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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.

1. Scientific Activity 2009

1.1 Zusammenfassung des wissenschaftlichen Berichts 2009 (deutsch)

Das Institut für Limnologie (ILIM) der Österreichischen Akademie der Wissenschaften (ÖAW) durchlief im Vorjahr das schwierigste Jahr seit der Eröffnung des Labor- und Bürogebäudes am Ufer des Mondsees im Jahr 1981. Kurz nachdem die Renovierungs- und Ausbauarbeiten im Frühjahr 2008 begonnen hatten, musste das Institutsgebäude geräumt werden, und die MitarbeiterInnen bezogen provisorische Labor- und Büroräume, die über fünf Standorte in Mondsee und Umgebung verteilt sind. Diese vorübergehenden Ausweichquartiere erfüllen nicht die Anforderungen einer modernen Forschungseinrichtung und teilweise nicht einmal die vom Arbeitsschutz vorgegebenen Sicherheits- und Gesundheitsstandards. Die Aufnahmefähigkeit der meisten provisorischen Labore ist überschritten (Fig. 1). Die Raumtemperatur überschreitet in mehreren Laboren deutlich 30°C im Sommer, wodurch technische Geräteausfälle von Tiefkühltruhen, Inkubatoren und einem Durchflusscytometer verursacht werden. Sogar im Winter kann die Temperatur 32°C erreichen und die Luftfeuchtigkeit unter 30% fallen, wodurch die Gesundheit der Angestellten gefährdet wird.



Fig. 1. Behelfsmäßiges Labor im TechnoZ Mondsee.

Konditionierte Fische der Arbeitsgruppe ‚Molekulare und cytogenetische Evolution asexueller aquatischer Organismen‘ werden in einem Aquarienraum gehalten, der großzügigerweise von dem Scharflinger Bundesinstitut für Gewässerökologie, Fischereibiologie und Seenkunde zur Verfügung gestellt wird, jedoch 13 km von Mondsee entfernt liegt. Seit eineinhalb Jahren haben die WissenschaftlerInnen keine angemessene Bibliothek zur Verfügung (Fig. 2). Gegen Ende 2009 mussten die mechanische und elektronische Werkstätte des Instituts geschlossen werden. Die mit befristeten Verträgen angestellten WissenschaftlerInnen, das sind die Dissertanten und drei PostDoc-WissenschaftlerInnen, und nahezu alle LabortechnikerInnen sind am stärksten von diesen unbefriedigenden Arbeitsbedingungen betroffen.

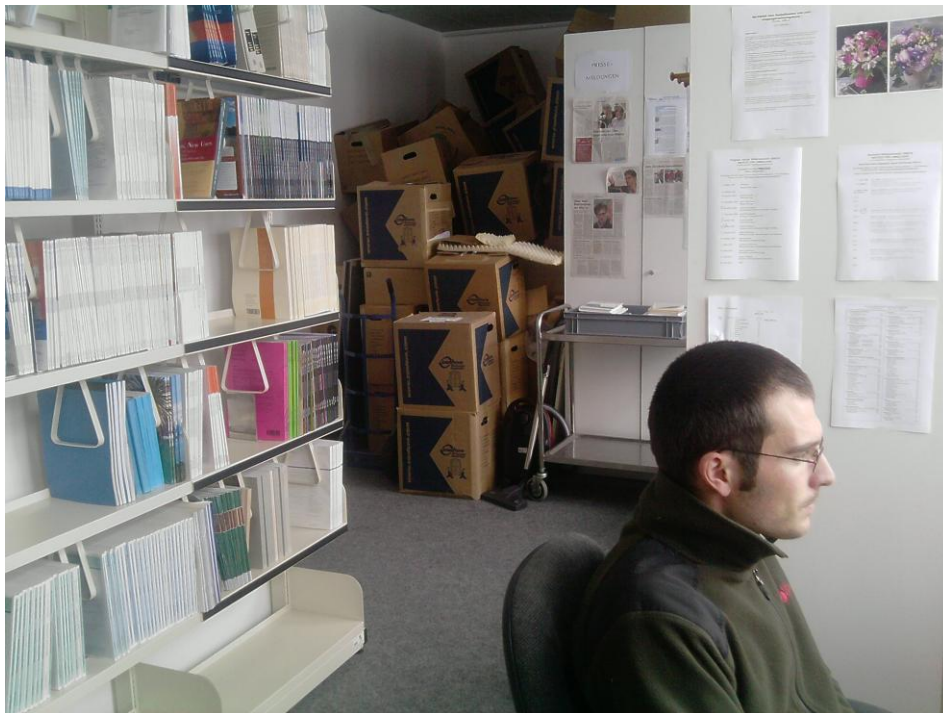


Fig. 2. Behelfsmäßige Bibliothek im Gewerbepark Mondsee. Die Schachteln im Hintergrund enthalten Bücher und gebundene Zeitschriften früherer Jahrgänge.

Diese mehr als unangenehme Situation wurde durch die ökonomische Krise verschärft, die die ÖAW und ILIM im vergangenen Jahr hart traf. Zwei Stellen von Arbeitsgruppenleitern, die zum Jahresende 2008 vakant wurden, durften 2009 nicht nachbesetzt werden. Die Ausgaben des ordentlichen Budgets waren 2009 12% geringer als im Vorjahr. Die Verwahrungen des Instituts in Höhe von 452.000 €, die für die Anschaffung von Ausrüstungsgegenständen für die im erweiterten Institutsgebäude neu entstehenden

Laborräume verwendet werden sollten, wurden von der ÖAW eingezogen. Insgesamt betrug der Beitrag des Instituts zur Bewältigung der finanziellen Krise bei der ÖAW im vergangenen Jahr mehr als 600.000 €. Selbst jetzt, im Februar 2010, verfügt die ÖAW nicht über ein realistisches Konzept, wie und wann die Umbauarbeiten fertiggestellt werden sollen. Die damit verbundene Ungewissheit stellt für alle Institutsmitarbeiter eine erhebliche psychische Belastung dar. Das gleiche gilt sinngemäß für die internationale Evaluierung des Instituts, die von seinem gegenwärtigen Direktor wiederholt eingefordert worden war, jedoch 2009 erneut verschoben wurde. Gemäß der Geschäftsordnung der ÖAW werden ihre Forschungseinrichtungen „mindestens alle sechs Jahre“ international evaluiert. ILIM wurde bisher nur einmal, im Jahre 1995, evaluiert.

Es ist offenkundig, dass diese mehr als schwierige Lage die Forschungs- und sonstigen Aktivitäten des Instituts für Limnologie beeinträchtigte. Zum Beispiel verminderte sich die Anzahl der GastwissenschaftlerInnen und graduierten Studierenden, die an unseren Forschungsaktivitäten teilnehmen, seit 2008 signifikant. Die finanziellen Einschränkungen führten auch dazu, dass die Beteiligung an internationalen Konferenzen 2009 stark abnahm, höchst bedauernswerterweise vor allem jener der NachwuchswissenschaftlerInnen.

Trotz dieser Widrigkeiten setzte das Institut seine Untersuchungen innerhalb des gegenwärtigen Schwerpunktes fort, der ***Erforschung des Ausmaßes, der Entstehung und der ökologischen Bedeutung der intraspezifischen Diversität aquatischer Mikro- und Makroorganismen.*** Mit zehn (bzw. nur 9 im Jahr 2009) auf Akademieposten angestellten Wissenschaftlern kann das Institut nicht alle Süßwassertypen, Taxa und Diversitätsebenen im Einzelnen untersuchen. Unser Vorgehen besteht darin, mittels Modellorganismen innerhalb der funktionellen Gilden und Schlüsseltaxa die Diversität in Seen auf den Ebenen von den Genen bis zur Gemeinschaft zu untersuchen. Wir konzentrieren uns dabei auf einige wenige Habitate, um den Ursprung, das Ausmaß und die Veränderung der Diversität in ausgewählten Taxa zu untersuchen.

1.1.1 Highlights 2009

- Charakterisierung neuer Anabaenopeptin-Moleküle und des zugehörigen nicht-ribosomalen Peptid-Synthetase (NRPS) Gen-Clusters bei dem Cyanobakterium *Planktothrix agardhii* führte zur Identifizierung der ersten bi-spezifischen Adenylierungs-Domäne einer NRPS
- Actinorhodopsin-Gene wurden in verschiedenen Süßwasser-Habitaten und innerhalb kultivierter Süßwasser-Actinobacteria entdeckt.
- Die hinter dem Verlust der erworbenen photosynthetischen Eigenschaften stehenden evolutiv treibenden Kräfte wurden bei Süßwasser-Flagellaten aufgedeckt.
- Unter den Protisten (Einzellern) gewinnen acidophile Spezialisten in Konkurrenzexperimenten gegenüber acidotoleranten Arten bei extremem Säure-Stress, wodurch ihre Vorherrschaft in sehr sauren Tagebaurestseen erklärt wird.
- Paläolimnologische Untersuchungen in Kärntner Seen und in einem See der zentralen Alpen waren Hauptschauplätze für die Klimarekonstruktion des Holozäns und haben das Verständnis der klimatischen und Umweltdynamik seit dem Ende der letzten Eiszeit in Österreich erheblich verbessert. Diese Untersuchungen zeigten, dass
- aquatische Organismen in diesen Seen wesentlich schneller als die terrestrische Vegetation auf vergangene Klimaänderungen reagiert haben.
- Einheimische Reinanken-Populationen können ihre genetische Identität in den Salzkammergutseen wahren, Hybrid-Schwärme mit eingesetzten Coregonen haben sich nicht entwickelt.
- Diploide Amazonenkärpflinge (*Poecilia formosa*) weisen in klonalen Konkurrenzexperimenten eine höhere Fitness auf als triploide.
- Obligate Parthenogenese bei dem Rädertier *Brachionus calyciflorus* entsteht wahrscheinlich durch eine Funktionsverlust-Mutation nach einem einfachen Mendel'schen Muster.
- Die Trainings-, Netzwerk- und Forschungsaktivitäten der IPGL-Programme wurden erfolgreich erweitert: das EU-finanzierte BOMOSA-Projekt wurde in Ostafrika erfolgreich beendet, das neue, große CAPAQUA-Projekt (1.5 Mio €) wurde von der Österreichischen Entwicklungszusammenarbeit für einen 3-Jahreszeitraum bewilligt.

