Zootaxa 2939, 50-58.

Kurmayer, R. (2011) The toxic cyanobacterium *Nostoc* strain 152 produces highest amounts of microcystin and nostophycin under stress conditions. Journal of Phycology 47, 200-207.

[c]Publication highlights in 2011

Kurmayer, R., **Schober, E**., Tonk, L., Visser, P., **Christiansen, G.** et al. [..] (2011) Spatial divergence in the proportions of genes encoding toxic peptide synthesis among populations of the cyanobacterium *Planktothrix* in European lakes. FEMS Microbiology Letters 317, 127-137.

Lamatsch, D.K., Trifonov, V., Schories,S., Epplen, J.T., Schmid, M., Schartl, M. (online :2011) Isolation of a cancer-associated microchromosome in the sperm-dependent parthenogen *Poecilia formosa*. Cytogenetics and Genome Research 135, 135-142.

Lauterbach, S.; Brauer, A.; Andersen, N.; **Danielopol, D.L**.; al., et (2011) Environmental responses to Lateglacial climatic fluctuations recorded in the sediments of pre-Alpine Lake Mondsee (northeastern Alps). Journal of Quaternary Science 26, 253-267.

Liu, X.; Wu, Q.; Chen, Y.; **Dokulil, M.** (2011, online :2011) Imbalance of plankton community metabolism in eutrophic Lake Taihu, China. Journal of Great Lakes Research 37, 650-655.

Luoto, T.P. and **Nevalainen, L**. (2011) Inferring reference conditions of hypolimnetic oxygen for deteriorated Lake Mallusjärvi in the cultural landscape of Mallusjoki, Southern Finland using fossil midge assemblages. Water, Air & Soil Pollution 217, 663-675.

Luoto T.P., **Nevalainen, L**., Kultti, S. and Sarmaja-Korjonen, K. (2011) An evaluation of the influence of water depth and river inflow on quantitative Cladocera-based temperature and lake level inferences in a shallow boreal lake. Hydrobiologia 676, 143-154.

Moser, M. and **Weisse, T.** (2011a) Combined stress effect of pH and temperature narrows the niche width of flagellates in acid mining lakes. Journal of Plankton Research 33, 1023-1032.

Moser, M. and **Weisse, T.** (2011b) The most acidified Austrian lake in comparison to a neutralized mining lake. Limnologica 41, 303-315.

Moser, M. and **Weisse, T.** (2011c) The outcome of competition between the two chrysomonads *Ochromonas* sp. and *Poterioochromonas malhamensis* depends on pH. European Journal of Protistology 47, 79-85.

Nevalainen, L. (2011) Intra-lake heterogeneity of sedimentary cladoceran (Crustacea) assemblages forced by local hydrology. Hydrobiologia 676, 9-22.

Nevalainen, L., **Luoto T.P**., Levine, S., and Manca, M. (2011a) Modern and pre-Industrial Age distributions of Cladocera in Italian and Swiss Alpine lakes. Hydrobiologia 676, 173-185.

Nevalainen, L., **Luoto T.P**., Levine, S., and Manca, M. (2011b) Paleolimnological evidence for increased sexual reproduction in chydorids (Chydoridae, Cladocera) under environmental stress. Journal of Limnology 70, 255-262.

Nevalainen, L., Sarmaja-Korjonen, K., Gasiorowski, M., and **Luoto, T.P.** (2011) Late 20th century shifts in cladoceran community structure and reproduction in a boreal acidified lake. Fundamental and Applied Limnology 179, 81-92.

Nevalainen, L., Sarmaja-Korjonen, K., **Luoto, T.P.**, and Kultti, S. (2011) Does oxygen availability regulate sexual reproduction in local populations of the littoral cladoceran *Alonella nana*? Hydrobiologia 661, 463-468.

Nevalainen, L., Sarmaja-Korjonen, K., and **Luoto, T.P.** (2011) Sedimentary Cladocera as indicators of past water-level changes in shallow northern lakes. Quaternary Research 75, 430-437.

Okello, W. and **Kurmayer, R.** (2011) Seasonal development of cyanobacteria and microcystin production in Ugandan freshwater lakes. Lakes & Reservoirs: Research & Management 16, 123-135.

Pearson, E.J., Juggins, S., Talbot, H.M., Weckström, J., Rosén, P., **Weckström, K.** et al. [..] (2011) A lacustrine GDGT-temperature calibration from the Scandinavian Arctic to Antarctic: renewed potential for the application of DGT-paleothermometry in lakes. Geochimica et Cosmochimica Acta, doi: 10.1016/j.gca.2011.07.042.

Savichtcheva, O., Debroas, D., **Kurmayer, R**., Villar, C., Jenny, J.P. et al. [..] (2011) Quantitative PCR Enumeration of Total/Toxic *Planktothrix rubescens* and Total Cyanobacteria in Preserved DNA Isolated from Lake Sediments. Applied and Environmental Microbiology 77, 8744-8753.

Scheuerl, T., **Riss, S.**, and **Stelzer, C.P.** (2011) Phenotypic effects of an allele causing obligate parthenogenesis in a rotifer 102, 409–415.

Schmidt, R., **Weckström, K.**, Lauterbach, S., Tessadri, R., and **Huber, K.** (2011) North Atlantic climate impact on early late-glacial climate oscillations in the south-eastern Alps inferred from a multi-proxy lake sediment record. Journal of Quaternary Science, doi: 10.1002/jqs. 1505.

Stelzer, C.P. (2011) A first assessment of genome size diversity in Monogonont rotifers. Hydrobiologia 662, 77–82.

Stelzer, C.P., **Riss, S.**, and **Stadler, P.** (2011) Genome size evolution at the speciation level: The cryptic species complex *Brachionus plicatilis* (Rotifera). BMC Evolutionary Biology 11, 90; doi:10.1186/1471-2148-11-90.

Taipale, S., Kankaala, P., **Hahn, M. W.**, Jones, R. I., and Tiirola, M. (2011) Methane oxidizing and photoautotrophic bacteria are major producers in a humic lake with large anoxic hypolimnion. Aquatic Microbial Ecology 64, 81-95.

Walpola, H., **Leichtfried, M.**, Amarasinghe, M., and Füreder, L. (2011) Leaf litter decomposition of three riparian tree species and associated macroinvertebrates of Eswathu Oya, a low order tropical stream in Sri Lanka. Internationale Revue der gesamten Hydrobiologie 96, 90-104.

Weisse, T., Berendonk, T., Kamjunke, N., **Moser, M.**, **Scheffel, U.** et al. [..] (2011) Significant habitat effects influence protist fitness: evidence for local adaptation from acidic mining lakes. Ecosphere 2, article 134.

C) Other scientific publications

Chorus, I., **Dokulil, M.** al., et (2011) Restoration responses of 19 lakes: are TP treshholds common?, in: Chorus, I, & Schauser, I. (2011) Oligothrophication of Lake Tegel and Schachtensee, Berlin.

D) Dissertations

Moser, M. (2011) Ecophysiological adaptations of freshwater protists to extremely acidic conditions, Faculty of Natural Science, Univ. of Salzburg.

Pamminger-Lahnsteiner, B. (2011) Conservation of natural biological resources in Austria: ecological-, morphological- and genetic analysis of European Whitefish (*Coregonus lavaretus* L. complex), Faculty of Natural Science, Univ. of Salzburg.

E) Habilitation dissertation

Stelzer, C.P. (2011) Evolutionary Ecology of Rotifers. Faculty of Natural Science, Univ. of Salzburg.

F) Scientific talks and poster presentations

See Attachment, Table 18 (p. 26-28)

2.7. Scientific Events 2011

The following Meetings and Events were organized by members of ILIM in 2011:

11th International symposium on the biology and management of coregonid fishes (Mondsee, 26.09.2011 - 30.09.2011)

Wanzenböck, J. and Wanzenböck, S. (Organisers; for details, see above, p. 39)

VI European Congress of Protistology (ECOP) (Berlin, Germany, 25.07.2011 - 29.07.2011)

Weisse, T. (Co-organiser)

Workshop/Seminar

Mutagenisation workshop on the toxigenic cyanobacterium *Planktothrix* (Mondsee, 11.07.2011 - 22.07.2011)

Kurmayer, R. and Christiansen, G. (Organisers; for details, see above, p. 15))

2.8. Scientific cooperation 2011

The Institute for Limnology cooperated with >20 external partners during the reporting period. Details are listed in the Attachment (Tables 14 and 15)

3. Attachment: Data report from AkademIS

The following tables present operating numbers and key figures generated by the database AkademIS of the Austrian Academy of Sciences. This material is available only in German.

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

Humanpotenzial (Kapazitäten, Qualifikationen, Altersstruktur, Projektleitungsfunktionen und Weiterbildung)

1. Mitarbeiter(innen)

	gesamt	m	w
Anzahl der Mitarbeiter(innen)	**42**	20	22
Anzahl der Mitarbeiter(innen) im Durchschnitt	**34**	17	17
Vollzeitäquivalente	**30.38**	15.81	14.57
davon			
· fremdfinanziert	**7.76**	4.31	3.45
· eigenfinanziert	**22.62**	11.5	11.12
· befristet	**8.92**	2	6.92
· unbefristet	**13.7**	9.5	4.2
· wissenschaftlich	**17.52**	11.28	6.24
· administrativ, technisch	**11.86**	4.53	7.33
· sonstige	**1**	0	1
Vollzeitäquivalente der Nachwuchswissenschafter	**4.73**	3.28	1.45

1. A) Leiter

Weisse, Thomas (m)

DirektorIn, 01.01.2011-31.12.2011

1. B) Personalstand

Blank, Stephan (m)

01.01.2011 - 31.12.2011 (365Tage), fremdfinanziert, befristet, wissenschaftlich, Nachwuchswiss., 75% => VZÄ: 0,750

Brandstätter, Regina (w)

01.01.2011 - 31.12.2011 (365Tage), fremdfinanziert, befristet, administrativ/technisch, 100% => VZÄ: 1,000

Christiansen, Guntram (m)

01.01.2011 - 31.12.2011 (365Tage), eigenfinanziert, unbefristet, wissenschaftlich, 100% => VZÄ: 1,000

Deng, Li (w)

01.01.2011 - 30.09.2011 (273Tage), fremdfinanziert, befristet, wissenschaftlich, Nachwuchswiss., 50% => VZÄ: 0,374

Eisl, Liselotte (w)

01.01.2011 - 31.12.2011 (365Tage), eigenfinanziert, befristet, administrativ/technisch, 75% => VZÄ: 0,750

Ficker, Harald (m)

01.01.2011 - 31.12.2011 (365Tage), fremdfinanziert, befristet, wissenschaftlich, Nachwuchswiss., 70% => VZÄ: 0,700

Gadermaier, Maria (w)

10.05.2011 - 31.12.2011 (236Tage), fremdfinanziert, befristet, wissenschaftlich, 100% => VZÄ: 0,647

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

1. B) Personalstand

Gradl, Ingrid (w)

01.01.2011 - 31.12.2011 (365Tage), eigenfinanziert, befristet, administrativ/technisch, 100% => VZÄ: 1,000

Hahn, Martin (m)

01.01.2011 - 31.12.2011 (365Tage), eigenfinanziert, unbefristet, wissenschaftlich, 100% => VZÄ: 1,000

Hebein, Martina (w)

01.11.2011 - 30.11.2011 (30Tage), fremdfinanziert, befristet, wissenschaftlich, 75% => VZÄ: 0,062

01.01.2011 - 31.10.2011 (304Tage), eigenfinanziert, befristet, wissenschaftlich, 75% => VZÄ: 0,625

Höllerer, Hannes (m)

01.01.2011 - 31.12.2011 (365Tage), eigenfinanziert, unbefristet, administrativ/technisch, 100% => VZÄ: 1,000

Jayavel, Sridhar (m)

01.01.2011 - 31.01.2011 (31Tage), fremdfinanziert, befristet, wissenschaftlich, Nachwuchswiss., 100% => VZÄ: 0,085

Knoblechner, Josef (m)

01.01.2011 - 09.01.2011 (9Tage), fremdfinanziert, befristet, administrativ/technisch, 100% => VZÄ: 0,025

Knoll, Johann (m)

01.01.2011 - 31.12.2011 (365Tage), eigenfinanziert, unbefristet, administrativ/technisch, 50% => VZÄ: 0,500

Koll, Ulrike (w)

01.01.2011 - 13.09.2011 (256Tage), eigenfinanziert, unbefristet, administrativ/technisch, 100% => VZÄ: 0,701

Kurmayer, Rainer (m)

01.01.2011 - 31.12.2011 (365Tage), eigenfinanziert, unbefristet, wissenschaftlich, 100% => VZÄ: 1,000

Lamatsch, Dunja (w)

04.03.2011 - 31.12.2011 (303Tage), eigenfinanziert, befristet, wissenschaftlich, 100% => VZÄ: 0,830

Leichtfried, Maria (w)

01.01.2011 - 30.11.2011 (334Tage), eigenfinanziert, befristet, wissenschaftlich, 100% => VZÄ: 0,915

Mayr, Stefan (m)

01.01.2011 - 31.12.2011 (365Tage), eigenfinanziert, befristet, wissenschaftlich, 100% => VZÄ: 1,000

Mayrhofer, Kurt (m)

01.01.2011 - 31.12.2011 (365Tage), eigenfinanziert, unbefristet, administrativ/technisch, 100% => VZÄ: 1,000

Moser, Michael (m)

01.05.2011 - 31.08.2011 (123Tage), fremdfinanziert, befristet, wissenschaftlich, Nachwuchswiss., 70% => VZÄ: 0,236

Nevalainen, Liisa (w)

01.01.2011 - 12.08.2011 (224Tage), eigenfinanziert, befristet, wissenschaftlich, 100% => VZÄ: 0,614

Ostermaier, Veronika (w)

01.01.2011 - 31.12.2011 (365Tage), fremdfinanziert, befristet, wissenschaftlich, Nachwuchswiss., 70% => VZÄ: 0,700

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

1. B) Personalstand

Pichler, Maria (w)

01.01.2011 - 31.12.2011 (365Tage), eigenfinanziert, unbefristet, administrativ/technisch, 100% => VZÄ: 1,000

Ployer, Harald (m)

01.01.2011 - 31.12.2011 (365Tage), eigenfinanziert, unbefristet, administrativ/technisch, 100% => VZÄ: 1,000

Riß, Simone (w)

01.01.2011 - 23.06.2011 (174Tage), fremdfinanziert, befristet, wissenschaftlich, Nachwuchswiss., 70% => VZÄ: 0,334

Scheffel, Ulrike (w)

01.01.2011 - 31.12.2011 (365Tage), fremdfinanziert, befristet, administrativ/technisch, 24,9975% => VZÄ: 0,250

01.01.2011 - 31.12.2011 (365Tage), eigenfinanziert, befristet, administrativ/technisch, 50,0025% => VZÄ: 0,500

Scheuerl, Thomas (m)

01.01.2011 - 31.12.2011 (365Tage), fremdfinanziert, befristet, wissenschaftlich, Nachwuchswiss., 75% => VZÄ: 0,750

Sonntag, Bettina (w)

01.06.2011 - 31.12.2011 (214Tage), eigenfinanziert, befristet, wissenschaftlich, 100% => VZÄ: 0,586

Stadler, Peter (m)

01.01.2011 - 31.12.2011 (365Tage), eigenfinanziert, unbefristet, administrativ/technisch, 100% => VZÄ: 1,000

Steinkogler, Hildegard (w)

01.01.2011 - 31.12.2011 (365Tage), eigenfinanziert, unbefristet, sonstige, 100% => VZÄ: 1,000

Stelzer, Claus-Peter (m)

01.01.2011 - 31.12.2011 (365Tage), eigenfinanziert, befristet, wissenschaftlich, 100% => VZÄ: 1,000

Tibitanzl, Karin (w)

07.11.2011 - 31.12.2011 (55Tage), eigenfinanziert, befristet, administrativ/technisch, 25% => VZÄ: 0,038

Trummer, Philipp (m)

01.01.2011 - 31.12.2011 (365Tage), fremdfinanziert, befristet, wissenschaftlich, Nachwuchswiss., 75% => VZÄ: 0,750

Ullrich, Sabine (w)

01.01.2011 - 31.12.2011 (365Tage), eigenfinanziert, befristet, administrativ/technisch, 100% => VZÄ: 1,000

Wanzenböck, Josef (m)

01.01.2011 - 31.12.2011 (365Tage), eigenfinanziert, unbefristet, wissenschaftlich, 100% => VZÄ: 1,000

Wanzenböck, Sabine (w)

01.01.2011 - 31.12.2011 (365Tage), eigenfinanziert, unbefristet, administrativ/technisch, 100% => VZÄ: 1,000

Weisse, Thomas (m)

01.01.2011 - 31.12.2011 (365Tage), eigenfinanziert, unbefristet, wissenschaftlich, 100% => VZÄ: 1,000

Wiedlroither, Anneliese (w)

01.01.2011 - 31.12.2011 (365Tage), eigenfinanziert, unbefristet, wissenschaftlich, 50% => VZÄ: 0,500

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

1. B) Personalstand

Wimmer, Doris (w)

01.01.2011 - 31.01.2011 (31Tage), fremdfinanziert, befristet, administrativ/technisch, 100% => VZÄ: 0,085

Winkler, Gerold (m)

01.01.2011 - 31.12.2011 (365Tage), fremdfinanziert, unbefristet, wissenschaftlich, 100% => VZÄ: 1,000

Zopf, Michaela (w)

01.07.2011 - 30.09.2011 (92Tage), eigenfinanziert, befristet, wissenschaftlich, Nachwuchswiss., 20% => VZÄ: 0,050

1. C) weitere Mitarbeiter(innen)

Chen, Qin (w)

DissertantIn: 01.10.2011-31.12.2011

Finster, Martin (m)

MitarbeiterIn: 01.01.2011-31.12.2011

Keil, Florian (m)

DiplomandIn: 01.06.2011-31.12.2011

Luoto, Tomi (m)

Post-Doc: 01.01.2011-31.12.2011

Oberlercher, Thomas Mario (m)

DiplomandIn: 14.11.2011-31.12.2011

Pamminger-Lahnsteiner, Barbara (w)

DissertantIn: 01.01.2011-31.12.2011

Schober, Eva Maria (w)

DissertantIn: 01.01.2011-31.12.2011

Schärfl, Sophie (w)

DiplomandIn: 01.01.2011-31.12.2011

Simiyu, Benard Mucholwa (m)

DiplomandIn: 01.10.2011-31.12.2011

Straubinger, Nadja (w)

MitarbeiterIn: 01.01.2011-31.12.2011

2. Nachwuchswissenschafter(innen) und Qualifizierungen I: Nachwuchwissenschafter(innen)

	gesamt	m	w
Anzahl der **Nachwuchswissenschafter(innen)**	**17**	10	7
· Diplomand(inn)en	**3**	3	
· Dissertant(inn)en, Junior Scientists	**11**	6	5
· Postdocs	**3**	1	2
· Junior Group Leader o.ä.	**0**		

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

2. Nachwuchswissenschafter(innen) und Qualifizierungen I: Nachwuchwissenschafter(innen)

	gesamt	m	w
Finanzierung			
· fremdfinanziert	**16**	10	6
· eigenfinanziert	**1**		1

2. Liste

Blank, Stephan (m); Dissertant(in); fremdfinanziert

Deng, Li (w); Postdoc; fremdfinanziert

Ficker, Harald (m); Dissertant(in); fremdfinanziert

Finster, Martin (m); Dissertant(in); fremdfinanziert

Jayavel, Sridhar (m); Postdoc; fremdfinanziert

Keil, Florian (m); Diplomand(in); fremdfinanziert

Moser, Michael (m); Dissertant(in); fremdfinanziert

Oberlercher, Thomas Mario (m); Diplomand(in); fremdfinanziert

Ostermaier, Veronika (w); Dissertant(in); fremdfinanziert

Pamminger-Lahnsteiner, Barbara (w); Dissertant(in); fremdfinanziert

Riß, Simone (w); Postdoc; fremdfinanziert

Scheuerl, Thomas (m); Dissertant(in); fremdfinanziert

Schober, Eva Maria (w); Dissertant(in); fremdfinanziert

Simiyu, Benard Mucholwa (m); Diplomand(in); fremdfinanziert

Straubinger, Nadja (w); Dissertant(in); fremdfinanziert

Trummer, Philipp (m); Dissertant(in); fremdfinanziert

Zopf, Michaela (w); Junior Scientist; eigenfinanziert

3. Nachwuchswissenschafter(innen) und Qualifizierungen II: promovierte wissenschaftliche Mitarbeiter(innen) unter 33

	gesamt	m	w
Promovierte wissenschaftliche Mitarbeiter(innen) **unter 33 Jahren**	**5**	2	3

3. Liste

Jayavel, Sridhar (m) (NW)

Riß, Simone (w) (NW)

Moser, Michael (m) (NW)

Deng, Li (w) (NW)

Nevalainen, Liisa (w)

4. Nachwuchswissenschafter(innen) und Qualifizierungen III: Diplomabschlüsse, Promotionen und Habilitationen

	gesamt	m	w
Ausbildungs-/Qualifizierungsabschlüsse in Verbindung mit einem Forschungsprojekt:	**2**	1	1
· Dissertation	**2**	1	1

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

4. Liste

Moser, Michael (m) (NW), 05.04.2011, Dissertation: "Ecophysiological adaptations of freshwater protists to extremely acidic conditions"

Pamminger-Lahnsteiner, Barbara (w) (NW), 07.02.2011, Dissertation: "Conservation of natural biological resources in Austria: ecological-, morphological- and genetic analysis of European Whitefish (Coregonus lavaretus L. complex)"

5. Wissenschaftliche Mitarbeiter(innen) in Projektleitungsfunktion

	gesamt	m	w
Anzahl der wissenschaften Mitarbeiter(innen) mit Leitungsfunktionen in Forschungsprojekten (zum Stichtag Ultimo)	**9**	7	2
· eigenfinanziert	**8**	6	2
- davon unbefristete Anstellungsverhältnisse	**5**	5	
· fremdfinanziert	**1**	1	

5. Liste

Christiansen, Guntram (m); eigenfinanziert; unbefristet

(Einzelforschungsprojekt): Polyzyklischer Peptid Phagen Display; Projektleitung; 01.02.2011 - 31.01.2013

Hahn, Martin (m); eigenfinanziert; unbefristet

(Bündelprojekt): Ecological diversification within the subspecies Polynucleobacter necessarius ssp. asymbioticus and environmental ecotype sorting, ESF project FREDI (FWF I 482-B09); Projektleitung; 01.06.2010 - 31.05.2013

Kurmayer, Rainer (m); eigenfinanziert; unbefristet

(Dissertationsprojekt): Assessment of planktonic diversity in alpine lakes by means of ultra-deep sequencing; Projektleitung; 15.11.2010 - 31.10.2013
(Dissertationsprojekt): Cyanobacteria population development and regulation of toxin production in a mesotrophic deep lake in the Alps; Projektleitung; 01.05.2010 - 31.03.2013
(Bündelprojekt): Global warming threatens biodiversity in (ultra)-sensitive high Alpine lakes: an assessment of past, present and future scenarios ; Projektmanagement; 15.01.2009 -
(Dissertationsprojekt): Molecular Ecology and Physiology of Cyanobacteria in the Ecosystem of Freshwater and Sediments; Projektleitung; 01.10.2011 - 30.09.2013

Lamatsch, Dunja (w); eigenfinanziert; befristet

(Einzelforschungsprojekt): Gynogenesis as a dispersal strategy – parasite communities vs. genetic structure of clonal stocks of invasive prussian carp (Carassius gibelio) in Finland, Germany and Austria; Projektleitung; 01.07.2008 - 31.12.2012

Sonntag, Bettina (w); eigenfinanziert; befristet

(Einzelforschungsprojekt): Ultraviolet radiation effects on plaktonic freshwater ciliates: an assessment of photoprotection and repair strategies; Projektleitung; 01.02.2009 - 31.01.2013

Stelzer, Claus-Peter (m); eigenfinanziert; befristet

(Einzelforschungsprojekt): Evolution of asexuality in experimental rotifer populations; Projektleitung; 01.01.2007 -

Wanzenböck, Josef (m); eigenfinanziert; unbefristet

(Einzelforschungsprojekt): Adaptation of Active Fisheries Methods: Pair trawling; Projektleitung; 01.04.2009 - 31.12.2011
(Dissertationsprojekt): Demographic modeling of whitefish with reference to toxins from cyanobacteria and climate change; Projektleitung; 01.01.2010 -
(Bündelprojekt): Risk Analysis of Direct and Indirect Climate effects on deep Austrian Lake Ecosystems; Projektleitung; 01.01.2010 - 31.12.2012

Weisse, Thomas (m); eigenfinanziert; unbefristet

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

5. Liste

Weisse, Thomas (m); eigenfinanziert; unbefristet

((allgemeines) Forschungsprojekt der Forschungseinrichtung): Allgemeine Limnologische Grundlagenforschung; Projektleitung; 01.04.1998 - 31.12.2012
(Bündelprojekt): Global warming threatens biodiversity in (ultra)-sensitive high Alpine lakes: an assessment of past, present and future scenarios ; Projektleitung; 15.01.2009 -
(Einzelforschungsprojekt): Morphology and ecology of endemic ciliates from bromeliads; Projektleitung; 15.05.2009 - 30.05.2013

Winkler, Gerold (m); fremdfinanziert; unbefristet

(Bündelprojekt): Development of Educational and Research CAPacity in Eastern Africa for the Sustainable Management of AQUAatic Ecosystems; Projektleitung; 01.10.2009 - 30.09.2012

6. Weiterbildungsmaßnahmen für Mitarbeiter(innen) I: Anzahl der Teilnehmenden

	gesamt	m	w
Anzahl der **Mitarbeiter(innen) mit Teilnahme an Weiterbildungsmaßnahmen**	**3**	2	1

7. Weiterbildungsmaßnahmen für Mitarbeiter(innen) II: Anzahl der Maßnahmen

	gesamt	m	w
Anzahl der **Besuche von Weiterbildungsmaßnahmen**	**8**	4	4

7. Liste

Mayr, Stefan (m)

FRBR (Functional Requirements for Bibliographic Records) Workshop

Ziel: Fachliche Weiterbildung, Zeitraum: 15.11.2011 - 15.11.2011, frauenspezifisch: nein

Stelzer, Claus-Peter (m)

Projekte managen / Workshopreihe "Projektkompetenzen entwickeln" - Teil 1

Ziel: Fachliche Weiterbildung, Zeitraum: 07.11.2011 - 07.11.2011, frauenspezifisch: nein

Wirksamkeit im Projektteam

Ziel: Sonstige, Zeitraum: 21.11.2011 - 21.11.2011, frauenspezifisch: nein

Wirksamkeit im Projektteam / Workshopreihe "Projektkompetenzen entwickeln" - Teil 2

Ziel: Fachliche Weiterbildung, Zeitraum: 21.11.2011 - 21.11.2011, frauenspezifisch: nein

Wanzenböck, Sabine (w)

FRBR (Functional Requirements for Bibliographic Records) Workshop

Ziel: Fachliche Weiterbildung, Zeitraum: 15.11.2011 - 15.11.2011, frauenspezifisch: nein

Katalogisierung in ALEPH: Grundschulung

Ziel: Fachliche Weiterbildung, Zeitraum: 14.02.2011 - 18.02.2011, frauenspezifisch: nein

Sacherschließung

Ziel: Fachliche Weiterbildung, Zeitraum: 04.03.2011 - 04.03.2011, frauenspezifisch: nein

18. Österreichischer Fundraising Kongress Masterclass

Ziel: Fachliche Weiterbildung, Zeitraum: 12.10.2011 - 12.10.2011, frauenspezifisch: nein

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

Strukturpotenzial

8. Nutzfläche der Forschungseinrichtung

	gesamt
Gesamtfläche in m²	626.81
davon **Nutzungsart:**	
· **Verkehrserschließung**	13.7
· **Büros und Sitzungsräume**	324.11
· **Werkstätten und Labors**	222.8
· **Technikräume**	0
· **Lager und Archive**	36
· **Unterrichtsräume und Bibliotheken**	0
· **Veranstaltungsräume**	0
· **Sonstige Raumnutzungen** (z.B. Wohn- und Aufenthaltsräume, medizinisch ausgestattete Räume etc.)	30.2

Beziehungspotenzial (Vernetzung, Mobilität und Attraktivität)

9. Aufenthalte im In- und Ausland

	gesamt	m	w
Anzahl der **Aufenthalte im In- u. Ausland** der wissenschaftlichen Mitarbeiter(innen)	**41**	24	17
davon im Rahmen des **Wissenschafteraustauschprogramms** der ÖAW	**0**		
davon **Nachwuchswissenschafter(innen)**	**4**	1	3
Zweck			
· sonstiger Aufenthalt mit wissenschaftlichem Bezug	**15**	13	2
· wiss. Vortragstätigkeit	**8**	7	1
· Weiterbildung	**6**	1	5
· wiss. Beratungstätigkeit	**2**	2	
· Forschungstätigkeit im Rahmen eines ÖAW-Forschungsprojekts	**10**	1	9
Aufenthaltsort			
· außerhalb EU	**10**	6	4
· im Inland	**20**	13	7
· innerhalb EU (ohne Österreich)	**11**	5	6
Finanzierung			
· intern	**15**	10	5
· extern	**19**	14	5
· misch	**7**		7
Dauer			
· <= 1 Tag	**10**	7	3
· > 1 <= 5 Tage	**21**	11	10
· > 5 Tage	**10**	6	4