1.1.2 Kurzfassung der wissenschaftlichen Tätigkeit 2009

Das Institut für Limnologie (ILIM) der Österreichischen Akademie der Wissenschaften (ÖAW) durchlief im Vorjahr das schwierigste Jahr seit der Eröffnung des Labor- und Bürogebäudes am Ufer des Mondsees im Jahr 1981. Kurz nachdem die Renovierungs- und Ausbauarbeiten im Frühjahr 2008 begonnen hatten, musste das Institutsgebäude geräumt werden, und die MitarbeiterInnen bezogen provisorische Labor- und Büroräume, die über fünf Standorte in Mondsee und Umgebung verteilt sind und die Anforderungen an eine moderne Forschungseinrichtung teilweise nicht erfüllen. Diese unbefriedigende Situation wurde durch die ökonomische Krise verschärft, die die ÖAW und ILIM im vergangenen Jahr hart trafen. Zwei Stellen von Arbeitsgruppenleitern, die zum Jahresende 2008 vakant wurden, durften 2009 nicht nachbesetzt werden. Die Ausgaben des ordentlichen Budgets waren 2009 12% geringer als im Vorjahr.

Trotz dieser Widrigkeiten setzte das Institut seine Untersuchungen erfolgreich innerhalb des gegenwärtigen Schwerpunktes fort, der *Erforschung des Ausmaßes, der Entstehung und der ökologischen Bedeutung der intraspezifischen Diversität aquatischer Mikro- und Makroorganismen*. Mit zehn (bzw. nur 9 im Jahr 2009) auf Akademieposten angestellten WissenschaftlerInnen kann das Institut nicht alle Süßwassertypen, Taxa und Diversitätsebenen im Einzelnen untersuchen. Unser Vorgehen besteht darin, mittels Modellorganismen innerhalb der funktionellen Gilden und Schlüsseltaxa die Diversität in Seen auf den Ebenen von den Genen bis zur Gemeinschaft zu untersuchen. Wir konzentrieren uns dabei auf einige wenige Habitate, um den Ursprung, das Ausmaß und die Veränderung der Diversität in ausgewählten Taxa zu untersuchen. Bezüglich der intraspezifischen Diversität wurden im Berichtszeitraum wesentliche Fortschritte auf der genetischen, organismischen und Populations-Ebene bei verschiedenen Mikroorganismen, Evertebraten und Fischen erzielt. Diese Untersuchungen wurden durch empirische, methodische und experimentelle Studien zur Evolution asexueller aquatischer Organismen bei unterschiedlichen Taxa (Rotatorien, Ostracoden und Fischen) ergänzt. Die herausragenden Ergebnisse wurden im vorigen Abschnitt schlagwortartig aufgeführt und werden in dem folgenden Kapitel ausführlich dargestellt. Die Ökosystemebene wird vor allem in zwei im vergangenen Jahr neu bewilligten interdisziplinären Projekten berücksichtigt, die

i.w.S. die Auswirkungen der Klimaveränderungen auf den Mondsee und ausgewählte hochalpine Seen untersuchen. Die Ökosystemebene wurde ebenfalls in einem Projekt der Fließgewässerökologie sowie in anwendungsorientierten Projekten im Rahmen der IPGL-Aktivitäten untersucht ('Resource management'). Innerhalb der Internationalen Postgraduierten Programme Limnologie (IPGL) waren Forschungs-, Lehr-, Netzwerk- und Management-Aktivitäten wie in den vergangenen Jahren eng verzahnt.

Die Forschungsergebnisse wurden in 24 begutachteten Fachartikeln sowie in mehreren populärwissenschaftlichen Veröffentlichungen verbreitet. Hierzu gehörte ein unter der Federführung des Instituts herausgegebenes, fachübergreifendes Buch zum Klimawandel in Österreich. Das Institut war wie in den vergangenen Jahren sehr erfolgreich bei der Lukrierung von Fördermitteln. Neben dem großen CAPAQUA-Projekt innerhalb der IPGL-Programme, die unverändert das größte und nachhaltigste Drittmittelprojekt des Instituts darstellen und den zwei o.a. klimabezogenen Projekten wurde ein neues FWF-Projekt im Jahr 2009 bewilligt. Drei FWF-Projekte und ein EU-Projekt wurden im vergangenen Jahr erfolgreich abgeschlossen.

Die Arbeitsgruppenleiter setzten ihre Lehraktivitäten an den Universitäten in Salzburg, Wien und Innsbruck fort. Zwei Dissertationen und eine Diplomarbeit wurden im Berichtsjahr erfolgreich abgeschlossen.

1.2 Summary of the scientific report 2009

The Institute for Limnology (ILIM) of the Austrian Academy of Sciences (AAS) went through its most difficult year since the laboratory and office building at the shore of Lake Mondsee was opened in 1981. Shortly after the beginning of the reconstruction and expansion works in spring 2008, the Institute's building had to be evacuated, the staff moved to interim laboratories, and offices spread over five localities in Mondsee and surroundings. These interim facilities do not fulfil the requirements of a modern research institution and do not meet, in part, the standards of occupational safety and health. The carrying capacity of most makeshift laboratories is exceeded (Fig. 3). Room temperature in several of the interim laboratories heats up to well over 30°C during summer, causing technical failures of several deep freezers, incubators, and a flow cytometer. Even in winter, temperature may reach 32°C, and the humidity often falls below 30% in the laboratories, putting health of the employees at risk.



Fig. 3. Makeshift laboratory of ILIM in the TechnoZ Mondsee

Pre-conditioned fishes of the working group 'Molecular & Cytogenetic Evolution of Asexual Aquatic Organisms' are kept in an aquarium room provided generously by the colleagues from the Federal Institute for Water Ecology, Fisheries and Lake Research at Scharfling, 13 km apart from Mondsee. Since one and a half years, researchers do not have access to an adequate library (Fig. 4). At the end of 2009, the mechanical and electronic workshops of ILIM had to be closed. Employees working on non-permanent contracts, such as junior scientist and three PostDocs, and virtually all laboratory technicians are most severely affected by these unsatisfactory working conditions.

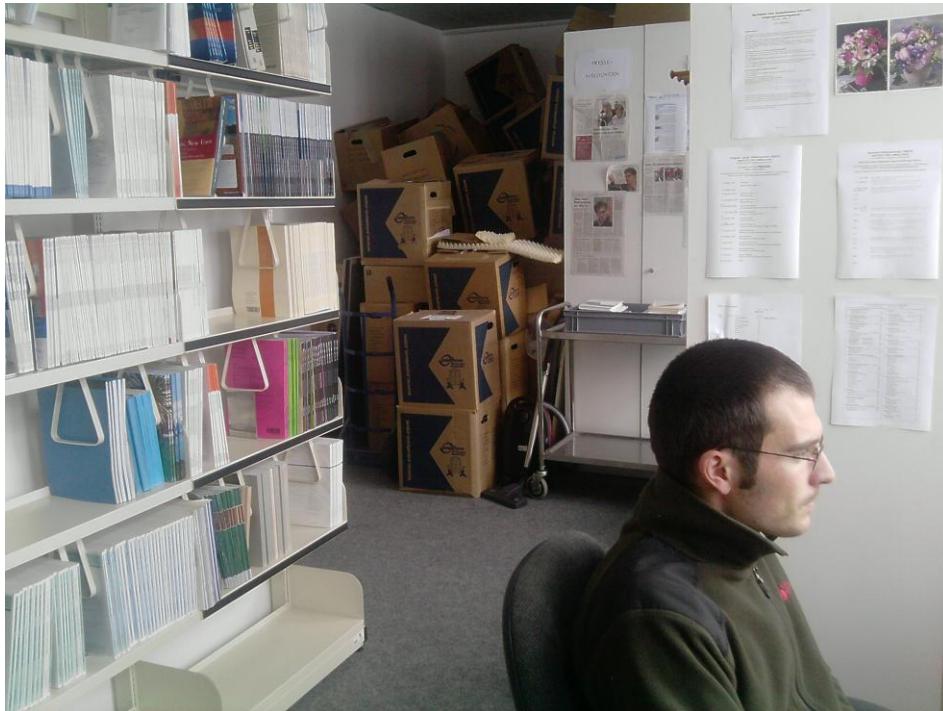


Fig. 4. Makeshift library in the Gewerbepark Mondsee. Note the boxes in the background that contain books and bound periodicals of former years.