9. Liste

außerhalb EU

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

9. Liste

außerhalb EU

Forschungstätigkeit im Rahmen eines ÖAW-Forschungsprojekts

Deng, Li (w) (NW)

(07.12.2010 - 20.03.2011)

Besuchte Institution: University of Arizona, Tucson; Land: UNITED STATES; Finanzierung: extern

(17.05.2011 - 01.07.2011)

Besuchte Institution: University of Arizona,Tucson; Land: UNITED STATES; Finanzierung: extern

Kurmayer, Rainer (m)

Betreuung Diplomstudent (24.10.2011 - 02.11.2011)

Besuchte Institution: Egerton University, Egerton; Land: KENYA; Finanzierung: extern

Lamatsch, Dunja (w)

(26.06.2011 - 12.07.2011)

Besuchte Institution: EAWAG, Zürich; Land: SWITZERLAND; Finanzierung: misch

(01.12.2011 - 15.12.2011)

Besuchte Institution: ; Land: SWITZERLAND; Finanzierung: misch

sonstiger Aufenthalt mit wissenschaftlichem Bezug

Christiansen, Guntram (m)

(26.06.2011 - 01.07.2011)

Besuchte Institution: Palexo Congress Center, Geneva; Land: SWITZERLAND; Finanzierung: intern

Kurmayer, Rainer (m)

(26.06.2011 - 01.07.2011)

Besuchte Institution: Palexo Congress Center, Geneva; Land: SWITZERLAND; Finanzierung: intern

Winkler, Gerold (m)

Eröffnung EGU-Labors und Water Resource Centre (07.02.2011 - 18.02.2011)

Besuchte Institution: Egerton University, Egerton; Land: KENYA; Finanzierung: extern

wiss. Vortragstätigkeit

Stelzer, Claus-Peter (m)

(30.05.2011 - 31.05.2011)

Besuchte Institution: University of Fribourg; Land: SWITZERLAND; Finanzierung: extern

Weisse, Thomas (m)

Wiss. Fachkongress (12.02.2011 - 19.02.2011)

Besuchte Institution: ASLO Meeting; Land: PUERTO RICO; Finanzierung: extern

im Inland

Weiterbildung

Wanzenböck, Sabine (w)

Katalogisierung in ALEPH (14.02.2011 - 18.02.2011)

Besuchte Institution: ÖAW-Bibliothek, Wien; Land: AUSTRIA; Finanzierung: intern

* Einführung in die verbale Sacherschließung nach RSWK
  * Einführung in klassifikatorische Sacherschließung (Basisklassifikation, Dewey Decimal Classification)
  * Schwerpunkt: korrekte Nutzung von Fremddatensätzen (04.03.2011 - 04.03.2011)

Besuchte Institution: ÖAW-Bibliothek, Wien; Land: AUSTRIA; Finanzierung: intern

ITG-Seminar: Was macht einen Antrag erfolgreich? Tipps und Tricks für die Einreichung von Projekten in das 7. Rahmenprogramm der EU. (12.04.2011 - 12.04.2011)

Besuchte Institution: Universität Salzburg; Land: AUSTRIA; Finanzierung: intern

18. Österreichischer Fundraising Kongress (10.10.2011 - 11.10.2011)

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

9. Liste

im Inland

Weiterbildung

Wanzenböck, Sabine (w)

Besuchte Institution: Europahaus, Vienna; Land: AUSTRIA; Finanzierung: extern

18. Österreichischer Fundraising Kongress, Masterclass (12.10.2011 - 12.10.2011)

Besuchte Institution: Europahaus, Austria; Land: AUSTRIA; Finanzierung: extern

Winkler, Gerold (m)

Projektmanagement in der Wissenschaft (08.06.2011 - 08.06.2011)

Besuchte Institution: Austrian Academy of Science, Vienna; Land: AUSTRIA; Finanzierung: extern

sonstiger Aufenthalt mit wissenschaftlichem Bezug

Hebein, Martina (w)

(05.07.2011 - 08.07.2011)

Besuchte Institution: University of Salzburg, Institute for Geographic Information science (AAS), Salzburg; Land: AUSTRIA; Finanzierung: intern

Kurmayer, Rainer (m)

(21.09.2011 - 22.09.2011)

Besuchte Institution: Wilhelm Exnerhaus der Universität für Bodenkultur Wien, 1190 Wien, Peter Jordanstraße 82, EH03; Land: AUSTRIA; Finanzierung: intern

Trummer, Philipp (m) (NW)

(21.09.2011 - 22.09.2011)

Besuchte Institution: Wilhelm Exnerhaus der Universität für Bodenkultur Wien, 1190 Wien, Peter Jordanstraße 82, EH03; Land: AUSTRIA; Finanzierung: intern

Weisse, Thomas (m)

Mitarbeiterevaluierung (04.05.2011 - 04.05.2011)

Besuchte Institution: ÖAW; Land: AUSTRIA; Finanzierung: intern

Teiln. Presidential Dinner u. Feirl. Sitzung der ÖAW (10.05.2011 - 11.05.2011)

Besuchte Institution: ÖAW; Land: AUSTRIA; Finanzierung: intern

Winkler, Gerold (m)

ACA Conference 2011: The excellence imperative. World-class aspirations and real-world needs (22.05.2011 - 24.05.2011)

Besuchte Institution: Vienna; Land: AUSTRIA; Finanzierung: extern

21. ÖAD Hochschultagung (17.11.2011 - 18.11.2011)

Besuchte Institution: Austrian Academy of Sciences, Vienna; Land: AUSTRIA; Finanzierung: extern

50 Jahre Österreichischer Austauschdienst, Festtagung (17.11.2011 - 17.11.2011)

Besuchte Institution: Austrian Academy of Sciences, Vienna; Land: AUSTRIA; Finanzierung: extern

wiss. Beratungstätigkeit

Weisse, Thomas (m)

Workshop Evaluation WassCluster Lunz (28.02.2011 - 28.02.2011)

Besuchte Institution: Universität für Bodenkultur, Wien; Land: AUSTRIA; Finanzierung: intern

wiss. Vortragstätigkeit

Kurmayer, Rainer (m)

(07.10.2011 - 07.10.2011)

Besuchte Institution: University of Vienna, UZAI, Althanstrasse 14; Land: AUSTRIA; Finanzierung: intern

(19.12.2011 - 21.12.2011)

Besuchte Institution: University of Vienna, UZAI, Althanstrasse 14; Land: AUSTRIA; Finanzierung: intern

Lamatsch, Dunja (w)

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

9. Liste

im Inland

wiss. Vortragstätigkeit

Lamatsch, Dunja (w)

(25.07.2011 - 28.07.2011)

Besuchte Institution: Karl-Franzens-University of Graz
Institute of Earth Sciences
Department of Geology & Palaeontology; Land: AUSTRIA; Finanzierung: intern

Weisse, Thomas (m)

Eröffnungsveranstaltung Dept. Limnologie Univ. Wien (25.03.2011 - 25.03.2011)

Besuchte Institution: Univ. Wien; Land: AUSTRIA; Finanzierung: extern

Vortrag im Rahmen IPGL (27.06.2011 - 27.06.2011)

Besuchte Institution: Wasserkluster Lunz, NÖ; Land: AUSTRIA; Finanzierung: extern

innerhalb EU (ohne Österreich)

Forschungstätigkeit im Rahmen eines ÖAW-Forschungsprojekts

Lamatsch, Dunja (w)

(06.04.2011 - 08.04.2011)

Besuchte Institution: Institut für Physiologische Chemie I, Biozentrum der Universität Würzburg; Land: GERMANY; Finanzierung: misch

(28.04.2011 - 02.05.2011)

Besuchte Institution: Institut für Physiologische Chemie I, Biozentrum der Universität Würzburg; Land: GERMANY; Finanzierung: misch

(08.06.2011 - 11.06.2011)

Besuchte Institution: Institut für Physiologische Chemie I, Biozentrum der Universität Würzburg; Land: GERMANY; Finanzierung: misch

(18.10.2011 - 22.10.2011)

Besuchte Institution: Institut für Humangenetik der LMU München; Land: GERMANY; Finanzierung: misch

(18.12.2011 - 21.12.2011)

Besuchte Institution: Institut für Physiologische Chemie I, Biozentrum der Universität Würzburg; Land: GERMANY; Finanzierung: misch

sonstiger Aufenthalt mit wissenschaftlichem Bezug

Christiansen, Guntram (m)

(11.04.2011 - 15.04.2011)

Besuchte Institution: University of Hamburg, Dep. Chemistry, Hanburg; Land: GERMANY; Finanzierung: extern

Deng, Li (w) (NW)

(28.08.2011 - 01.09.2011)

Besuchte Institution: Naantali Spa Hotel, Naantali, Turku; Land: FINLAND; Finanzierung: extern

Kurmayer, Rainer (m)

(28.08.2011 - 01.09.2011)

Besuchte Institution: Naantali Spa Hotel, Naantali, Turku; Land: FINLAND; Finanzierung: extern

Winkler, Gerold (m)

MSc Prüfungen, CAPAQUA Projektbesprechung (18.04.2011 - 20.04.2011)

Besuchte Institution: UNESCO-IHE, Delft; Land: NETHERLANDS; Finanzierung: extern

wiss. Beratungstätigkeit

Weisse, Thomas (m)

Sitzung des Wiss. Beirates des IGB Berlin (22.08.2011 - 24.08.2011)

Besuchte Institution: Leibniz-Institut für Gewässerökologie und Binnenfischerei (IGB) Berlin; Land: GERMANY; Finanzierung: extern

wiss. Vortragstätigkeit

Weisse, Thomas (m)

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

9. Liste

innerhalb EU (ohne Österreich)

wiss. Vortragstätigkeit

Weisse, Thomas (m)

Wiss. Fachkongress (24.07.2011 - 29.07.2011)

Besuchte Institution: ECOP VI Congress, Institut für Pflanzenphysiologie der FU Berlin, Berlin; Land: GERMANY; Finanzierung: intern

10. Tagungsteilnahmen von wissenschaftlichen Mitarbeiter(inne)n

	gesamt	m	w
Anzahl der **Teilnahmen an wissenschaftlichen Tagungen**	**35**	20	15
davon Teilnahmen von **Nachwuchswissenschafter(innen)**	**6**	3	3
davon auf internationalen	**22**	12	10
Tagungsort			
· im Inland	**18**	10	8
· innerhalb EU (ohne Österreich)	**10**	5	5
· außerhalb EU	**7**	5	2

10. Liste

Kongress/Symposium/Konferenz/Tagung

111th General Meeting of the American Society for Microbiology (21.05.2011 - 24.05.2011)

Deng, Li (w) (NW), ReferentIn

11th International symposium on the biology and management of coregonid fishes (26.09.2011 - 30.09.2011)

Ficker, Harald (m) (NW), ReferentIn

Wanzenböck, Josef (m), ReferentIn, TeilnehmerIn

12. Österreichischer Klimatag (21.09.2011 - 22.09.2011)

Kurmayer, Rainer (m), ReferentIn, TeilnehmerIn

13th Congress of the European Society for Evolutionary Biology (ESEB) (20.08.2011 - 25.08.2011)

Lamatsch, Dunja (w), PosterpräsentatorIn

4th Congress of European Microbiologists, FEMS (26.06.2011 - 30.06.2011)

Christiansen, Guntram (m), ReferentIn, TeilnehmerIn

Deng, Li (w) (NW), ReferentIn

Kurmayer, Rainer (m), ReferentIn, TeilnehmerIn

7th Ostracodologists´Meeting (25.07.2011 - 28.07.2011)

Lamatsch, Dunja (w), PosterpräsentatorIn

8th European Workshop on Molecular Biology of Cyanobacteria (28.08.2011 - 01.09.2011)

Deng, Li (w) (NW), ReferentIn

Kurmayer, Rainer (m), ReferentIn, TeilnehmerIn

8th National Geological Colloquium (24.10.2011 - 26.10.2011)

Luoto, Tomi (m), ReferentIn

Nevalainen, Liisa (w), ReferentIn

ASLO Aquatic Sciences Meeting (13.02.2011 - 18.02.2011)

Weisse, Thomas (m), ReferentIn

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

10. Liste

Kongress/Symposium/Konferenz/Tagung

European Geosciences Union General Assembly 2011, Vienna, Austria (03.04.2011 - 08.04.2011)

Luoto, Tomi (m), ReferentIn

Nevalainen, Liisa (w), ReferentIn

Geoinformationsforum Salzburg & Symposium und Ausstellung Angewandte Geoinformatik (05.07.2011 - 08.07.2011)

Hebein, Martina (w), PosterpräsentatorIn

IDK Sitzung der ÖAW (28.01.2011 - 28.01.2011)

Weisse, Thomas (m), TeilnehmerIn

International Symposium Cladocera in Italy, 2011 (02.10.2011 - 08.10.2011)

Nevalainen, Liisa (w), ReferentIn

Klimafolgenforschung in Österreich: Aktuelle Projekte im Überblick (17.05.2011 - 18.05.2011)

Wanzenböck, Josef (m), TeilnehmerIn

Wanzenböck, Sabine (w), TeilnehmerIn

VI European Congress of Protistology (ECOP) (25.07.2011 - 29.07.2011)

Sonntag, Bettina (w), Session Chair

Weisse, Thomas (m), ReferentIn, TeilnehmerIn

Public Lecture

Ecology and Evolution Seminar (31.05.2011 - 31.05.2011)

Stelzer, Claus-Peter (m), ReferentIn

Spezialvorlesung

Dissertationsvorstellung (18.01.2011 - 19.01.2011)

Ficker, Harald (m) (NW), ReferentIn, TeilnehmerIn

Spezialvorlesung, Gastvorlesung

Dissertationsvorstellung (12.03.2011 - 12.03.2011)

Trummer, Philipp (m) (NW), ReferentIn, TeilnehmerIn

Distinguished Lecturer Series (06.05.2011 - 06.05.2011)

Hahn, Martin (m), ReferentIn, TeilnehmerIn

Seminar (12.04.2011 - 12.04.2011)

Christiansen, Guntram (m), ReferentIn, TeilnehmerIn

Workshop/Seminar

Functional Requirements for Bibliographic Records (FRBR) - Workshop (15.11.2011 - 15.11.2011)

Mayr, Stefan (m), TeilnehmerIn

Wanzenböck, Sabine (w), TeilnehmerIn

ITG-Salzburg: Was macht einen Antrag erfolgreich? (11.04.2011 - 11.04.2011)

Lamatsch, Dunja (w), TeilnehmerIn

Wanzenböck, Josef (m), ReferentIn

Wanzenböck, Sabine (w), TeilnehmerIn

Katalogisierung in Aleph: Grundschulung (14.02.2011 - 18.02.2011)

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

10. Liste

Workshop/Seminar

Katalogisierung in Aleph: Grundschulung (14.02.2011 - 18.02.2011)

Wanzenböck, Sabine (w), TeilnehmerIn

Kolloquiumsreihe "Aktuelle Probleme und Ergebnisse der Mikrobiellen Ökologie und Physiologie" (01.10.2010 - 15.02.2011)

Hahn, Martin (m), ReferentIn, TeilnehmerIn

11. Wissenschaftliche Gäste aus dem Ausland

	gesamt	m	w
Anzahl der wissenschaftlich tätigen Gäste aus dem Ausland	**1**	1	
davon im Rahmen des **Wissenschafteraustauschprogramms** der ÖAW	**0**		
Aufenthaltszweck			
· wissenschaftliche Vortragstätigkeit	**1**	1	
Herkunftsort			
· außerhalb EU	**1**	1	
Finanzierung			
· intern	**1**	1	
Dauer			
· <= 1 Tag	**1**	1	

11. Liste

Prof. Dr. Shinichi Nakagawa, m; Herkunft: University of Otago, New Zealand, NEW ZEALAND

Aufenthaltsdauer: 13.10.2011 - 13.10.2011; Finanzierung: Eigenmittel der Forschungseinrichtung; Zweck: wissenschaftliche Vortragstätigkeit

12. Externe Funktionen im Rahmen wissenschaftlicher Qualitätssicherung I: Funktionen bei Zeitschriften/Buchreihen

	gesamt	m	w
Anzahl der **Funktionen,** die wissenschaftliche Mitarbeiter(innen) **für wissenschaftliche Zeitschriften und Buchreihen ausüben**	**60**	51	9
davon in **indizierten Publikationsorganen**	**58**	49	9
davon als			
· Editorial Board Member, Subject/Associate Editor	**6**	6	
· Herausgeber(in), Editor-in-chief	**1**	1	
· Gutachter (Referee, Reviewer)	**52**	43	9
· Mitglied eines Editorial Advisory Board	**1**	1	

12. Liste

Hahn, Martin (m)

Gutachter (Referee, Reviewer); Bezeichnung: "AQUATIC ECOLOGY"; angeführt in Index: ja

Editorial Board Member, Subject/Associate Editor; Bezeichnung: "APPLIED AND ENVIRONMENTAL MICROBIOLOGY"; angeführt in Index: ja

Gutachter (Referee, Reviewer); Bezeichnung: "The ISME Journal"; angeführt in Index: nein

Gutachter (Referee, Reviewer); Bezeichnung: "JOURNAL OF GENERAL AND APPLIED MICROBIOLOGY"; angeführt in Index: ja

Gutachter (Referee, Reviewer); Bezeichnung: "FEMS MICROBIOLOGY ECOLOGY"; angeführt in Index: ja

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

12. Liste

Hahn, Martin (m)

Gutachter (Referee, Reviewer); Bezeichnung: "ENVIRONMENTAL MICROBIOLOGY"; angeführt in Index: ja

Gutachter (Referee, Reviewer); Bezeichnung: "JOURNAL OF PLANKTON RESEARCH"; angeführt in Index: ja

Gutachter (Referee, Reviewer); Bezeichnung: "APPLIED AND ENVIRONMENTAL MICROBIOLOGY"; angeführt in Index: ja

Editorial Board Member, Subject/Associate Editor; Bezeichnung: "ENVIRONMENTAL MICROBIOLOGY"; angeführt in Index: ja

Gutachter (Referee, Reviewer); Bezeichnung: "MICROBIAL ECOLOGY"; angeführt in Index: ja

Gutachter (Referee, Reviewer); Bezeichnung: "INTERNATIONAL JOURNAL OF SYSTEMATIC AND EVOLUTIONARY MICROBIOLOGY"; angeführt in Index: ja

Kurmayer, Rainer (m)

Gutachter (Referee, Reviewer); Bezeichnung: "HARMFUL ALGAE"; angeführt in Index: ja

Gutachter (Referee, Reviewer); Bezeichnung: "MARINE BIOLOGY"; angeführt in Index: ja

Gutachter (Referee, Reviewer); Bezeichnung: "ANNALES DE LIMNOLOGIE-INTERNATIONAL JOURNAL OF LIMNOLOGY"; angeführt in Index: ja

Gutachter (Referee, Reviewer); Bezeichnung: "ENVIRONMENTAL POLLUTION"; angeführt in Index: ja

Gutachter (Referee, Reviewer); Bezeichnung: "FEBS JOURNAL"; angeführt in Index: ja

Gutachter (Referee, Reviewer); Bezeichnung: "INTERNATIONAL REVIEW OF HYDROBIOLOGY"; angeführt in Index: ja

Gutachter (Referee, Reviewer); Bezeichnung: "APPLIED AND ENVIRONMENTAL MICROBIOLOGY"; angeführt in Index: ja

Gutachter (Referee, Reviewer); Bezeichnung: "WATER RESEARCH"; angeführt in Index: ja

Gutachter (Referee, Reviewer); Bezeichnung: "ENVIRONMENTAL MICROBIOLOGY"; angeführt in Index: ja

Gutachter (Referee, Reviewer); Bezeichnung: "FEMS MICROBIOLOGY REVIEWS"; angeführt in Index: ja

Gutachter (Referee, Reviewer); Bezeichnung: "HYDROBIOLOGIA"; angeführt in Index: ja

Gutachter (Referee, Reviewer); Bezeichnung: "FEMS MICROBIOLOGY ECOLOGY"; angeführt in Index: ja

Gutachter (Referee, Reviewer); Bezeichnung: "JOURNAL OF APPLIED MICROBIOLOGY"; angeführt in Index: ja

Editorial Board Member, Subject/Associate Editor; Bezeichnung: "FUNDAMENTAL AND APPLIED LIMNOLOGY"; angeführt in Index: ja

Lamatsch, Dunja (w)

Gutachter (Referee, Reviewer); Bezeichnung: "HYDROBIOLOGIA"; angeführt in Index: ja

Gutachter (Referee, Reviewer); Bezeichnung: "BIOLOGICAL JOURNAL OF THE LINNEAN SOCIETY"; angeführt in Index: ja

Gutachter (Referee, Reviewer); Bezeichnung: "BMC EVOLUTIONARY BIOLOGY"; angeführt in Index: ja

Gutachter (Referee, Reviewer); Bezeichnung: "HEREDITY"; angeführt in Index: ja

Gutachter (Referee, Reviewer); Bezeichnung: "BMC GENETICS"; angeführt in Index: ja

Sonntag, Bettina (w)

Gutachter (Referee, Reviewer); Bezeichnung: "European Journal of Protistology"; angeführt in Index: ja

Gutachter (Referee, Reviewer); Bezeichnung: "Freshwater Biology"; angeführt in Index: ja

Gutachter (Referee, Reviewer); Bezeichnung: "Microbial Ecology"; angeführt in Index: ja

Gutachter (Referee, Reviewer); Bezeichnung: "Biodiversity and Conservation"; angeführt in Index: ja

Stelzer, Claus-Peter (m)

Gutachter (Referee, Reviewer); Bezeichnung: "BIOLOGICAL JOURNAL OF THE LINNEAN SOCIETY"; angeführt in Index: ja

Gutachter (Referee, Reviewer); Bezeichnung: "LIMNOLOGY AND OCEANOGRAPHY-METHODS"; angeführt in Index: ja

Gutachter (Referee, Reviewer); Bezeichnung: "PLOS BIOLOGY"; angeführt in Index: ja

Gutachter (Referee, Reviewer); Bezeichnung: "HYDROBIOLOGIA"; angeführt in Index: ja

Gutachter (Referee, Reviewer); Bezeichnung: "LIMNOLOGY AND OCEANOGRAPHY"; angeführt in Index: ja

Gutachter (Referee, Reviewer); Bezeichnung: "AQUATIC ECOLOGY"; angeführt in Index: ja

Gutachter (Referee, Reviewer); Bezeichnung: "BMC EVOLUTIONARY BIOLOGY"; angeführt in Index: ja

Gutachter (Referee, Reviewer); Bezeichnung: "JOURNAL OF PLANKTON RESEARCH"; angeführt in Index: ja

Gutachter (Referee, Reviewer); Bezeichnung: "JOURNAL OF EXPERIMENTAL MARINE BIOLOGY AND ECOLOGY"; angeführt in Index: ja

Wanzenböck, Josef (m)

Gutachter (Referee, Reviewer); Bezeichnung: "AQUATIC CONSERVATION-MARINE AND FRESHWATER ECOSYSTEMS"; angeführt in Index: ja

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

12. Liste

Wanzenböck, Josef (m)

Gutachter (Referee, Reviewer); Bezeichnung: "JOURNAL OF FISH BIOLOGY"; angeführt in Index: ja

Gutachter (Referee, Reviewer); Bezeichnung: "INTERNATIONAL REVIEW OF HYDROBIOLOGY"; angeführt in Index: ja

Gutachter (Referee, Reviewer); Bezeichnung: "HYDROBIOLOGIA"; angeführt in Index: ja

Weisse, Thomas (m)

Gutachter (Referee, Reviewer); Bezeichnung: "MOLECULAR ECOLOGY"; angeführt in Index: ja

Editorial Board Member, Subject/Associate Editor; Bezeichnung: "LIMNOLOGICA"; angeführt in Index: ja

Gutachter (Referee, Reviewer); Bezeichnung: "MARINE ENVIRONMENTAL RESEARCH"; angeführt in Index: ja

Herausgeber(in), Editor-in-chief; Bezeichnung: "EUROPEAN JOURNAL OF PROTISTOLOGY"; angeführt in Index: ja

Gutachter (Referee, Reviewer); Bezeichnung: "JOURNAL OF PLANKTON RESEARCH"; angeführt in Index: ja

Editorial Board Member, Subject/Associate Editor; Bezeichnung: "Protozoological Monographs"; angeführt in Index: nein

Gutachter (Referee, Reviewer); Bezeichnung: "EUROPEAN JOURNAL OF SOIL BIOLOGY"; angeführt in Index: ja

Editorial Board Member, Subject/Associate Editor; Bezeichnung: "FRESHWATER BIOLOGY"; angeführt in Index: ja

Gutachter (Referee, Reviewer); Bezeichnung: "Aquatic Ecosystem Health & Management"; angeführt in Index: ja

Gutachter (Referee, Reviewer); Bezeichnung: "JOURNAL OF EUKARYOTIC MICROBIOLOGY"; angeführt in Index: ja

Mitglied eines Editorial Advisory Board; Bezeichnung: "FRESHWATER BIOLOGY"; angeführt in Index: ja

Gutachter (Referee, Reviewer); Bezeichnung: "AQUATIC MICROBIAL ECOLOGY"; angeführt in Index: ja

Gutachter (Referee, Reviewer); Bezeichnung: "ENVIRONMENTAL MICROBIOLOGY"; angeführt in Index: ja

13. Externe Funktionen im Rahmen wissenschaftlicher Qualitätssicherung II: Gutachter(innen) oder Evaluator(inn)en für externe Forschungseinrichtungen oder -programme

	gesamt	m	w
Anzahl der Funktionen wissenschaftlicher Mitarbeiter(innen) als Gutachter(innen) oder Evaluator(inn)en für externe Forschungseinrichtungen oder -programme	**9**	9	
davon externe Einheiten			
· im Inland	**1**	1	
· innerhalb EU (ohne Österreich)	**6**	6	
· außerhalb EU	**2**	2	

13. Liste

Hahn, Martin (m)

Deutsche Forschungsgemeinschaft (DFG), Bonn, GERMANY, Funktionsdauer: 01.01.2009 -

Weisse, Thomas (m)

National Science Foundation (NSF), Arlington, UNITED STATES, Funktionsdauer: 01.04.1998 -

Swiss National Science Foundation, Bern, SWITZERLAND, Funktionsdauer: 15.05.2011 -

WasserKluster Lunz GmbH, Lunz am See (NÖ), AUSTRIA, Funktionsdauer: 05.03.2007 -

Deutsche Forschungsgemeinschaft (DFG), Bonn, GERMANY, Funktionsdauer: 01.01.2000 -

Leibniz-Institute of Freshwater Ecology and Inland Fisheries, Berlin, GERMANY, Funktionsdauer: 01.12.2004 - 30.11.2012

The Danish Council for Independent Research (DFF), Kopenhagen, DENMARK, Funktionsdauer: 01.04.2011 -

Estonian Science Foundation, Tallinn, ESTONIA, Funktionsdauer: 19.10.2007 -

Natural Environment Research Council, Swindon, Wiltshire, UNITED KINGDOM, Funktionsdauer: 15.05.1998 -

Leistungen der Forschungsträgereinrichtung (Forschungsportfolio, Projektstrukturen

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

und -kooperationen, Drittmittelerwerb, Resultate, Dissemination wissenschaftlicher Erkenntnis)

14. Forschungsportfolio

	gesamt
Anzahl der laufenden Forschungsprojekte	25
· davon Forschungsschwerpunkte, in denen Einzelprojekte zusammengefasst sind	0
· drittfinanziert	21
· eigenfinanziert	4
interdisziplinär	28 %
· Langfristprojekt	56 %
· Mittelfristprojekt	40 %
· Kurzfristprojekt	4 %
Projekte mit externen Partnern	15
· davon EU-Projekte	0
· Grundlagenforschung	92 %
· Angewandte Forschung	4 %
· Experimentelle Entwicklung	4 %
· Förderung der Erforschung der Erde, der Meere, der Atmosphäre und des Weltraumes	88 %
· Förderung des Unterrichts- und Bildungswesens	4 %
· Förderung der allgemeinen Erweiterung des Wissens	8 %

14. Liste

(allgemeines) Forschungsprojekt der Forschungseinrichtung

Allgemeine Limnologische Grundlagenforschung

Laufzeit (Istdaten): 01.04.1998 - ; Laufzeit (Solldaten): 01.04.1998 - 31.12.2012; Sozio-ökonomische Zielsetzung: Förderung der Erforschung der Erde, der Meere, der Atmosphäre und des Weltraumes; Forschungsart: Grundlagenforschung; Finanzierung: eigenfinanziert; Interdisziplinarität: ja ; Fristigkeit: Langfristprojekt; Anzahl der Kooperationspartner: 5

Kooperations-Partner: Fachbereich Organismische Biologie; Partnerschaft
Kooperations-Partner: Institut für Ökologie, Universität Innsbruck; Partnerschaft
Kooperations-Partner: School of Biological Sciences; Partnerschaft
Kooperations-Partner: Universität Innsbruck; Partnerschaft
Kooperations-Partner: Universität, Wien, Fakultät für Lebenswissenschaften, Department für Limnologie und Hydrobotanik; Partnerschaft

Bündelprojekt

Development of Educational and Research CAPacity in Eastern Africa for the Sustainable Management of AQUAatic Ecosystems