This more than unpleasant situation was exacerbated by the economic crisis that hit the AAS and ILIM hard in 2009. Two research positions of senior scientist that became vacant at the end of 2008 could not be filled in 2009. Expenses within the ordinary budget were 12% lower in 2009 than in the previous year. The Institute's savings, 452,000 €, which were intended to purchase equipment for the new laboratories at the expanded main building, were withdrawn by the AAS. In total, ILIM contributed >600,000 € to overcome the financial crisis at the AAS. Even now, in February 2010, the AAS does not have a realistic concept how and when to finish the reconstruction works. The resulting uncertainty puts a considerable psychic burden on all employees of ILIM. Similarly, an international evaluation of ILIM, which was repeatedly demanded by its current director, was postponed, once again. According to the rules of procedure of the AAS, each of its research institutions has to be evaluated in at least 6-years intervals; ILIM was evaluated only once, in 1995.

It is obvious that this more than difficult situation affected the research and outreach activities of ILIM. For instance, the number of guest researchers and graduate students involved in our research activities declined significantly since 2008. Similarly, due to the financial restrictions, participation in international scientific meetings declined drastically in 2009, and, most regrettable, in particular by junior scientists.

In spite of these obstacles, the Institute for Limnology continued its research within the current focus, i.e. investigating the *extent, origin and ecological significance of intraspecific diversity of aquatic micro- and macroorganisms*. With its staff complement of 10 scientists (only 9 in 2009), the Institute cannot cover all freshwater types, taxa and levels of diversity in detail. Our research philosophy is to use model organisms within functional guilds and key taxa to investigate the lake diversity at the levels ranging from genes through communities. Similarly, we focus on a few study sites to investigate the origin, extent and change of diversity in specific taxa.

1.2.1 Highlights 2009

- Characterization of new anabaenopeptin molecules and the respective non-ribosomal peptide synthetase (NRPS) gene cluster in the cyanobacterium *Planktothrix agardhii* led to the identification of the first bispecific adenylation domain in NRPS.
- Actinorhodopsin genes discovered in diverse freshwater habitats and among cultivated freshwater Actinobacteria.
- Driving forces behind the loss of acquired photosynthetic traits discovered in freshwater flagellates.
- Acidophil specialist protist species outcompete acidotolerant species under conditions of extreme acid stress, thus explaining their dominance in acid mining lakes.
- Palaeolimnological investigations in Carinthian lakes and from a lake in the Central Austrian Alps were a key-site for Holocene climate reconstruction, significantly improving the understanding of climatic and environmental dynamics since the end of the last Ice Age in Austria. These investigations revealed that
- aquatic organisms reacted much quicker and more sensitive to past climatic changes than the terrestrial vegetation in these lakes.
- Native whitefish populations retain their genetic identity in the Salzkammergut lakes; hybrid swarms with introduced coregonids have not developed.
- Diploid Amazon mollies (*Poecilia formosa*) show a higher fitness than triploids in clonal competition experiments.
- Obligate parthenogenesis in the rotifer *Brachionus calyciflorus* is probably caused by a loss-of-function mutation in a simple Mendelian fashion.
- The IPGL training, networking and research projects thrived: The EU-funded project BOMOSA was successfully completed in East Africa, the large, new project CAPAQUA was granted (1.5 Mio €) by the Austrian Development Cooperation for a three years period.

1.2.2 Abstract of the scientific activity during 2009

The Institute for Limnology (ILIM) of the Austrian Academy of Sciences (AAS) went through its most difficult year since the laboratory and office building at the shore of Lake Mondsee was opened in 1981. Shortly after the beginning of the reconstruction and expansion works in spring 2008, the Institute's building had to be evacuated, the staff moved to interim laboratories, and offices spread over five localities in Mondsee and surroundings. This difficult situation was exacerbated by the economic crisis that hit the AAS and ILIM hard in 2009. Two research positions of senior scientist that became vacant at the end of 2008 could not be filled in 2009. Expenses within the ordinary budget were 12% lower in 2009 than in the previous year.

In spite of these obstacles, the Institute for Limnology continued successfully its research within the current focus, i.e. investigating the *extent, origin and ecological significance of intraspecific diversity of aquatic micro- and macroorganisms*. With its staff complement of 10 scientists (only 9 in 2009), the Institute cannot cover all freshwater types, taxa and levels of diversity in detail. Our research philosophy is to use model organisms within functional guilds and key taxa to investigate the lake diversity at the levels ranging from genes through communities. Similarly, we focus on a few study sites to investigate the origin, extent and change of diversity in specific taxa.

With respect to intraspecific diversity, considerable progress was made during the reporting period at the levels of gene, organisms, and populations with different taxa, reaching from microorganisms to evertebrates and fish. These studies were complemented by empirical, methodical, and experimental investigations on the evolution of asexual aquatic organisms of different taxa (rotifers, ostracods, and fish). The highlights mentioned in the previous section will be reported in more detail in the following chapter. The ecosystem level is the primary target of two new projects that were granted in the past year. These projects deal with the effect of climate change, in a broad sense, on Lake Mondsee and several selected, high Alpine lakes. A project of river ecology and more applied projects within the framework of the IPGL activities also investigated the ecosystem level. Research, training, networking and management activities were closely coupled within the International Post-Graduate Training Programmes in Limnology (IPGL), as it was the case in previous years.

Research results were disseminated in 24 peer-reviewed articles and in several popular scientific publications. An example for the latter is a book on climate change in Austria that was edited under the lead of ILIM. The Institute successfully acquired third-party funds, as in the previous years. The IPGL programmes were continued as the longest lasting and most sustainable extramurally funded project. The large CAPAQUA-Project within IPGL was granted in 2009. In addition, the two climate change-related projects mentioned above and one new FWF project were granted in 2009. Three FWF projects and one EU project were successfully completed in the past year.

The senior scientists continued teaching at the universities in Salzburg, Vienna, and Innsbruck. Two Ph.D. and one diploma theses were successfully completed during the reporting period.

1.3 Report on the scientific activity during 2009

Physiology and Molecular Ecology of secondary metabolite synthesis in algae

(**Rainer Kurmayer**¹, Guntram Christiansen, William Okello, Veronika Ostermaier, Nadja Straubinger, Josef Knoblechner, Maria Reischauer, Johanna Schmidt)

The application of DNA-based approaches has an enormous input on the understanding of the regulation of toxin production by algae such as cyanobacteria flourishing under eutrophic conditions in freshwater ecosystems. By combining genome sequencing with the genetic manipulation of genes we have been successful in elucidating several gene clusters encoding the synthesis of bioactive secondary metabolites (see previous Annual Reports). The heterologous expression and functional characterization of particular enzyme domains provides another important tool in order to explore the consequences of genetic diversity observed in the environment. In the year, 2009 we were successful to

- Elucidate and characterise the gene cluster encoding the non-ribosomal synthesis of the carboxypeptidase inhibitor anabaenopeptin (FWF-P20231, in cooperation with Dep. Chemistry, Univ. of Hawaii)
- Document the influence of spatial isolation between freshwater lakes in Uganda on the production of the toxic peptide microcystin (Northern-Southern Dialogue fellowship to William Okello)
- Apply real-time PCR to estimate the production of the toxic peptide microcystin in Alpine lakes (Doc-Forte fellowship to Veronika Ostermaier)

In the following, we report on the characterization of new anabaenopeptin molecules and the respective non-ribosomal peptide synthetase (NRPS) gene cluster in the cyanobacterium *Planktothrix agardhii*. This led to the identification of the first bispecific adenylation domain in NRPS. The diversity in biochemical reactions in NRPS as revealed from cyanobacteria is attracting increasing interest due to potential pharmaceutical applications.

¹ Head of each working group in bold face

Elucidation and characterisation of the gene cluster encoding the non-ribosomal synthesis of the carboxypeptidase inhibitor anabaenopeptin

Anabaenopeptins are produced by several groups of planktonic (*Anabaena*, *Microcystis*, *Planktothrix*) and benthic cyanobacteria (*Plectonema*, *Schizothrix*) but also by marine sponges (*Theonella*). Anabaenopeptins are hexapeptides that are cyclic due to a lactam ring formation between a strictly conserved amino acid in position 5 (lysine) and another amino acid in position 1. A variable amino acid (in position 6) is attached by an ureido bond to the lysine in position 5.

It has been shown that anabaenopeptin inhibit proteases such as carboxypeptidase A by mimicking an amido bond that blocks the catalytic domain of the carboxypeptidase.

The anabaenopeptin gene cluster constitutes six modules consisting only of peptide synthetases (*apnA-D*), which encode the synthesis of the anabaenopeptin molecule in a linear order by the so-called thio-template directed biosynthesis pathway. An ABC transporter enzyme putatively encoding an exporter protein is encoded by the *apnE* gene (Fig. 5). As shown in Kosol et al. (2009) single isolates of *Planktothrix* sp. frequently co-produce structural variants that contain either arginine or tyrosine in the side chain (position 6) of the anabaenopeptin molecule. We demonstrated by heterologous expression (Fig. 6) and *in vitro* characterization (Fig. 7) of the adenylation domain of module 1 (*apnA-A1*) that the same adenylation domain is responsible for the activation of the two amino acids arginine and tyrosine. This result is surprising, as the two amino acids are non-homologous with rather contrasting chemical properties (i.e. arginine is basic with a positively charged guanidino group, tyrosine is aromatic). So far, only the observation on side-specificity of adenylation domains activating chemically related amino acids such as valine, leucine and isoleucine has been documented. In contrast this result constitutes the first truly bispecific adenylation domain that has been reported for non-ribosomal peptide synthetases in general.

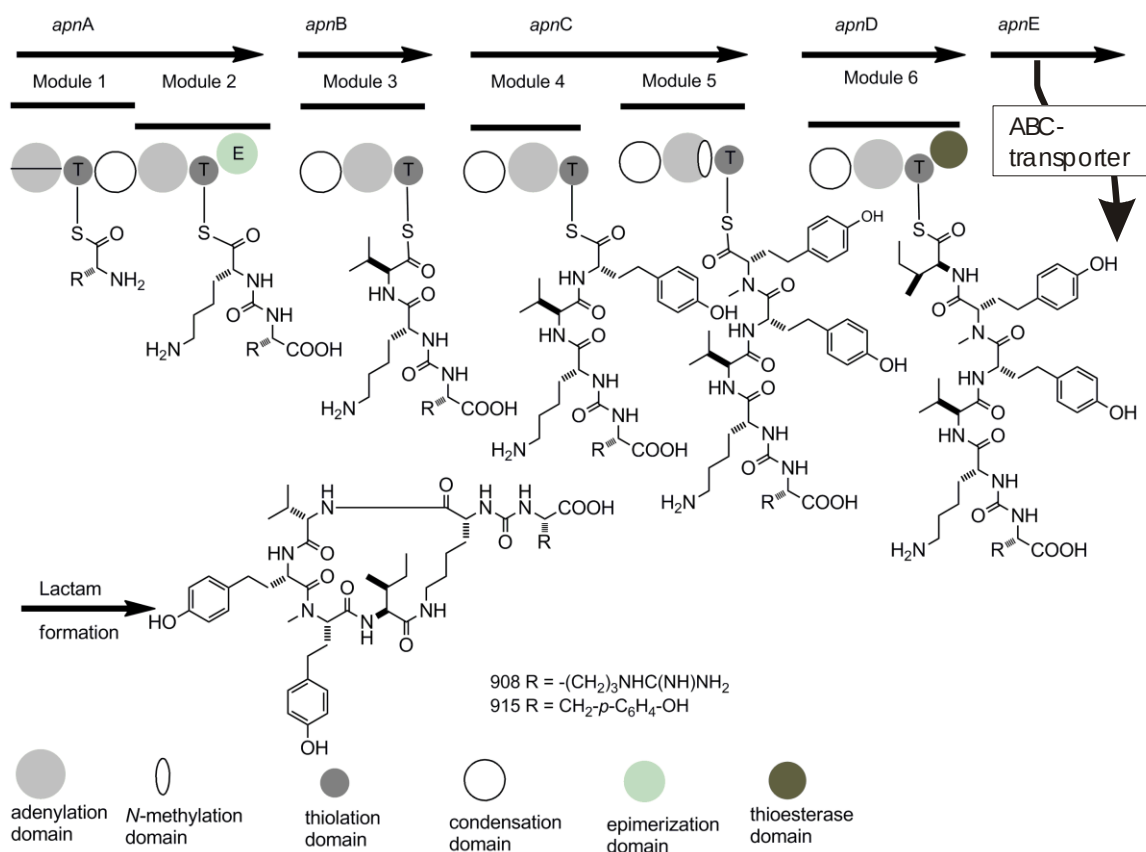


Fig. 5. Anabaenopeptin (*apn*) gene cluster and proposed biosynthesis of anabaenopeptins 908 and 915 in the cyanobacterium *Planktothrix agardhii* CYA 126/8. ORFs are shown as solid arrows indicating the direction of transcription, while modules are highlighted with solid lines and domains are shown as circles. The three-letter code inside the adenylation domain circles indicates the predicted amino acid that is activated. Genes not drawn to scale.

The anabaenopeptin synthetase gene cluster constitutes a non-ribosomal peptide synthetase (NRPS) system that is interesting both from a biochemical and from an evolutionary point of view. With respect to biochemistry, it will be appealing to explore the functional constraints resulting in the specificity of adenylation domains in comparison with the reported bispecificity. From an evolutionary point of view, it will be interesting to explore the selective forces leading to this functional adaptation not only within the anabaenopeptin synthetase but also within other NRPS such as the microcystin synthetase.

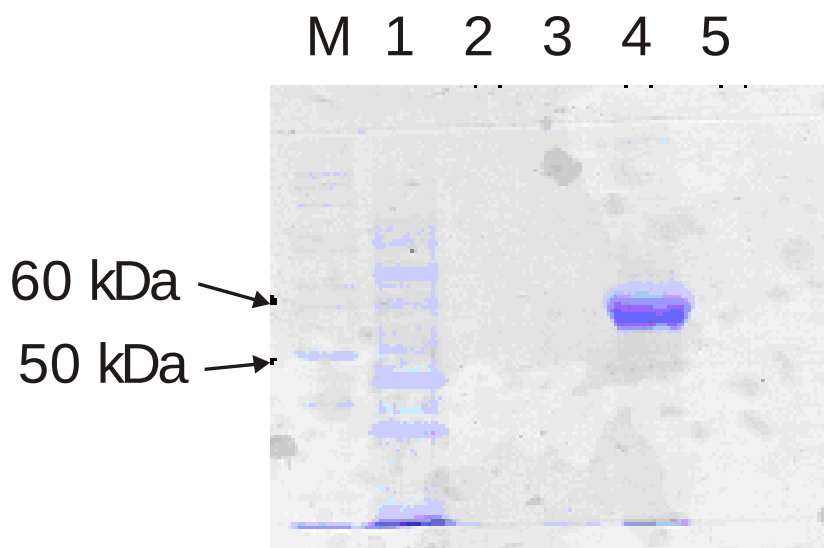


Fig. 6. Heterologous expression of the adenylation domain of module 1 (*apnA*-A₁). During His₆-*ApnA*-A₁ isolation individual fractions (1-5) have been stained with Coomassie blue stain on a SDS-PAGE gel (10 %). M, Fermentas PageRuler Protein Ladder.

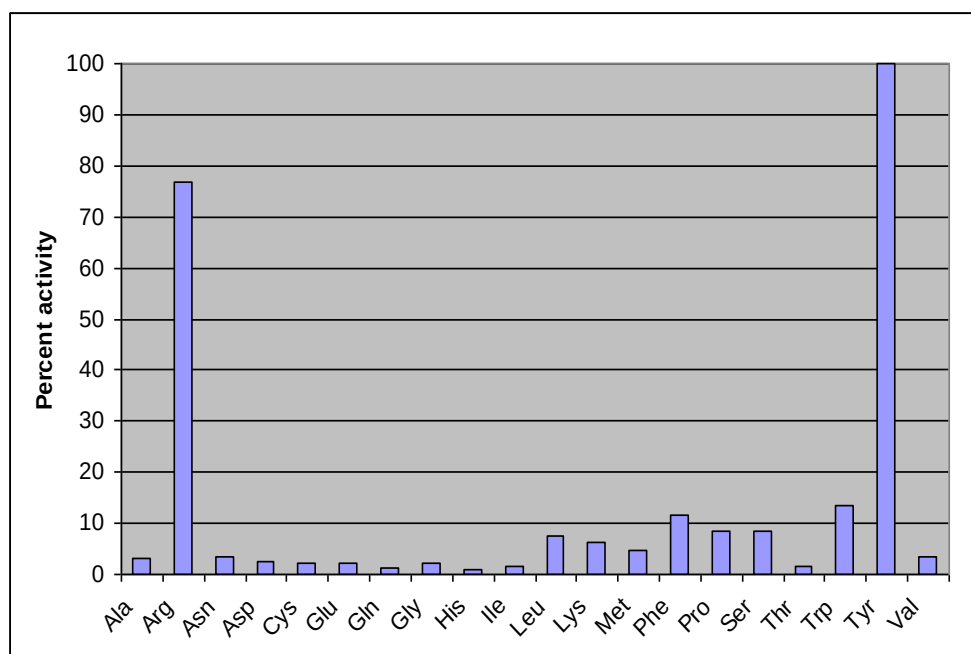


Fig. 7. ATP-PP_i exchange assay results (mean of three parallels) for the bispecific amino acid-activation domain (*ApnA*-A₁) of *Planktothrix agardhii* strain CYA 126/8. The radioactive assay shows a high transversion of the non-homologous amino acids arginine and tyrosine, which is in accordance with the two anabaenopeptin structural variants 908 and 915 produced *in vivo*.

The influence of spatial isolation on microcystin net production by the cyanobacterium *Microcystis* in Ugandan freshwater lakes

During the last years, we have shown (see previous Annual Reports, Ostermaier & Kurmayer 2009) that spatially isolated populations of cyanobacteria differ in the composition of genotypes encoding the synthesis of the toxic heptapeptide microcystin. This isolation potentially results in the production of new structural variants (Okello et al. 2009). We further showed that the structural variation in highly variable positions such as position 2 of the microcystin molecule is selectively neutral implying that genetic drift resulting from spatial isolation has the potential to lead to the evolution of new microcystin structural variants. For lakes located in the Alps of Austria, Germany and Switzerland we reported that populations of *Planktothrix* diverge in the microcystin genotype composition at least during consecutive years (Ostermaier & Kurmayer 2009).