Laufzeit (Istdaten): 01.10.2009 - ; Laufzeit (Solldaten): 01.10.2009 - 30.09.2012; Sozio-ökonomische Zielsetzung: Förderung des Unterrichts- und Bildungswesens; Forschungsart: Angewandte Forschung; Finanzierung: drittfinanziert; Interdisziplinarität: nein ; Fristigkeit: Mittelfristprojekt; Anzahl der Kooperationspartner: 4

Kooperations-Partner: Egerton University; Partnerschaft
Kooperations-Partner: Fisheries Research Institute; Partnerschaft
Kooperations-Partner: Makerere University; Partnerschaft
Kooperations-Partner: UNESCO-IHE, Institute for Water Education; Projektleitung

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

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Bündelprojekt

Ecological diversification within the subspecies Polynucleobacter necessarius ssp. asymbioticus and environmental ecotype sorting, ESF project FREDI (FWF I 482-B09)

Laufzeit (Istdaten): 01.06.2010 - ; Laufzeit (Solldaten): 01.06.2010 - 31.05.2014; Sozio-ökonomische Zielsetzung: Förderung der Erforschung der Erde, der Meere, der Atmosphäre und des Weltraumes; Forschungsart: Grundlagenforschung; Finanzierung: drittfinanziert; Interdisziplinarität: ja ; Fristigkeit: Langfristprojekt; Anzahl der Kooperationspartner: 5

Kooperations-Partner: Biology Center of Czech Academy of Sciences; Partnerschaft
Förderprogramm: Ecological and Evolutionary Functional Genomics; EU
Geldgeber: Fonds zur Förderung der wissenschaftlichen Forschung (FWF)
Kooperations-Partner: Leibniz-Institute of Freshwater Ecology and Inland Fisheries; Partnerschaft
Kooperations-Partner: Nanjing Institute of Geography and Limnology; Partnerschaft
Kooperations-Partner: University of Zurich, Institute of Plant Biology; Projektleitung
Kooperations-Partner: Uppsala University; Partnerschaft

Global warming threatens biodiversity in (ultra)-sensitive high Alpine lakes: an assessment of past, present and future scenarios

Laufzeit (Istdaten): 01.12.2009 - ; Laufzeit (Solldaten): 01.07.2009 - 30.11.2012; Sozio-ökonomische Zielsetzung: Förderung der Erforschung der Erde, der Meere, der Atmosphäre und des Weltraumes; Forschungsart: Grundlagenforschung; Finanzierung: eigenfinanziert; Interdisziplinarität: nein ; Fristigkeit: Langfristprojekt; Anzahl der Kooperationspartner: 5

Kooperations-Partner: Fachbereich Organismische Biologie der Naturwissenschaftlichen Fakultät der Universität Salzburg; Partnerschaft
Kooperations-Partner: Institut für Ökologie, Universität Innsbruck; Partnerschaft
Geldgeber: Nationalkommitee Alpenforschung
Kooperations-Partner: Rotes Kreuz Oberösterreich, Blutzentrale; Partnerschaft
Kooperations-Partner: Universität Bern; Partnerschaft
Kooperations-Partner: Zentralanstalt für Meteorologie und Geodynamik (ZAMG); Partnerschaft

Risk Analysis of Direct and Indirect Climate effects on deep Austrian Lake Ecosystems

Laufzeit (Istdaten): 01.01.2010 - ; Laufzeit (Solldaten): 01.01.2010 - 31.12.2012; Sozio-ökonomische Zielsetzung: Förderung der Erforschung der Erde, der Meere, der Atmosphäre und des Weltraumes; Forschungsart: Grundlagenforschung; Finanzierung: drittfinanziert; Interdisziplinarität: nein ; Fristigkeit: Mittelfristprojekt; Anzahl der Kooperationspartner: 1

Förderprogramm: Austrian Climate Research Program
Kooperations-Partner: Institut für Öko-Toxikologie; Partnerschaft

Dissertationsprojekt

Assessment of planktonic diversity in alpine lakes by means of ultra-deep sequencing

Laufzeit (Istdaten): 15.11.2010 - ; Laufzeit (Solldaten): 01.05.2010 - 14.11.2013; Sozio-ökonomische Zielsetzung: Förderung der Erforschung der Erde, der Meere, der Atmosphäre und des Weltraumes; Forschungsart: Grundlagenforschung; Finanzierung: drittfinanziert; Interdisziplinarität: nein ; Fristigkeit: Langfristprojekt; Anzahl der Kooperationspartner: 0

Cyanobacteria population development and regulation of toxin production in a mesotrophic deep lake in the Alps

Laufzeit (Istdaten): 01.05.2010 - 30.04.2013 ; Laufzeit (Solldaten): 01.05.2010 - 30.04.2013; Sozio-ökonomische Zielsetzung: Förderung der Erforschung der Erde, der Meere, der Atmosphäre und des Weltraumes; Forschungsart: Grundlagenforschung; Finanzierung: drittfinanziert; Interdisziplinarität: nein ; Fristigkeit: Mittelfristprojekt; Anzahl der Kooperationspartner: 0

Demographic modeling of whitefish with reference to toxins from cyanobacteria and climate change

Laufzeit (Istdaten): 01.05.2010 - ; Laufzeit (Solldaten): 01.05.2010 - 01.05.2013; Sozio-ökonomische Zielsetzung: Förderung der Erforschung der Erde, der Meere, der Atmosphäre und des Weltraumes; Forschungsart: Grundlagenforschung; Finanzierung: drittfinanziert; Interdisziplinarität: nein ; Fristigkeit: Mittelfristprojekt; Anzahl der Kooperationspartner: 1

Kooperations-Partner: Veterinärmedizinische Universität Wien; Partnerschaft

Dissertation: Effects of cage fish farming systems on phytoplankton and water quality in small ponds of East Africa

Laufzeit (Istdaten): 01.05.2007 - ; Laufzeit (Solldaten): 01.05.2007 - 31.12.2011; Sozio-ökonomische Zielsetzung: Förderung der Erforschung der Erde, der Meere, der Atmosphäre und des Weltraumes; Forschungsart: Grundlagenforschung; Finanzierung: drittfinanziert; Interdisziplinarität: nein ; Fristigkeit: Langfristprojekt; Anzahl der Kooperationspartner: 0

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

14. Liste

Dissertationsprojekt

Ecophysiological adaptations of freshwater protists to extremely acidic conditions

Laufzeit (Istdaten): 01.02.2007 - 30.04.2011 ; Laufzeit (Solldaten): 01.02.2007 - 30.06.2010; Sozio-ökonomische Zielsetzung: Förderung der Erforschung der Erde, der Meere, der Atmosphäre und des Weltraumes; Forschungsart: Grundlagenforschung; Finanzierung: drittfinanziert; Interdisziplinarität: nein ; Fristigkeit: Langfristprojekt; Anzahl der Kooperationspartner: 1

Kooperations-Partner: Fachbereich Organismische Biologie; Partnerschaft

Molecular Ecology and Physiology of Cyanobacteria in the Ecosystem of Freshwater and Sediments

Laufzeit (Istdaten): 01.10.2011 - 30.09.2013 ; Laufzeit (Solldaten): 01.10.2011 - 30.09.2013; Sozio-ökonomische Zielsetzung: Förderung der Erforschung der Erde, der Meere, der Atmosphäre und des Weltraumes; Forschungsart: Grundlagenforschung; Finanzierung: drittfinanziert; Interdisziplinarität: ja ; Fristigkeit: Mittelfristprojekt; Anzahl der Kooperationspartner: 0

Time in Microevolution of Microcystin Synthesis, Doc-fFORTE

Laufzeit (Istdaten): 15.04.2009 - 31.03.2012 ; Laufzeit (Solldaten): 15.04.2009 - 14.03.2011; Sozio-ökonomische Zielsetzung: Förderung der Erforschung der Erde, der Meere, der Atmosphäre und des Weltraumes; Forschungsart: Grundlagenforschung; Finanzierung: eigenfinanziert; Interdisziplinarität: ja ; Fristigkeit: Mittelfristprojekt; Anzahl der Kooperationspartner: 1

Kooperations-Partner: University of Vienna, Faculty of Life Sciences; Partnerschaft

Einzelforschungsprojekt

Adaptation of Active Fisheries Methods: Pair trawling

Laufzeit (Istdaten): 01.04.2009 - ; Laufzeit (Solldaten): 01.04.2009 - 31.12.2011; Sozio-ökonomische Zielsetzung: Förderung der Erforschung der Erde, der Meere, der Atmosphäre und des Weltraumes; Forschungsart: Grundlagenforschung; Finanzierung: drittfinanziert; Interdisziplinarität: nein ; Fristigkeit: Mittelfristprojekt; Anzahl der Kooperationspartner: 0

Diversity of Mycobacteria associated with tropical ornamental fishes and indigenous fishes in aquaculture systems or natural habitats: risk of invasion of non-indigenous pathogenic Mycobacteria?

Laufzeit (Istdaten): 01.04.2010 - ; Laufzeit (Solldaten): 01.04.2010 - 31.12.2013; Sozio-ökonomische Zielsetzung: Förderung der Erforschung der Erde, der Meere, der Atmosphäre und des Weltraumes; Forschungsart: Grundlagenforschung; Finanzierung: eigenfinanziert; Interdisziplinarität: ja ; Fristigkeit: Langfristprojekt; Anzahl der Kooperationspartner: 0

Echolot- und sonstige Beprobung des Mondsee

Laufzeit (Istdaten): 06.06.2011 - 30.09.2011 ; Laufzeit (Solldaten): 01.06.2011 - 15.12.2011; Sozio-ökonomische Zielsetzung: Förderung der allgemeinen Erweiterung des Wissens; Forschungsart: Grundlagenforschung; Finanzierung: drittfinanziert; Interdisziplinarität: nein ; Fristigkeit: Kurzfristprojekt; Anzahl der Kooperationspartner: 1

Kooperations-Partner: Helmholtz-Zentrum Potsdam Deutsches GeoForschungsZentrum – GFZ Sektion 1.5 Erdsystemmodellierung; Partnerschaft
Geldgeber: Helmholtz-Zentrum Potsdam Deutsches GeoForschungsZentrum – GFZ Sektion 1.5 Erdsystemmodellierung; Partnerschaft

Evolution of asexuality in experimental rotifer populations

Laufzeit (Istdaten): 01.05.2008 - 30.05.2012 ; Laufzeit (Solldaten): 01.05.2008 - 30.05.2012; Sozio-ökonomische Zielsetzung: Förderung der Erforschung der Erde, der Meere, der Atmosphäre und des Weltraumes; Forschungsart: Grundlagenforschung; Finanzierung: drittfinanziert; Interdisziplinarität: ja ; Fristigkeit: Langfristprojekt; Anzahl der Kooperationspartner: 1

Geldgeber: Fonds zur Förderung der wissenschaftlichen Forschung (FWF)
Kooperations-Partner: Veterinärmedizinische Universität Wien; Partnerschaft

Genotype determined toxin content in cyanobacteria, FWFP20231

Laufzeit (Istdaten): 01.07.2008 - 31.12.2011 ; Laufzeit (Solldaten): 01.07.2008 - 31.12.2011; Sozio-ökonomische Zielsetzung: Förderung der Erforschung der Erde, der Meere, der Atmosphäre und des Weltraumes; Forschungsart: Grundlagenforschung; Finanzierung: drittfinanziert; Interdisziplinarität: nein ; Fristigkeit: Langfristprojekt; Anzahl der Kooperationspartner: 5

Geldgeber: Fonds zur Förderung der wissenschaftlichen Forschung (FWF)
Kooperations-Partner: Humboldt Universität zu Berlin, Institut für Biologie und Genetik; Partnerschaft
Kooperations-Partner: Universität Innsbruck, Institut für Botanik; Partnerschaft

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

14. Liste

Einzelforschungsprojekt

Kooperations-Partner: University of Hawaii at Manoa, Department of Chemistry; Partnerschaft
Kooperations-Partner: University of Helsinki, Department of Applied Chemistry and Microbiology, Division of Microbiology; Partnerschaft
Kooperations-Partner: University of Zurich, Institute of Plant Biology; Partnerschaft

Gynogenesis as a dispersal strategy – parasite communities vs. genetic structure of clonal stocks of invasive prussian carp (Carassius gibelio) in Finland, Germany and Austria

Laufzeit (Istdaten): 01.07.2008 - ; Laufzeit (Solldaten): 01.07.2008 - 31.12.2012; Sozio-ökonomische Zielsetzung: Förderung der Erforschung der Erde, der Meere, der Atmosphäre und des Weltraumes; Forschungsart: Grundlagenforschung; Finanzierung: drittfinanziert; Interdisziplinarität: nein ; Fristigkeit: Langfristprojekt; Anzahl der Kooperationspartner: 0

Impact of early thermal experience on coregonid body and muscle growth: How much environment is at play in phenotypic diversification of fish ecotypes?