In the reporting period, we could show that populations of *Microcystis* occurring in freshwater lakes in Uganda are also spatially isolated, differing in the average proportion of microcystin (*mcy*) genotypes (as determined by real-time PCR according to our established protocols) independent from seasonal influences. This led to >100 fold difference in the average microcystin content per cell of *Microcystis* between lakes. While *Microcystis* from Lake George consistently showed the lowest microcystin cell quotas (0.03-1.24 fg cell⁻¹), *Microcystis* from Lake Saka showed maximum microcystin cell contents (14-144 fg cell⁻¹, Fig. 8A, B). Over the study period the proportion of the *mcyB* genotype was linearly related to the average cellular microcystin content per cell, $y = 1.2884x - 0.7835$ ($n = 77$, $R^2 = 0.58$), where x is the log₁₀ proportion of the *mcyB* genotype and y is the log₁₀ microcystin content in fg microcystin cell⁻¹ (Fig. 8C).

This study is the first that demonstrates that in consequence to genetic differentiation between spatially isolated populations of cyanobacteria the net production of the toxic heptapeptide microcystin differs quantitatively. While the influence of physiological effects on the transcriptional regulation of the *mcy* gene cluster (for example due to different irradiances in the various water bodies) cannot be excluded, it is likely to be of minor importance when compared with the influence of the *mcy* genotype number.

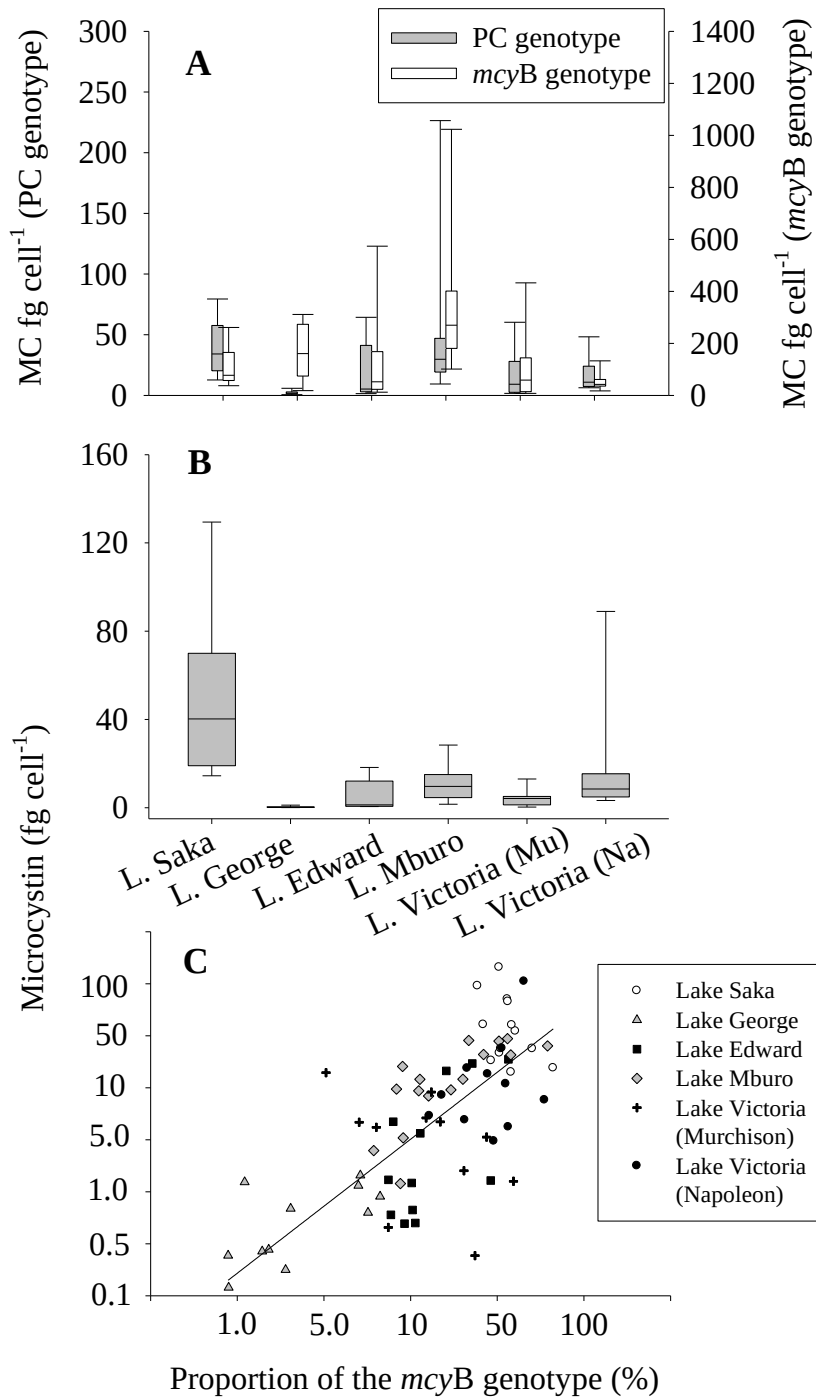


Fig. 8. Microcystin cell contents (in fg of microcystin cell⁻¹) of (A) *Microcystis* genotypes (PC=phycocyanin; *mcyB*=microcystin synthetase gene cluster) and (B) *Microcystis* cells estimated at six sites of the freshwater lakes sampled from May 2007- April 2008 in Uganda (Mu=Murchison Bay, Na=Napoleon Gulf). (C) Dependence of the average microcystin content (as determined for *Microcystis* cells counted in the microscope) on the proportion of the *mcyB* genotype of *Microcystis* for the same data set. Parameters of the regression curve are given in the text.

Application of real-time PCR to estimate the production of the toxic peptide microcystin

The application of real-time PCR for rapid detection and quantification of toxin-producing cyanobacteria in water bodies was developed in our laboratory already in 2003. Although the technique proposed has become widely distributed and applied to various water bodies several concerns remain. Firstly, DNA provides information on the genetic capability only but not on the *in situ* activity. Secondly, the specificity of real-time PCR results has been questioned particularly with regard to the specificity of the applied primers and probes. Thirdly, the quantitative relationships between the presence of toxin-producing cyanobacteria and the actual toxin concentrations are not clear.

In this study, we aimed to quantify three genotypes of the cyanobacterium *Planktothrix* sp. in twelve different lakes of the Alps during the years 2005-2007. These genotypes encode the synthesis of different structural variants of the microcystin molecule. Three microcystin genotypes (denoted the Dhb, Mdha and Hty genotype) were quantified by means of quantitative real-time PCR and their absolute and relative abundance was related to the concentration of the microcystin structural variants as determined from aliquots by HPLC. Total microcystin concentrations varied from 0 – 6.2 $\mu\text{g L}^{-1}$ (mean 0.6 ± 0.1 (SE) $\mu\text{g L}^{-1}$) among samples resulting in an average microcystin content in *Planktothrix* that was 2 ± 0.5 $\mu\text{g mm}^{-3}$ biovolume. Over a wide range in population density ($0.001 - 3.585$ $\text{mm}^3 \text{L}^{-1}$ *Planktothrix* biovolume), the Dhb genotype and [Asp, Dhb]-MC-RR were most abundant while the Hty genotype and MC-HtyR occurred only in lowest proportion.

The results of this study are of relevance to justify the application of toxic genotype monitoring by means of real-time PCR in order to predict microcystin concentrations in water. Following the overall regression curve shown in Fig. 9, a biovolume of $10 \text{ mm}^3 \text{L}^{-1}$ of microcystin genotypes corresponds to a microcystin concentration of 43.2 (31.7 – 58.8, confidence interval) $\mu\text{g microcystin-LR equivalents ()}$. Since microcystin-producing strains of *Microcystis* and *Planktothrix* do not differ principally in their microcystin content (Kosol et al. 2009), this regression curve may also be applicable to water samples that are dominated by *Microcystis*.

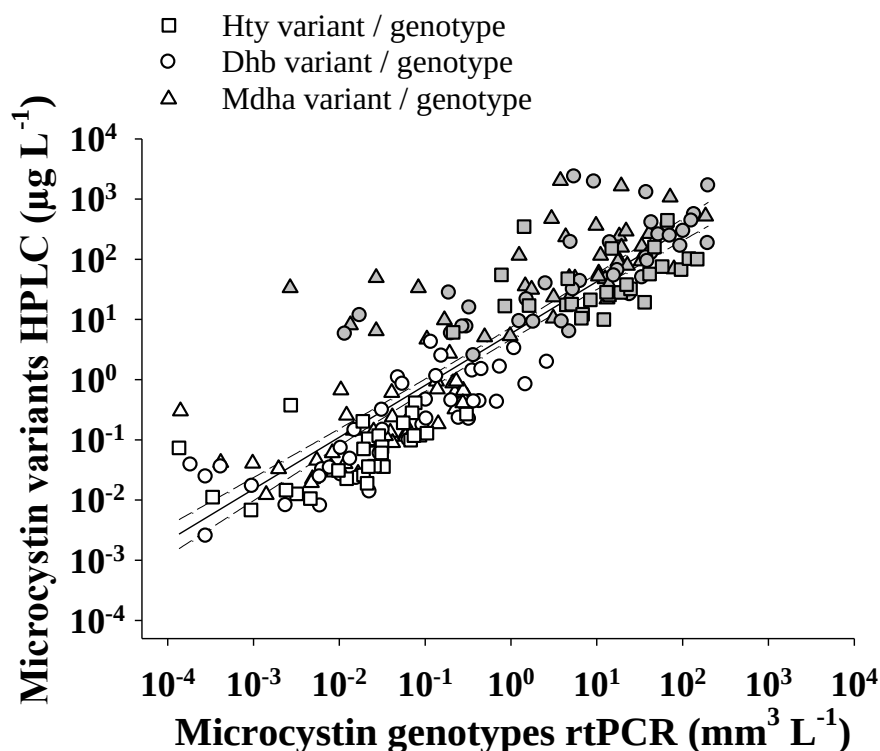


Fig. 9. Relationship between the microcystin genotypes as determined by real-time PCR (biovolume in $\text{mm}^3 \text{L}^{-1}$) and the microcystin variants as estimated by HPLC ($\mu\text{g L}^{-1}$) from integrated (white symbols) and net (grey symbols) samples. Broken lines of the linear regression curve indicate 95% confidence limits: $y = 0.77 + 0.86x$, ($R^2 = 0.77$, $n = 213$, $P < 0.001$), where x is the $\log_{10}$ biovolume of a specific genotype and y is the $\log_{10}$ of the concentration of the corresponding microcystin variant ($\mu\text{g L}^{-1}$).

Research to be performed in 2010

- 1) Closing the *Planktothrix agardhii* genome (three contigs remaining) and the associated plasmids (6 kb, 105 kb)
- 2) Completing the naming of the 4800 automatically identified ORFs
- 3) Identifying the influence of the transcriptional rate of genes on the differences in the toxin contents among 39 isolates of the cyanobacterium *Planktothrix* (Tasks 1-3 FWF project P20231)
- 4) Ultra-deep sequencing of planktonic communities in Alpine lakes (project DETECTIVE)
- 5) Monitoring of physical conditions and (phyto)plankton composition in Lake Mondsee (project RADICAL)

Environmental Microbiology

(Martin Hahn, Ulrike Brandt and cooperation partners)

Bacteria and Archaea represent the genetically most diverse superkingdom. The exploration of prokaryotic diversity and its taxonomic description is still hampered by methodical limitations (e.g., lack of sufficient cultivation methods) and conceptual obstacles. The current taxonomic species concept for prokaryotes (i.e. the Bacteriological Code) is not built on an evolutionary theory. Alternative concepts on how to define and delineate prokaryotic species are hotly debated at present, and intensive research on evolutionary mechanisms driving “speciation” in prokaryotes is going on in many research laboratories. One consequence of the shortfalls of the current taxonomic species concept for prokaryotes is a lack of comparability of prokaryotic and eukaryotic species taxa and another consequence is the frequent lack of congruence between prokaryotic species taxa and ecologically coherent taxa.

The long-term goal of the Environmental Microbiology group is to contribute to a better understanding of evolutionary forces driving diversification of prokaryotes. We use model groups (e.g. *Polynucleobacter* spp., lineages of freshwater *Actinobacteria*, and *Bacteroidetes*) for detailed studies on ecological and genetic diversification.

The research of the group Environmental Microbiology focused on three aspects during the reporting period: (i) Linking ecological and phylogenetic diversity of *Polynucleobacter necessarius* to taxonomy of this important bacterial group, (ii) research on presence, diversity and distribution of actinorhodopsins in freshwater *Actinobacteria*, and (iii) advancing the taxonomy of planktonic freshwater bacteria.

Research was performed in cooperation with international partners including Mitsunori Tarao (Tokyo University of Agriculture and Technology, Japan), Qinglong Wu (Chinese Academy of Sciences, Nanjing Institute of Geography and Limnology, China), Karel Šimek and Jan Jezbera (Biology Centre AS CR, Czech Republic), Adrian Sharma and W. Ford Doolittle (Dalhousie University, Canada), and Elke Lang and Erko Stackebrandt (DSMZ, Braunschweig, Germany). Our research results were presented in six peer-reviewed articles published in international journals, and in another, non-reviewed paper.

Research on *Polynucleobacter* bacteria

Recently we demonstrated ecological diversity among the phylogenetically diverse group of *Polynucleobacter* bacteria (five papers published in 2005-2007). Detailed investigations demonstrated, on the one hand, for a species-like subgroup ('subcluster PnecC) ubiquitous occurrence in freshwater habitats of a 2000 km² area mainly located in the Salzkammergut region (Jezberova et al., in press). On the other hand, it was demonstrated that this species-like subgroup of the *Polynucleobacter* clade is further subdivided into groups, which all do not possess ubiquitous distributions in the investigated area (Jezbera et al., submitted). We aimed on better characterization of subcluster PnecC by sequencing of phylogenetic marker genes and phenotypic investigations, as well as on taxonomic characterization of the group. The performed phylogenetic and phenotypic investigations indicated that subcluster PnecC represents a diverse but monophyletic taxon. The phylogeny supported our previously published hypothesis of a close phylogenetic relationship between the free-living, planktonic bacteria representing subcluster PnecC and obligate endosymbionts of ciliates affiliated with the validly described species *Polynucleobacter necessarius*. Investigations by currently available methods did not reveal any hint on the presence of distinct species in subcluster PnecC. Consequently, a taxonomic revision of the genus *Polynucleobacter* and the sole described species *P. necessarius* was proposed (Hahn et al., 2009). This revision included the proposal of two subspecies, *P. necessarius* ssp. *necessarius* and *P. necessarius* ssp. *asymbioticus* to accommodate obligately endosymbiotic and obligately free-living strains. The performed taxonomic investigations resulted furthermore in the proposal of two new species, *Polynucleobacter cosmopolitanus* sp. nov. (Hahn et al., 2010) and *Polynucleobacter rarus* sp. nov. (Hahn et al., submitted).

***Actinobacteria*, actinorhodopsins, and grazing protection**

Actinobacteria represented another research focus of the working group. The consortium lead by our Canadian colleague Adrian Sharma (Dalhousie University) published the discovery of actinorhodopsin gene (encoding transmembrane proteins acting as light-driven proton pumps potentially enabling bacteria to harvest light energy; see Annual Report 2008) in freshwater *Actinobacteria* (Sharma et al., 2009).

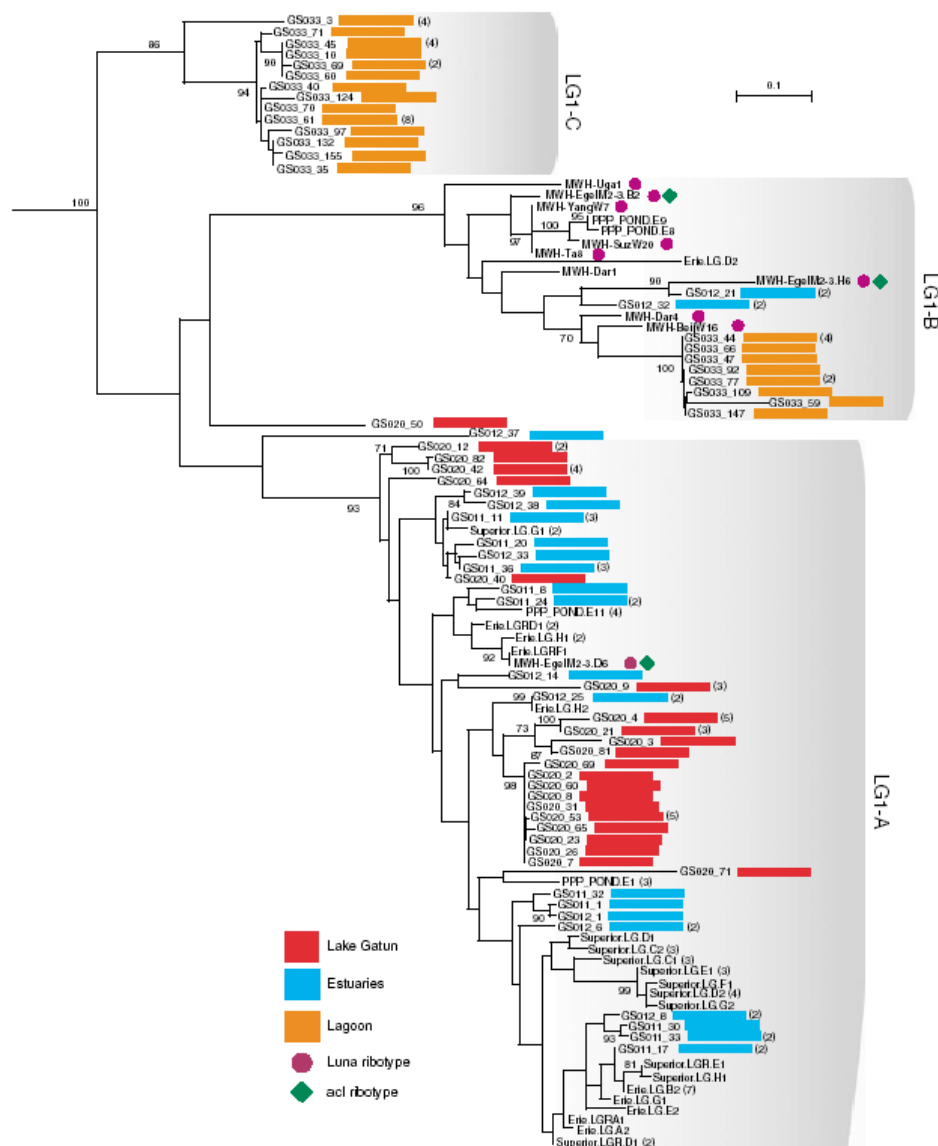


Fig. 10. Phylogenetic tree of actinorhodopsin genes obtained from cultivated Actinobacteria and environmental samples. The colour code indicates the origin from metagenomic datasets (squares) or actinobacterial cultures representing two different ribosomal lineages. These two lineages were meanwhile taxonomically described (Hahn, 2009; Jezbera et al., 2009). All non-colour-labeled sequences were obtained from Lake Erie or Lake Superior.