Laufzeit (Istdaten): 01.11.2011 - ; Laufzeit (Solldaten): 01.11.2011 - 31.10.2015; Sozio-ökonomische Zielsetzung: Förderung der Erforschung der Erde, der Meere, der Atmosphäre und des Weltraumes; Forschungsart: Grundlagenforschung; Finanzierung: drittfinanziert; Interdisziplinarität: nein ; Fristigkeit: Langfristprojekt; Anzahl der Kooperationspartner: 0

Geldgeber: Department Organismic Biology, Faculty of Natural Sciences, University of Salzburg; Projektleitung

Morphology and ecology of endemic ciliates from bromeliads

Laufzeit (Istdaten): 01.11.2009 - 30.05.2013 ; Laufzeit (Solldaten): 01.09.2008 - 31.12.2011; Sozio-ökonomische Zielsetzung: Förderung der Erforschung der Erde, der Meere, der Atmosphäre und des Weltraumes; Forschungsart: Grundlagenforschung; Finanzierung: drittfinanziert; Interdisziplinarität: nein ; Fristigkeit: Langfristprojekt; Anzahl der Kooperationspartner: 1

Kooperations-Partner: Fachbereich Organismische Biologie der Naturwissenschaftlichen Fakultät der Universität Salzburg; Projektleitung
Geldgeber: Fonds zur Förderung der wissenschaftlichen Forschung (FWF)

Patterns and processes of adaptation and tolerance to low pH of freshwater plankton

Laufzeit (Istdaten): 01.07.2007 - 31.03.2011 ; Laufzeit (Solldaten): 01.07.2007 - 30.06.2010; Sozio-ökonomische Zielsetzung: Förderung der Erforschung der Erde, der Meere, der Atmosphäre und des Weltraumes; Forschungsart: Grundlagenforschung; Finanzierung: drittfinanziert; Interdisziplinarität: ja ; Fristigkeit: Mittelfristprojekt; Anzahl der Kooperationspartner: 4

Kooperations-Partner: Fachbereich Organismische Biologie der Naturwissenschaftlichen Fakultät der Universität Salzburg; Partnerschaft
Kooperations-Partner: Sea Education Association; Partnerschaft
Kooperations-Partner: Universität Leipzig; Partnerschaft
Kooperations-Partner: Universität Potsdam; Partnerschaft

Polyzyklischer Peptid Phagen Display

Laufzeit (Istdaten): 01.02.2011 - 31.01.2013 ; Laufzeit (Solldaten): 01.01.2011 - 31.12.2012; Sozio-ökonomische Zielsetzung: Förderung der allgemeinen Erweiterung des Wissens; Forschungsart: Experimentelle Entwicklung; Finanzierung: drittfinanziert; Interdisziplinarität: nein ; Fristigkeit: Mittelfristprojekt; Anzahl der Kooperationspartner: 0

Quantifying Individual Fitness with Trojan Sex Chromosomes: an Ultimate Conservation Tool

Laufzeit (Istdaten): 04.03.2011 - 31.12.2012 ; Laufzeit (Solldaten): 01.01.2010 - 31.12.2012; Sozio-ökonomische Zielsetzung: Förderung der Erforschung der Erde, der Meere, der Atmosphäre und des Weltraumes; Forschungsart: Grundlagenforschung; Finanzierung: drittfinanziert; Interdisziplinarität: nein ; Fristigkeit: Mittelfristprojekt; Anzahl der Kooperationspartner: 0

Rhodoluna Genome Project

Laufzeit (Istdaten): 01.01.2010 - ; Laufzeit (Solldaten): 01.01.2010 - 31.12.2013; Sozio-ökonomische Zielsetzung: Förderung der Erforschung der Erde, der Meere, der Atmosphäre und des Weltraumes; Forschungsart: Grundlagenforschung; Finanzierung: drittfinanziert; Interdisziplinarität: nein ; Fristigkeit: Langfristprojekt; Anzahl der Kooperationspartner: 2

Kooperations-Partner: Dalhousie University; Projektleitung
Kooperations-Partner: Massachusetts Institute of Technology; Partnerschaft

Ultraviolet radiation effects on plaktonic freshwater ciliates: an assessment of photoprotection and repair strategies

Laufzeit (Istdaten): 01.02.2009 - ; Laufzeit (Solldaten): 01.02.2009 - 31.01.2013; Sozio-ökonomische Zielsetzung: Förderung der Erforschung der Erde, der Meere, der Atmosphäre und des Weltraumes; Forschungsart: Grundlagenforschung; Finanzierung: drittfinanziert;

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

14. Liste

Einzelforschungsprojekt

Interdisziplinarität: nein ; Fristigkeit: Langfristprojekt; Anzahl der Kooperationspartner: 2

Kooperations-Partner: Institut für Ökologie, Universität Innsbruck; Partnerschaft
Kooperations-Partner: University of Guelph, Department of Microbiology, College of Biological Science; Partnerschaft

15. Externe Partner von Forschungsprojekten

	gesamt
Anzahl der **externen Partner**	**28**
Kooperationspartner	
· Universität	**9**
· Sonstige externe Einheiten	**5**
· Außeruniversitäre F-Einrichtung	**2**
· Universitäre Lehr- und Forschungseinheit	**12**
Herkunftsinstitutionen der Partner	
· im Inland	**10**
· innerhalb EU (ohne Österreich)	**8**
· außerhalb EU	**10**

15. Liste

Biology Center of Czech Academy of Sciences, České Budějovice, CZECH REPUBLIC, Typ: Außeruniversitäre FuE-Einrichtung

Ecological diversification within the subspecies Polynucleobacter necessarius ssp. asymbioticus and environmental ecotype sorting, ESF project FREDI (FWF I 482-B09) (Bündelprojekt)

Dalhousie University, Halifax, Nova Scotia, CANADA, Typ: Universität

Rhodoluna Genome Project (Einzelforschungsprojekt)

Egerton University, Njoro, KENYA, Typ: Universitäre Lehr- und Forschungseinheit

Development of Educational and Research CAPacity in Eastern Africa for the Sustainable Management of AQUAatic Ecosystems (Bündelprojekt)

Fachbereich Organismische Biologie der Naturwissenschaftlichen Fakultät der Universität Salzburg, Salzburg, AUSTRIA, Typ: Universität

Global warming threatens biodiversity in (ultra)-sensitive high Alpine lakes: an assessment of past, present and future scenarios (Bündelprojekt)
Morphology and ecology of endemic ciliates from bromeliads (Einzelforschungsprojekt)
Patterns and processes of adaptation and tolerance to low pH of freshwater plankton (Einzelforschungsprojekt)

Fachbereich Organismische Biologie, Salzburg, AUSTRIA, Typ: Universitäre Lehr- und Forschungseinheit

Allgemeine Limnologische Grundlagenforschung ((allgemeines) Forschungsprojekt der Forschungseinrichtung)

Fisheries Research Institute, Jinja, KENYA, Typ: Universitäre Lehr- und Forschungseinheit

Development of Educational and Research CAPacity in Eastern Africa for the Sustainable Management of AQUAatic Ecosystems (Bündelprojekt)

Helmholtz-Zentrum Potsdam Deutsches GeoForschungsZentrum – GFZ Sektion 1.5 Erdsystemmodellierung, Potsdam, GERMANY, Typ: Sonstige externe Einheiten

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

15. Liste

Helmholtz-Zentrum Potsdam Deutsches GeoForschungsZentrum – GFZ Sektion 1.5 Erdsystemmodellierung, Potsdam, GERMANY, Typ: Sonstige externe Einheiten

Echolot- und sonstige Beprobung des Mondsee (Einzelforschungsprojekt)

Institut für Öko-Toxikologie, Wien, AUSTRIA, Typ: Universitäre Lehr- und Forschungseinheit

Risk Analysis of Direct and Indirect Climate effects on deep Austrian Lake Ecosystems (Bündelprojekt)

Institut für Ökologie, Universität Innsbruck, Innsbruck, AUSTRIA, Typ: Universitäre Lehr- und Forschungseinheit

Allgemeine Limnologische Grundlagenforschung ((allgemeines) Forschungsprojekt der Forschungseinrichtung)
Global warming threatens biodiversity in (ultra)-sensitive high Alpine lakes: an assessment of past, present and future scenarios (Bündelprojekt)
Ultraviolet radiation effects on plaktonic freshwater ciliates: an assessment of photoprotection and repair strategies (Einzelforschungsprojekt)

Leibniz-Institute of Freshwater Ecology and Inland Fisheries, Berlin, GERMANY, Typ: Sonstige externe Einheiten

Ecological diversification within the subspecies Polynucleobacter necessarius ssp. asymbioticus and environmental ecotype sorting, ESF project FREDI (FWF I 482-B09) (Bündelprojekt)

Makerere University, Kampala, UGANDA, Typ: Universität

Development of Educational and Research CAPacity in Eastern Africa for the Sustainable Management of AQUAatic Ecosystems (Bündelprojekt)

Massachusetts Institute of Technology, Cambridge, UNITED STATES, Typ: Universitäre Lehr- und Forschungseinheit

Rhodoluna Genome Project (Einzelforschungsprojekt)

Nanjing Institute of Geography and Limnology, Nanjing, CHINA, Typ: Sonstige externe Einheiten

Ecological diversification within the subspecies Polynucleobacter necessarius ssp. asymbioticus and environmental ecotype sorting, ESF project FREDI (FWF I 482-B09) (Bündelprojekt)

Rotes Kreuz Oberösterreich, Blutzentrale, Linz, AUSTRIA, Typ: Sonstige externe Einheiten

Global warming threatens biodiversity in (ultra)-sensitive high Alpine lakes: an assessment of past, present and future scenarios (Bündelprojekt)

School of Biological Sciences, Liverpool, UNITED KINGDOM, Typ: Universitäre Lehr- und Forschungseinheit

Allgemeine Limnologische Grundlagenforschung ((allgemeines) Forschungsprojekt der Forschungseinrichtung)

Sea Education Association, Woods Hole, UNITED STATES, Typ: Sonstige externe Einheiten

Patterns and processes of adaptation and tolerance to low pH of freshwater plankton (Einzelforschungsprojekt)

UNESCO-IHE, Institute for Water Education, Delft, NETHERLANDS, Typ: Universitäre Lehr- und Forschungseinheit

Development of Educational and Research CAPacity in Eastern Africa for the Sustainable Management of AQUAatic Ecosystems (Bündelprojekt)

University of Guelph, Department of Microbiology, College of Biological Science, Ontario, CANADA, Typ: Universitäre Lehr- und Forschungseinheit

Ultraviolet radiation effects on plaktonic freshwater ciliates: an assessment of photoprotection and repair strategies (Einzelforschungsprojekt)

University of Vienna, Faculty of Life Sciences, Wien, AUSTRIA, Typ: Universitäre Lehr- und Forschungseinheit

Time in Microevolution of Microcystin Synthesis, Doc-fFORTE (Dissertationsprojekt)

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

15. Liste

University of Zurich, Institute of Plant Biology, Zürich, SWITZERLAND, Typ: Universitäre Lehr- und Forschungseinheit

Ecological diversification within the subspecies Polynucleobacter necessarius ssp. asymbioticus and environmental ecotype sorting, ESF project FREDI (FWF I 482-B09) (Bündelprojekt)

Universität Bern, Bern, SWITZERLAND, Typ: Universität

Global warming threatens biodiversity in (ultra)-sensitive high Alpine lakes: an assessment of past, present and future scenarios (Bündelprojekt)

Universität Innsbruck, Innsbruck, AUSTRIA, Typ: Universität

Allgemeine Limnologische Grundlagenforschung ((allgemeines) Forschungsprojekt der Forschungseinrichtung)

Universität Leipzig, Leipzig, GERMANY, Typ: Universität

Patterns and processes of adaptation and tolerance to low pH of freshwater plankton (Einzelforschungsprojekt)

Universität Potsdam, Potsdam, GERMANY, Typ: Universität

Patterns and processes of adaptation and tolerance to low pH of freshwater plankton (Einzelforschungsprojekt)

Universität, Wien, Fakultät für Lebenswissenschaften, Department für Limnologie und Hydrobotanik, Wien, AUSTRIA, Typ: Universität

Allgemeine Limnologische Grundlagenforschung ((allgemeines) Forschungsprojekt der Forschungseinrichtung)

Uppsala University, Uppsala, SWEDEN, Typ: Universitäre Lehr- und Forschungseinheit

Ecological diversification within the subspecies Polynucleobacter necessarius ssp. asymbioticus and environmental ecotype sorting, ESF project FREDI (FWF I 482-B09) (Bündelprojekt)

Veterinärmedizinische Universität Wien, Wien, AUSTRIA, Typ: Universität

Demographic modeling of whitefish with reference to toxins from cyanobacteria and climate change (Dissertationsprojekt)

Zentralanstalt für Meteorologie und Geodynamik (ZAMG), Wien, AUSTRIA, Typ: Außeruniversitäre FuE-Einrichtung

Global warming threatens biodiversity in (ultra)-sensitive high Alpine lakes: an assessment of past, present and future scenarios (Bündelprojekt)

16. Zweit- und Drittmittelzuflüsse und –geber

	gesamt
Zweitmittelzuflüsse an FE	0
Drittmittelzuflüsse an FE	801053.47
davon **eingeworben bei:**	
· **FWF Sachmittel**	130423.71
· **FWF Personalmittel**	113246.44
· **Bund** (ohne FWF und FFG)	450000
· **FFG**	4000
· **EU**	32194.98
· **Organisationen**	70688.34
· **davon im Inland**	35576

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

16. Zweit- und Drittmittelzuflüsse und –geber

	gesamt
· davon im Ausland	35112.34
· Spenden	500

17. Wissenschaftliche Publikationen

	gesamt
A) Bücher / Monographien oder **Editionen**	1
A) Peer-reviewte Beiträge in Fachzeitschriften oder Sammelwerken	36
· davon in indizierten Fachzeitschriften	30
B) Herausgeberschaften	0
B) längere Beiträge ohne Peer-Review in Fachzeitschriften oder Sammelwerken	0
C) Sonstige wissenschaftliche Publikationen	3
Veröffentlichungen von Nachwuchswissenschafter(inne)n/Habilitationen	
(diese Publikationen wurden z.T. bereits in oben angeführten Kennzahlen miterfasst)	
· Diplomarbeiten	0
· Dissertationen	2
· Habilitationen	0
Lexikonartikel	0
Kurze Lexikonbeiträge, summarisch	0

Neu ab Berichtszeitraum 2008: *Es wird das Veröffentlichungsdatum statt des Annahmedatums berücksichtigt!*

17. Liste

A) Bücher / Monographien oder Editionen

Bass, D.; Boenigk, J. (2011) Everything is Everywhere: a twenty-first century de-/reconstruction with respect to protists, in: Fontaneto, D.: Biogeography of Microscopic Organisms. In Reihe: Systematics Association Special Volume Series; Cambridge: Cambridge University Press. [Boenigk, Jens: HauptautorIn];

A) Peer-reviewte Beiträge in Fachzeitschriften oder Sammelwerken

***Christiansen, Guntram; Philmus, Benjamin; Hemscheidt, Thomas; Kurmayer, Rainer; Limnology, Institute for et al. [..] (2011) Genetic variation of adenylation domains of the anabaenopeptin synthesis operon and the evolution of substrate promiscuity. Journal of Bacteriology, Bd. 193, S. 3822-3831.** [Christiansen, Guntram: HauptautorIn; Kurmayer, Rainer: HauptautorIn]; peer-rev.indiziert lang

***Jezbera, J., Jezberová, J., Brandt, U., and Hahn, M.W. (2011) Ubiquity of Polynucleobacter necessarius subspecies asymbioticus results from ecological diversification. Environ. Microbiol., Bd. 13, S. 922–931.** [Jezberova, Jitka: KoautorIn; Jezbera, Jan: HauptautorIn; Koll, Ulrike: KoautorIn; Hahn, Martin: KoautorIn]; peer-rev.indiziert lang

***Stelzer, C.P. (online :2011) Population regulation in sexual and asexual rotifers: an eco-evolutionary feedback to population size?. Functional Ecology, Bd. 26 (1), S. 180-188.** [Stelzer, Claus-Peter: AlleinautorIn]; peer-rev.indiziert

***Stelzer, CP (2011, online :2011) The cost of sex and competition between cyclical and obligate parthenogenetic rotifers. The American Naturalist, Bd. 177 (2), S. E43-E53.** [Stelzer, Claus-Peter: AlleinautorIn]; peer-rev.indiziert

***Wang, J., Yang, D., Zhang, Y., Shen, J., van der Gast, C., Hahn, M.W. and Wu, Q.L (2011) Do patterns of bacterial taxon richness along salinity gradients differ from those observed for macroorganisms?. PLoS ONE, Bd. 6 (11), S. e27597.** [Hahn, Martin: KoautorIn]; peer-rev. lang

, Luoto T.P.; L., Nevalainen; S., Kultti; Sarmaja-Korjonen, K. (2011) An evaluation of the influence of water depth and river inflow on quantitative Cladocera-based temperature and lake level inferences in a shallow boreal lake. Hydrobiologia, Bd. 676 (1), S. 143-154. [Nevalainen, Liisa:

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

17. Liste

A) Peer-reviewte Beiträge in Fachzeitschriften oder Sammelwerken

KoautorIn; Luoto, Tomi: HauptautorIn]; peer-rev.indiziert lang

Babanazarova, O. V.; Kurmayer, R.; Sidelev, S. I.; Aleksandrina, E. M.; G., Sakharova E. (2011) Phytoplankton structure and microcystine concentration in the highly eutrophic Nero Lake. Water Resources, Bd. 38, S. 229-236. [Kurmayer, Rainer: KoautorIn]; peer-rev.indiziert lang

Bruvo, R., Adolfsson, S., Symonova, R., Lamatsch, D.K., Schön, I., Jokela, J., Butlin, R.K., Müller, S. (2011, online :2010) Few parasites, and no evidence for Wolbachia infections in a freshwater ostracod inhabiting temporary ponds. Biological Journal of the Linnean Society, Bd. 102 (1), S. 208 -216. [Lamatsch, Dunja: KoautorIn]; peer-rev.indiziert lang

Hahn, M.W., Lang, E., Brandt, U., and Spröer, C. (2011) Polynucleobacter acidiphobus sp. nov., a representative of an abundant group of planktonic freshwater bacteria. Int. J. Syst. Evol. Microbiol., Bd. 61, S. 788-794. [Hahn, Martin: HauptautorIn; Koll, Ulrike: KoautorIn]; peer-rev. indiziert lang

Hahn, M.W., Lang, E., Tarao, M., and Brandt, U. (2011) Polynucleobacter rarus sp. nov., a free-living planktonic bacterium isolated from an acidic lake. Int. J. Syst. Evol. Microbiol., Bd. 61, S. 781-787. [Hahn, Martin: HauptautorIn; Koll, Ulrike: KoautorIn]; peer-rev.indiziert lang

Jersabek, Christian; Weithoff, Guntram; Weisse, Thomas (2011) Cephalodella acidophila n. sp. (Monogononta: Notommatidae), a new rotifer species from highly acidic mining lakes. Zootaxa, Bd. 2939, S. 50-58. [Weisse, Thomas: KoautorIn]; peer-rev.indiziert lang

Kurmayer, R. (2011) The toxic cyanobacterium Nostoc strain 152 produces highest amounts of microcystin and nostophycin under stress conditions. Journal of Phycology, Bd. 47, S. 200-207. [Kurmayer, Rainer: AlleinautorIn]; peer-rev.indiziert lang

Kurmayer, Rainer; Schober, Eva; Tonk, Linda; Visser, Petra; Christiansen, Guntram et al. [..] (2011) Spatial divergence in the proportions of genes encoding toxic peptide synthesis among populations of the cyanobacterium Planktothrix in European lakes. FEMS Microbiology Letters, Bd. 317, S. 127-137. [Schober, Eva Maria: KoautorIn; Christiansen, Guntram: KoautorIn; Kurmayer, Rainer: HauptautorIn]; peer-rev.indiziert lang

Lamatsch, D.K., Trifonov, V., Schories,S., Epplen, J.T., Schmid, M., Schartl, M. (online :2011) Isolation of a cancer-associated microchromosome in the sperm-dependent parthenogen Poecilia formosa. Cytogenetics and Genome Research, Bd. 135 (2), S. 135-142. [Lamatsch, Dunja: HauptautorIn]; peer-rev. lang

Lauterbach, S.; Brauer, A.; Andersen, N.; Danielopol, DL.; al., et (2011) Environmental responses to Lateglacial climatic fluctuations recorded in the sediments of pre-Alpine Lake Mondsee (northeastern Alps). Journal of Quaternary Science, Bd. 26 (3), S. 253-267. [Danielopol, Dan Luca: KoautorIn]; peer-rev.indiziert lang

Liu, X.; Wu, Q.; Chen, Y.; Dokulil, M. (2011, online :2011) Imbalance of plankton community metabolism in eutrophic Lake Taihu, China. Journal of Great Lakes Research, Bd. 37, S. 650-655. [Dokulil, Martin: KoautorIn]; peer-rev. lang

Luoto, TP.; Nevalainen, L. (2011, online :2010) Inferring reference conditions of hypolimnetic oxygen for deteriorated Lake Mallusjärvi in the cultural landscape of Mallusjoki, Southern Finland using fossil midge assemblages. Water, Air & Soil Pollution, Bd. 217, S. 663-675. [Nevalainen, Liisa: KoautorIn; Luoto, Tomi: HauptautorIn]; peer-rev.indiziert lang

Moser, Michael; Weisse, Thomas (2011) Combined stress effect of pH and temperature narrows the niche width of flagellates in acid mining lakes. Journal of Plankton Research, Bd. 33, S. 1023-1032. [Weisse, Thomas: KoautorIn; Moser, Michael: HauptautorIn]; peer-rev.indiziert lang

Moser, Michael; Weisse, Thomas (2011) The most acidified Austrian lake in comparison to a neutralized mining lake. Limnologica, Bd. 41, S. doi: 10.1016/j.limno.2011.01.002. [Weisse, Thomas: KoautorIn; Moser, Michael: HauptautorIn]; peer-rev.indiziert lang

Moser, Michael; Weisse, Thomas (2011) The outcome of competition between the two chrysomonads Ochromonas sp. and Poterioochromonas malhamensis depends on pH. European Journal of Protistology15, Bd. 47 (2), S. 79-85. [Weisse, Thomas: KoautorIn; Moser, Michael: HauptautorIn]; peer-rev.indiziert lang

Nevalainen L.,; Luoto T.P.,; Levine S.,; Manca, M. (2011) Modern and pre-Industrial Age distributions of Cladocera in Italian and Swiss Alpine lakes. Hydrobiologia, Bd. 676 (1), S. 173-185. [Luoto, Tomi: KoautorIn; Nevalainen, Liisa: HauptautorIn]; peer-rev.indiziert lang

Nevalainen L.,; Luoto T.P.,; Levine S.,; Manca, M. (2011) Paleolimnological evidence for increased sexual reproduction in chydorids (Chydoridae, Cladocera) under environmental stress. Journal of Limnology, Bd. 70 (2), S. 255-262. [Luoto, Tomi: KoautorIn; Nevalainen, Liisa: HauptautorIn]; peer -rev.indiziert lang

Nevalainen L.,; Sarmaja-Korjonen K.,; , Gasiorowski M.; Luoto, T.P. (2011) Late 20th century shifts in cladoceran community structure and reproduction in a boreal acidified lake. Fundamental and Applied Limnology, Bd. 179 (2), S. 81-92 . [Luoto, Tomi: KoautorIn; Nevalainen, Liisa: HauptautorIn]; peer-rev.indiziert lang

Nevalainen, L.,; Sarmaja-Korjonen, K.,; Luoto, T.P.,; Kultti, S. (2011) Does oxygen availability regulate sexual reproduction in local populations of the littoral cladoceran Alonella nana?. Hydrobiologia, Bd. 661 (1), S. 463-468. [Luoto, Tomi: KoautorIn; Nevalainen, Liisa: HauptautorIn]; peer-rev. indiziert lang

Nevalainen, L.; Sarmaja-Korjonen, K.; Luoto, T.P. (2011) Sedimentary Cladocera as indicators of past water-level changes in shallow northern lakes. Quaternary Research . [Luoto, Tomi: KoautorIn; Nevalainen, Liisa: HauptautorIn]; peer-rev.indiziert lang

Nevalainen, L. (2011) Intra-lake heterogeneity of sedimentary cladoceran (Crustacea) assemblages forced by local hydrology. Hydrobiologia, Bd.

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

17. Liste

A) Peer-reviewte Beiträge in Fachzeitschriften oder Sammelwerken

676 (1), S. 9-22. [Nevalainen, Liisa: AlleinautorIn]; peer-rev.indiziert lang

Okello, William; Kurmayer, Rainer (2011) Seasonal development of cyanobacteria and microcystin production in Ugandan freshwater lakes. Lakes & Reservoirs: Research & Management, Bd. 16, S. 123-135. [Okello, William: KoautorIn; Kurmayer, Rainer: HauptautorIn]; peer-rev. lang

Pearson, E.J.,; Juggins, S.,; Talbot, H.M.,; Weckström, J.,; Rosén, P., et al. [..] (2011) A lacustrine GDGT-temperature calibration from the Scandinavian Arctic to Antarctic: renewed potential for the application of DGT-paleothermometry in lakes. Geochimica et Cosmochimica Acta. [Schmidt, Roland: KoautorIn; Weckström, Kaarina: KoautorIn]; peer-rev.indiziert lang

Savichtcheva, Olga; Debroas, Didier; Kurmayer, Rainer; Villar, Clement; Jenny, Jean Philippe et al. [..] (2011, online :2011) Quantitative PCR Enumeration of Total/Toxic Planktothrix rubescens and Total Cyanobacteria in Preserved DNA Isolated from Lake Sediments. Applied and Environmental Microbiology (77), S. 8744-8753. [Kurmayer, Rainer: KoautorIn]; peer-rev.indiziert lang

Scheuerl, T.; Riss, S.; Stelzer, C.P. (online :2011) Phenotypic effects of an allele causing obligate parthenogenesis in a rotifer., Bd. 102 (4), S. 409–415. [Scheuerl, Thomas: HauptautorIn; Stelzer, Claus-Peter: KoautorIn; Riß, Simone: KoautorIn]; peer-rev.indiziert

Schmidt, R,; Weckström, K,; Lauterbach, S,; Tessadri, R,; Huber, K (2011) North Atlantic climate impact on early late-glacial climate oscillations in the south-eastern Alps inferred from a multi-proxy lake sediment record. Journal of Quaternary Science. [Schmidt, Roland: HauptautorIn; Weckström, Kaarina: KoautorIn; Huber, Kerstin: KoautorIn]; peer-rev.indiziert lang

Stelzer, CP (online :2011) A first assessment of genome size diversity in Monogonont rotifers., Bd. 662 (1), S. 77–82. [Stelzer, Claus-Peter: AlleinautorIn]; peer-rev.indiziert

Stelzer, C.P.; Riss, S.; Stadler, P. (2011, online :2011) Genome size evolution at the speciation level: The cryptic species complex Brachionus plicatilis (Rotifera). BMC Evolutionary Biology, Bd. 11, S. 90. [Riß, Simone: KoautorIn; Stadler, Peter: KoautorIn; Stelzer, Claus-Peter: HauptautorIn]; peer-rev.indiziert

Taipale, S., Kankaala, P., Hahn, M. W., Jones, R. I., and Tiirola, M. (2011) Methane oxidizing and photoautotrophic bacteria are major producers in a humic lake with large anoxic hypolimnion. Aquatic Microbial Ecology, Bd. 64, S. 81-95. [Hahn, Martin: KoautorIn]; peer-rev.indiziert lang

Walpola, H.,; Leichtfried, M.,; Amarasinghe, M.,; Füreder, L. (2011) Leaf litter decomposition of three riparian tree species and associated macroinvertebrates of Eswathu Oya, a low order tropical stream in Sri Lanka. Internat. Rev. Hydrobiol., Bd. 96 (1), S. 90-104. [Leichtfried, Maria: KoautorIn]; peer-rev. lang

Weisse, T.; Berendonk, T.; Kamjunke, N.; Moser, M.; Scheffel, U. et al. [..] (2011, online :2011) Significant habitat effects influence protist fitness: evidence for local adaptation from acidic mining lakes. Ecosphere, Bd. 2 (12), S. article 134. [Moser, Michael: KoautorIn; Scheffel, Ulrike: KoautorIn; Stadler, Peter: KoautorIn; Weisse, Thomas: HauptautorIn]; peer-rev. lang

C) Sonstige wissenschaftliche Publikationen

Chorus, I.; Dokulil, M.; al., et (2011) Restoration responses of 19 lakes: are TP treshholds common?, in: Chorus, I, & Schauser, I. (2011) Oligothrophication of Lake Tegel and Schachtensee, Berlin. . [Dokulil, Martin: KoautorIn]; lang

Moser, Michael (2011) Ecophysiological adaptations of freshwater protists to extremely acidic conditions., FB Organismische Biologie, Salzburg, Salzburg. [Moser, Michael: AlleinautorIn];

Pamminger-Lahnsteiner, Barbara (2011) Conservation of natural biological resources in Austria: ecological-, morphological- and genetic analysis of European Whitefish (Coregonus lavaretus L. complex)., Faculty of Natural Science, Paris-Lodron University Salzburg, Salzburg. [Wanzenböck, Josef: HerausgeberIn; Pamminger-Lahnsteiner, Barbara: AlleinautorIn];

Dissertationen (z.T. bereits oben gelistet)

Moser, Michael (2011) Ecophysiological adaptations of freshwater protists to extremely acidic conditions., FB Organismische Biologie, Salzburg, Salzburg. [Moser, Michael: AlleinautorIn];

Pamminger-Lahnsteiner, Barbara (2011) Conservation of natural biological resources in Austria: ecological-, morphological- and genetic analysis of European Whitefish (Coregonus lavaretus L. complex)., Faculty of Natural Science, Paris-Lodron University Salzburg, Salzburg. [Wanzenböck, Josef: HerausgeberIn; Pamminger-Lahnsteiner, Barbara: AlleinautorIn];

18. Wissenschaftliche Vorträge und Präsentationen

	gesamt
Eingeladene wissenschaftliche Vorträge	**20**
· davon auf internationalen Veranstaltungen	**18**
· davon Internationalität nicht zuordenbar	**0**

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

18. Wissenschaftliche Vorträge und Präsentationen

	gesamt
· davon Keynotes und Named Lectures	15
Sonstige wissenschaftliche Vorträge	3
· davon auf internationalen Veranstaltungen	2
· davon Internationalität nicht zuordenbar	0
Wissenschaftliche Posterpräsentationen	9
· davon auf internationalen Veranstaltungen	8
· davon Internationalität nicht zuordenbar	0

18. Liste

Eingeladene wissenschaftliche Vorträge

Christiansen, Guntram (12.04.2011) Characterization of ApnAA1,a bi-specific Adenylation domain part of the Anabaenopeptin synthetase. Vortrag bei: Seminar, University of Hamburg, Dep. Chemistry/GERMANY.; Typ: Sonstiger eingeladener Veranstaltungsbeitrag

Hahn, Martin W. (06.05.2011) Freshwater Bacterioplankton: Ecological and Evolutionary Aspects. Vortrag bei: Distinguished Lecturer Series (EAWAG), Zurich/SWITZERLAND.; Typ: Sonstiger eingeladener Veranstaltungsbeitrag (internationale Veranstaltung)

Hahn, Martin W. (14.02.2011) Freshwater Bacterioplankton: Ecology, Diversification and Biogeography of Abundant Taxa. Vortrag bei: Kolloquiumsreihe "Aktuelle Probleme und Ergebnisse der Mikrobiellen Ökologie und Physiologie", Konstanz/GERMANY.; Typ: Sonstiger eingeladener Veranstaltungsbeitrag (internationale Veranstaltung)