All but one group of cultured *Actinobacteria* encoding actinorhodopsin genes were meanwhile taxonomically characterized as Candidatus genera and species (Hahn, 2009; Jezbera et al. 2009). A Phylogenetic tree of actinorhodopsin genes obtained from cultivated Actinobacteria is shown in Fig. 10.

Another interesting aspect of freshwater *Actinobacteria* is their resistance to grazing by bacterivorous protists. We have experimentally demonstrated this resistance for a single strain (Hahn et al., 2003), and others have presented *in situ* data indicating a widespread distribution of this trait among freshwater *Actinobacteria*. We tested if this trait is a common one among *Actinobacteria* affiliated with the so-called Luna2 lineage (taxonomic description in preparation). We observed that all tested members were protected against predation by a model predator (Tarao et al., 2009). Furthermore, we tested hypotheses on the nature of this grazing protection. The performed experiments indicated that a surface layer (S-layer) of the bacteria is responsible for the protection trait (Tarao et al., 2009).

Taxonomic research

Besides the above-mentioned taxonomic research on *Polynucleobacter* and *Actinobacteria*, taxonomic investigations on the so-called 'Rhodoferax sp. BAL47' group were performed. Research based on cultivation-independent methods defined and named this phylogenetic group of *Betaproteobacteria*. We isolated strains affiliated with this taxon and performed a taxonomic evaluation (in cooperation with Karel Šimek and Jan Jezbera, Budweis). Our results indicated that the investigated strains are phenotypically, chemotaxonomically, and phylogenetically different from members of the genus *Rhodoferax*. Therefore, we proposed to establish for these organisms the genus *Limnohabitans* gen. nov. and the species *L. curvus* sp. nov., *L. parvus* sp. nov., *L. planktonicus* sp. nov., and *L. australis* sp. nov. (Hahn et al., in press; Kasalický et al., in press). Bacteria affiliated with this new genus occur in many freshwater habitats with high relative abundances.

Research to be performed in 2010

- Genome sequencing and analysis of a actinorhodopsin encoding freshwater *Actinobacterium* (in cooperation with A. Sharma)
- Comparative genome analyses of *P. necessarius* ssp. *asymbioticus* strains (ESF proposal, pending)
- Characterization of ecological differences between *P. necessarius* ssp. *asymbioticus* strains (in part in cooperation with Q. Wu and A. Camacho)
- Investigations on ecological diversification among taxa of the *Limnohabitans parvus-planktonicus* lineage (cooperation with K. Šimek and J. Jezbera)
- Taxonomic characterization of the so-called 'GKS98 cluster'

Diversity and ecology of Flagellates and Microalgae

(Jens Boenigk, Liselotte Eisl, Anneliese Wiedlroither, Barbara Findenig, Steffen Jost, Ralph Medinger)

Our research focused on aspects of diversity, evolution and ecology of eukaryotic microorganisms with a focus on chrysophytes. The analysis of distribution pattern focussed on an Alpine lake gradient ranging from the German border north of Salzburg to the central Alps comprising 40 lakes.

Methodological progress

In order to test for the general applicability of a method for the quantitative analysis of planktonic protists and microalgae from preserved field samples combining morphological and small-subunit (SSU) rRNA gene sequence analysis (Auinger et al. 2008) we investigated the protist community in two saline-alkaline lakes in Kenya (Ong'ondo et al. in prep.). Food webs in saline – alkaline lakes often differ from 'classical' lakes as zooplankton, fish are lacking or are represented by only few taxa, and microbes dominate. Phagotrophic protists are of primary importance as they are the main consumers of microalgae and bacterioplankton. We studied the composition of the ciliated protist assemblage and, furthermore, the intra-specific variation of *Frontonia* in two shallow saline-alkaline Rift Valley lakes (Lake Bogoria and Lake Nakuru) in Kenya. In both lakes, fifteen genera of ciliated protists were identified and the community composition was similar. *Cyclidium* sp. and *Frontonia* sp. dominated numerically in the two lakes while the biomass in Lake Bogoria was mainly constituted by *Frontonia* sp. and *Condylostoma* sp. (75% and 21%, respectively) and *Frontonia* sp. and *Holophrya* sp. (40% to 90%) in Lake Nakuru. The abundance of bacterivorous ciliates was independent of the bacterial abundance, probably due to the very high and generally satiating bacterial food concentration. *Frontonia* abundance was positively correlated to the chlorophyll a concentration (Spearman's rank correlation, $C = 0.46$, $P < 0.05$, $n = 40$). Morphometric measurements and molecular analysis of the 18s SSU rRNA showed that *Frontonia* morphospecies from both lakes were represented by the same SSU rRNA genotypes. They differed from other *Frontonia* spp in the phylogenetic tree, except for *Frontonia didieri*, and clustered with *Apofrontonia* and *Paramecium*.

For the comparative analysis of promising barcoding genes, we linked this method to a multiplex PCR approach (Jost et al. in prep.; Fig. 11). The strong benefit of multiplex PCR is the requirement of a single DNA aliquot (e.g. a single cell) for the parallel analyses of different target sequences. In this study we combined multiplex PCR targeting an approximately 2.4 kb fragment of the ribosomal operon containing the SSU, the ITS1, the 5.8S and the ITS2 as well as a ~900bp fragment of the CO1 gene with morphological analyses of *Dinobryon* spp. (Chrysophyceae) originating from field samples preserved in Lugol's iodine solution. This approach allowed us to comparatively analyse the two candidate barcode sequences ITS2 and CO1 and to link the corresponding gene phylogenies to morphology and the phylogeny of the by far better investigated SSU rRNA gene.

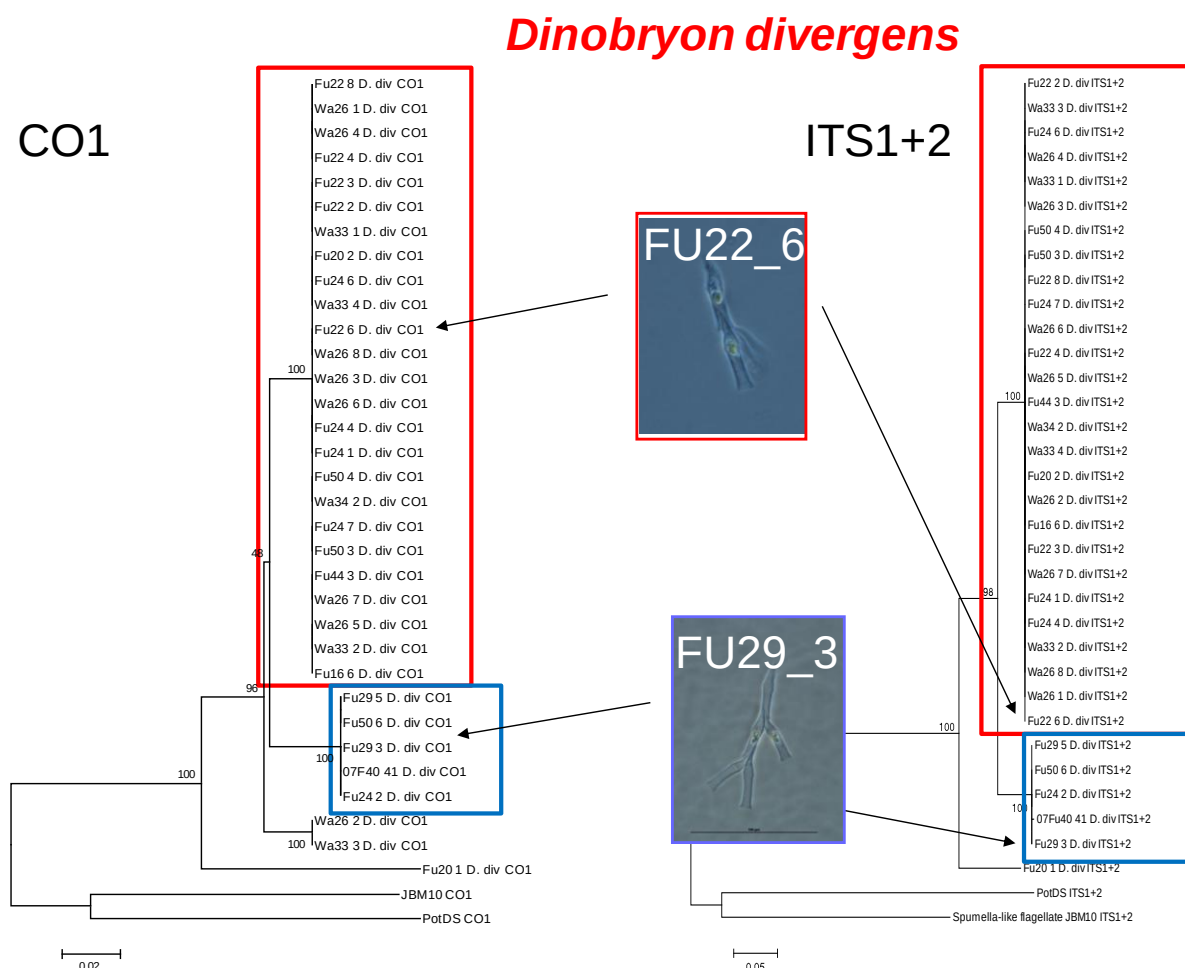


Fig. 11. Comparative analysis of the barcode candidate sequences CO1 and ITS. Both sequences correspondingly separate two clusters within the *Dinobryon divergens* morphospecies indicating a cryptic species.