Sonntag, Bettina (27.07.2011) Ciliate biodiversity patterns in alpine and subalpine lakes. Vortrag bei: VI European Congress of Protistology (Deutsche Gesellschaft für Protistologie), Berlin/GERMANY.; Typ: Sonstiger eingeladener Veranstaltungsbeitrag (internationale Veranstaltung)

Stelzer, Claus-Peter (31.05.2011) Loss of sexual reproduction in rotifers: Causes and consequences. Vortrag bei: Ecology and Evolution Seminar, Fribourg/SWITZERLAND.; Typ: Sonstiger eingeladener Veranstaltungsbeitrag (internationale Veranstaltung)

Eingeladene wissenschaftliche Vorträge: Keynotes and Named Lectures

Deng, Li (22.05.2011) Phage population genomics and viral tagging. Vortrag bei: 111th General Meeting of the American Society for Microbiology, New Orleans/UNITED STATES.; Typ: Keynote (internationale Veranstaltung)

Deng, Li (27.06.2011) Viral tagging: missing pieces in the study of host viral interactions. Vortrag bei: 4th Congress of European Microbiologists, FEMS, Geneva/SWITZERLAND.; Typ: Named Lecture (internationale Veranstaltung)

Deng, Li (29.08.2011) Viral tagging – a high throughput approach to explore virus-host interactions. Vortrag bei: 8th European Workshop on Molecular Biology of Cyanobacteria, Naantali (Turku)/FINLAND.; Typ: Named Lecture (internationale Veranstaltung)

Ficker, Harald (26.09.2011) Population projection matrix models (PPMs) for whitefish (Coregonus maraena) derived from gillnet catch data corrected by the SELECT-method. Vortrag bei: International Symposium on the Biology and Management of Coregonid Fishes (Wanzenböck, Josef; Wanzenböck, Sabine; Gassner, Hubert), Mondsee/AUSTRIA .; Typ: Named Lecture (internationale Veranstaltung)

Kurmayer, Rainer (22.09.2011) Modelling the response of stratifying cyanobacteria to changing climate conditions in a deep mesotrophic lake. Vortrag bei: 12. Österreichischer Klimatag, Wilhelm Exnerhaus der Universität für Bodenkultur Wien, 1190 Wien, Peter Jordanstraße 82, EH03/ AUSTRIA.; Typ: Named Lecture

Kurmayer, Rainer (28.06.2011) Genetic variation of adenylation domains of the anabaenopeptin synthesis operon and the evolution of substrate promiscuity. Vortrag bei: 4th Congress of European Microbiologists, FEMS, Geneva/SWITZERLAND.; Typ: Named Lecture (internationale Veranstaltung)

Kurmayer, Rainer (29.08.2011) Transformation of the cyanobacterium Planktothrix with a synthetic mcyT gene encoding a type II thioesterase and its effect on microcystin production. Vortrag bei: 8th European Workshop on Molecular Biology of Cyanobacteria, Naantali/FINLAND.; Typ: Keynote (internationale Veranstaltung)

Luoto, Tomi; Limnology, Institute for (05.04.2011) Fossil invertebrates reveal major ecological turnovers during the recent centuries in a high altitude lake in the Austrian Alps. Vortrag bei: European Geosciences Union General Assembly 2011, Vienna, Austria, Vienna/AUSTRIA.; Typ: Named Lecture (internationale Veranstaltung)

Luoto, Tomi; Limnology, Institute for (25.10.2011) Effective precipitation in the Niedere Tauern Alps (Austria) since 1700 AD: Fossil invertebrate ‐ based water level reconstructions from two High Alpine lakes. Vortrag bei: 8th National Geological Colloquium, University of Helsinki/FINLAND.; Typ: Named Lecture (internationale Veranstaltung)

Nevalainen, Liisa; Limnology, Institute for (03.10.2011) Cladoceran community and reproduction shifts under recent climate-driven oxygen depletion in a high Alpine lake. Vortrag bei: 9th International Symposium on Cladocera, Verbania/ITALY.; Typ: Named Lecture (internationale Veranstaltung)

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

18. Liste

Eingeladene wissenschaftliche Vorträge: Keynotes and Named Lectures

Nevalainen, Liisa; Limnology, Institute for (04.04.2011) Past evolutionary responses of Chydoridae (Cladocera) under oxygen depletion in an Austrian Alpine lake. Vortrag bei: European Geosciences Union General Assembly 2011, Vienna, Austria, Vienna/AUSTRIA.; Typ: Named Lecture (internationale Veranstaltung)

Nevalainen, Liisa; Limnology, Institute for (25.10.2011) Cladoceran community and reproduction shifts under recent climate-driven oxygen depletion in a high Alpine lake. Vortrag bei: 8th National Geological Colloquium, University of Helsinki/FINLAND.; Typ: Named Lecture (internationale Veranstaltung)

Schmidt, Roland; Limnology, Institute for (01.09.2011) Long-term seasonal climate changes inferred from proxies in Austrian alpine lake sediments. Vortrag bei: International Conference on the Occasion of the 125 Anniversary of Sonnblick Observatory, Salzburg Congress, Salzburg/AUSTRIA.; Typ: Named Lecture (internationale Veranstaltung)

Sonntag, Bettina (25.07.2011) Ciliate assemblages and their vertical distributions from two alpine lakes of contrasting transparency. Vortrag bei: VI European Congress of Protistology (Deutsche Gesellschaft für Protozoologie), Berlin/GERMANY.; Typ: Named Lecture (internationale Veranstaltung)

Wanzenböck, Josef (26.09.2011) Domestication of an Alpine whitefish strain. Vortrag bei: SYMCORE (Wanzenböck, Josef, Wanzenböck, Sabine, Gassner, Hubert), Mondsee/AUSTRIA .; Typ: Named Lecture (internationale Veranstaltung)

Sonstige wissenschaftliche Vorträge

Trummer, Philipp (12.03.2011) Cyanobacteria population development and regulation of toxin production in a mesotrophic deep lake in the Alps. Vortrag bei: Dissertationsvorstellung, University of Vienna, UZAI, Althanstrasse 14 (Vienna)/AUSTRIA.; Typ: Sonstiger Veranstaltungsbeitrag

Weisse, Thomas; Scheffel, Ulrike; Stadler, Peter (28.07.2011) Temperature dependent resistance to starvation of the freshwater ciliate Meseres corlissi Petz & Foissner, 1992 (Ciliophora, Spirotrichea). Vortrag bei: VI European Congress of Protistology (ECOP) (Deutsche Gesellschaft für Protistoology), Berlin/GERMANY.; Typ: Sonstiger Veranstaltungsbeitrag (internationale Veranstaltung)

Weisse, Thomas (14.02.2011) Extremely acidic mining lakes: An environment dominated by protists. Vortrag bei: ASLO Aquatic Sciences Meeting, San Juan/PUERTO RICO.; Typ: Sonstiger Veranstaltungsbeitrag (internationale Veranstaltung)

Wissenschaftliche Posterpräsentationen

Christiansen, Guntram (27.06.2011) Transformation of the cyanobacterium Planktothrix with a synthetic mcyT gene encoding a type II thioesterase and its effect on Microcystin production. Posterpräsentation bei: 4th Congress of European Microbiologists, Geneva/SWITZERLAND.; Typ: Sonstiger Veranstaltungsbeitrag (internationale Veranstaltung)

Ficker, Harald (18.01.2011) Population modelling of Alpine whitefish stocks with reference to ecotoxic and climatic impacts. Posterpräsentation bei: Dissertationsvorstellung, Paris Lodron Universität Salzburg (FB Organismische Biologie, Paris Lodron Universität Salzburg), Salzburg/AUSTRIA.; Typ: Named Lecture

Hebein, Martina (06.07.2011) Synoptic representation of horizontal and vertical phytoplankton distribution in Lake Mondsee, with a focus on potentially toxic filamentous cyanobacteria. Posterpräsentation bei: Geoinformatics Forum Salzburg (GI_Forum) & Symposium and Exhibit Applied Geoinformatics (AGIT) 2011, Salzburg/AUSTRIA.; Typ: Sonstiger Veranstaltungsbeitrag (internationale Veranstaltung)

Lamatsch, DK (25.07.2011) Genome size variability among phylogenetically distinct groups including sexual, diploid asexual and triploid asexual lineages. Posterpräsentation bei: 13th Congress of the European Society for Evolutionary Biology, Tuebingen/GERMANY.; Typ: Sonstiger Veranstaltungsbeitrag (internationale Veranstaltung)

Lamatsch, DK (25.07.2011) Mitochondrial cluster-specific genome size variability among sexual and asexual lineages of the ostracod Eucypris virens species group. Posterpräsentation bei: 7th Ostracodologists´Meeting, Graz/AUSTRIA.; Typ: Sonstiger Veranstaltungsbeitrag (internationale Veranstaltung)

Ong'ondo, G.; Yasindi, AW.; Sonntag, B.; Boenigk, J.; Schagerl, M. et al. [..] (25.07.2011) Ciliated protist assemblage in two shallow saline-alkaline lakes in Kenya. Posterpräsentation bei: VI. European Congress of Protistology (Deutsche Gesellschaft für Protistologie), Berlin/GERMANY.; Typ: Sonstiger Veranstaltungsbeitrag (internationale Veranstaltung)

Ong'ondo, G.; Yasindi, AW.; Sonntag, B.; Boenigk, J.; Schagerl, M. et al. [..] (25.07.2011) Intra-specific variation of Frontonia species in two shallow saline-alkaline lakes in Kenya. Posterpräsentation bei: VI. European Congress of Protistology (Deutsche Gesellschaft für Protistology), Berlin/GERMANY.; Typ: Sonstiger Veranstaltungsbeitrag (internationale Veranstaltung)

Pöll, D.; Sonntag, B. (25.07.2011) Do heterotrophic freshwater ciliates acquire UV sunscreen compounds from algal food?. Posterpräsentation bei: VI. European Congress of Protistology (Deutsche Gesellschaft für Protistologie), Berlin/GERMANY.; Typ: Sonstiger Veranstaltungsbeitrag (internationale Veranstaltung)

Weisse, Thomas; Scheffel, Ulrike; Stadler, Peter; Foissner, Wilhelm (25.07.2011) Life cycle and ecology of Bromeliothrix metopoides Foissner, 2010, an enigmatic ciliate (Protista, Colpodea) from tank bromeliads (Bromeliaceae). Posterpräsentation bei: VI European Congress of Protistology (ECOP) (Deutsche Gesellschaft für Protozoologe), Berlin/GERMANY.; Typ: Sonstiger Veranstaltungsbeitrag (internationale Veranstaltung)

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

19. Schutzrechte

	gesamt
Gesamtanzahl der **Patente**	1
davon:	
· eingereicht	1
Gesamtanzahl der **neu freigegebenen Softwareprodukte**	0

19. Liste

Patente

eingereicht

ErfinderIn: Christiansen, Guntram; InhaberIn: ÖAW; Titel: "Modified Peptide Display"; Anmeldedatum: 13.08.2010; Patenterteilungsdatum:

20. Organisation wissenschaftlicher Veranstaltungen

	gesamt
Anzahl der durch Mitarbeiter(innen) (mit-)organisierten **wissenschaftlichen Veranstaltungen**	3
· internationale Veranstaltungen	2
· Kongress/Symposium/Konferenz/Tagung	2
· Workshop/Seminar	1

20. Liste

Kongress/Symposium/Konferenz/Tagung

VI European Congress of Protistology (ECOP) (25.07.2011 - 29.07.2011)

Weisse, Thomas (m); (Mit)OrganisatorIn

11th International symposium on the biology and management of coregonid fishes (26.09.2011 - 30.09.2011)

Wanzenböck, Josef (m); (Mit)OrganisatorIn
Wanzenböck, Sabine (w); (Mit)OrganisatorIn

Workshop/Seminar

Kurs zur genetischen Manipulation von Cyanobakterien (11.07.2011 - 22.07.2011)

Christiansen, Guntram (m); (Mit)OrganisatorIn
Kurmayer, Rainer (m); (Mit)OrganisatorIn

21. Populärwissenschaftliche Veröffentlichungen

	gesamt
von Mitarbeitern veröffentlichte **populärwissenschaftliche Werke**	0

21. Liste

22. Populärwissenschaftliche Vorträge und Präsentationen

	gesamt

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

22. Populärwissenschaftliche Vorträge und Präsentationen

	gesamt
Populärwissenschaftliche Vorträge und Posterpräsentationen	**0**

22. Liste

Wirkungen der Forschungseinrichtung

23. Lehrveranstaltungen an Universitäten und Fachhochschulen

	gesamt
Anzahl der von Mitarbeiter(innen) gehaltenen **Lehrveranstaltungen**	**9**
· Lehrveranstaltung an Universität	**9**

23. Liste

Lehrveranstaltung an Universität

Aquatische Tierökologie (Kurs 1) (20.06.2011 - 22.06.2011), Semester: Sommersemester 2011

Wanzenböck, Josef (m); ReferentIn

Bachelormodul: Evolution, Biodiversität, Systematik I (07.11.2011 - 05.12.2011), Semester: Wintersemester 2011/2012

Stelzer, Claus-Peter (m); ReferentIn
Weisse, Thomas (m); ReferentIn

Bachelormodul: Evolution, Biodiversität, Systematik II (07.11.2011 - 05.12.2011), Semester: Wintersemester 2011/2012

Stelzer, Claus-Peter (m); ReferentIn
Weisse, Thomas (m); ReferentIn

Bachelormodul: Mikrobiologie (01.10.2011 - 15.02.2012), Semester: Wintersemester 2011/2012

Hahn, Martin (m); (Mit)OrganisatorIn

Baupläne im Tierreich (Einzellige Eukaryota) (01.03.2011 - 30.06.2011), Semester: Sommersemester 2011

Sonntag, Bettina (w); ReferentIn

Einführung in die Angewandte Limnologie (12.10.2011 - 14.12.2011), Semester: Wintersemester 2010/2011

Weisse, Thomas (m); (Mit)OrganisatorIn

Ökologie und Physiologie von Cyanobakterien (07.10.2011 - 21.12.2011), Semester: Wintersemester 2011/2012

Kurmayer, Rainer (m); (Mit)OrganisatorIn

Vorlesung Fischökologie (03.10.2011 - 24.01.2012), Semester: Wintersemester 2011/2012

Wanzenböck, Josef (m); ReferentIn

VU Mikrobielle Ökologie (15.02.2011 - 15.07.2011), Semester: Sommersemester 2011

Hahn, Martin (m); (Mit)OrganisatorIn

24. Preise und Auszeichnungen

	gesamt
Anzahl der an Mitarbeiter(innen) vergebenen **Preise und Auszeichnungen**	**0**