Biodiversity – cyst formation and the species problem

The second focus of the project was on cyst formation, which is a characteristic feature of chrysophytes. Cyst morphology is used for species identification, and the distribution of cysts in sediment cores is used to infer past climate conditions. The affiliation of stomatocyst demes with morphospecies, however, remains unclear. Here we investigated the taxonomic and ecological value of the occurrence of cyst formation and cyst morphology to differentiate chrysophyte flagellates of the *Spumella*-morphodeme, which are among the numerically dominant eukaryotes in many aquatic and terrestrial habitats. In the investigated 90 strains of *Spumella*-like flagellates, we observed encystment only in six strains despite the broad range of temperature regimes and chemical factors tested. *Spumella*-like flagellates, which produce cysts, are affiliated with different subclusters within the Chrysophyceae and are closely related to strains for which cyst formation is not known. The occurrence of cyst formation is therefore unsuitable as a taxonomic criterion. Cyst morphology allows for differentiating some strains even though distinctly different strains may have similar or even identical looking cyst demes. Despite considerable changes in cell size of the vegetative cells related to the nutritional status, the size of the cysts was always larger than that of a typical vegetative cell. Cysts were colourless and had no chromatophores and some granula were visible in the light microscope. None of the investigated strains and none of the so far published cyst descriptions of *Spumella* spp. entirely seem to match the cyst description of the generic type strain. However, taking methodological bias between light and electron microscopical investigations into account, the cyst 199hm (Findenig et al. in press) and N1846 (Yubuki et al. 2008) seem to correspond to the cyst of the generic type strain. We propose the strain 199hm as epitype for *Spumella vulgaris*; we further describe *Spumella rivalis* Boenigk & Findenig sp. nov., *Pedospumella encystans* Boenigk & Findenig gen. et sp. nov. and *Poteriospumella lacustris* Boenigk & Findenig gen. et sp. nov. (Fig. 12).

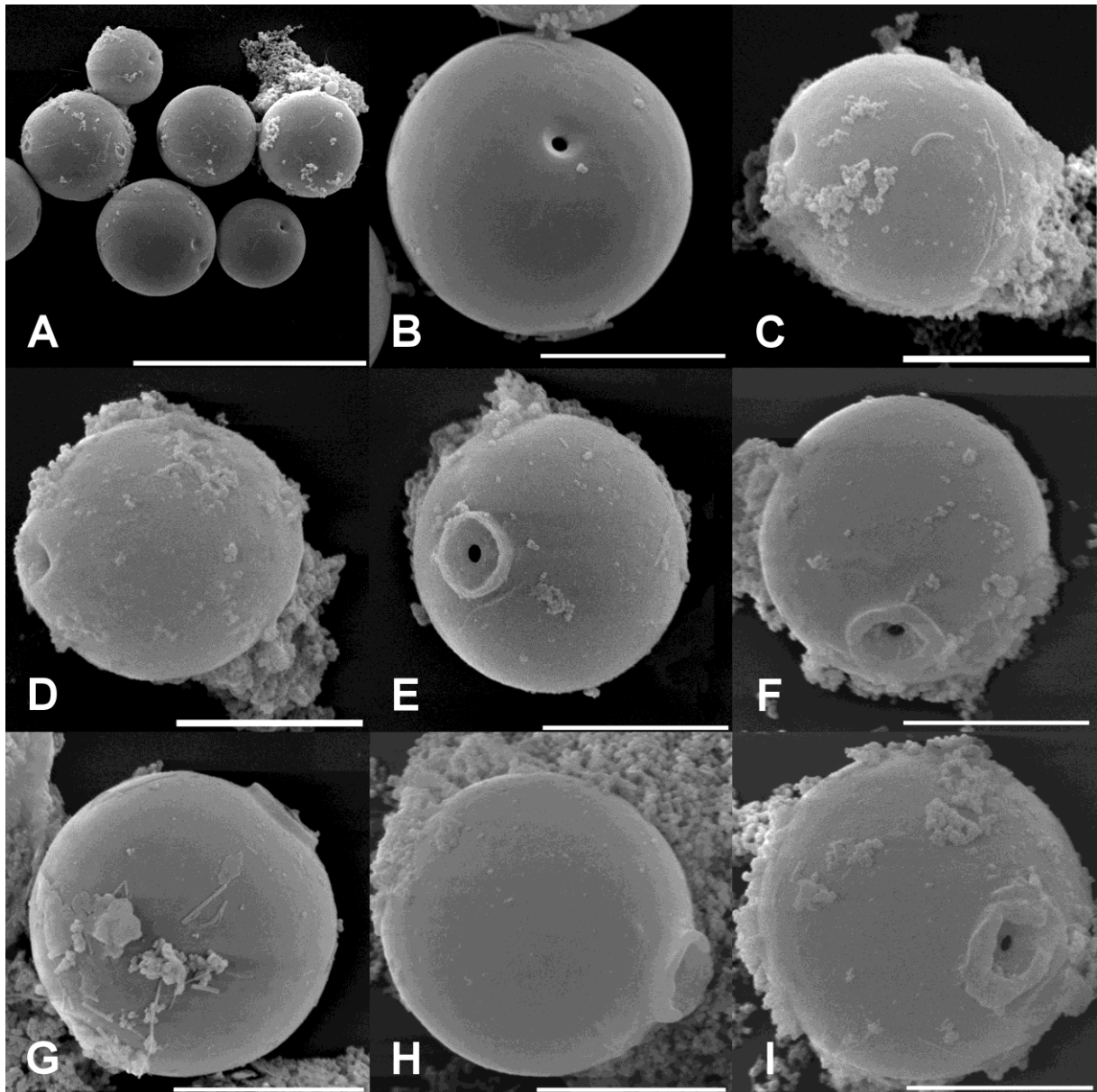


Fig. 12. SEM pictures showing stomatocysts of the investigated strains. Scale bar in A is 20 µm, Scale bar in B – I is 5 µm. (A – B) *Pedospumella encystans* (strain JBM/S11); (C – D) strain JBL14; (E – I) *Spumella vulgaris* (strain 199hm).

Irrespective of the biogeographic distribution pattern, several phylotypes affiliated with the same morphospecies may co-occur at the same site. We therefore analysed the extent of ecophysiological and molecular homogeneity, or heterogeneity, of distinct protist populations and tested for correlations between molecular distance and ecophysiological adaptation in a widespread and ubiquitous protistan taxon. We selected heterotrophic nanoflagellates of the *Spumella* morphotype as a model organism, because these flagellates are widespread and among the dominant bacterivores in many microbial communities. We investigated the molecular microdiversity and the ecophysiological tolerances of 13 strains originating from

two freshwater samples. We further investigated the affiliation of different ecotypes with distinct small subunit ribosomal ribonucleic acid (SSU rRNA) genotypes, or molecular operational taxonomic units. These regional population studies were further compared to the molecular and ecophysiological diversity of 28 strains originating from remote sampling sites. None of the investigated populations is homogenous, but is rather heterogeneously composed of different ecotypes and genotypes, possibly corresponding to cryptic species. This population heterogeneity may partly explain the deviations between studies on single strains and populations in both laboratory and field studies. The molecular distance between the strains was correlated with the salinity and temperature adaptation of the respective strains, contradicting the assumption that SSU rRNA variation reflects accumulated neutral mutations. Independent of whether this correlation reflects adaptation above the (biological) species level or variation between asexually reproducing lineages, we demonstrate the unsuitability of the current classification system (species concept) for the investigated organisms, at least with respect to ecological and ecophysiological investigations (Pfandl et al. 2009). On the community basis, it became clear that microbial biodiversity had been vastly underestimated. Formerly, species abundance patterns were determined for several environments, but temporal changes in species composition were not studied to the same level of resolution. Using next generation sequencing, we identified a highly dynamic turnover of the seasonal abundance of protists in the Austrian lake Fuschlsee (Nolte et al. submitted). We show that (i) seasonal abundance pattern of protists closely match the biogeographic distribution and (ii) the predominance of few highly abundant generalist taxa, which previously led to the suggestion of low global protist species richness, is contrasted by a highly dynamic turnover of rare specialist species. We suggest that differential seasonality of rare and abundant protist taxa explains the - so far - conflicting evidence in the 'everything is everywhere' dispute. Consequently, temporal sampling is basic for adequate diversity and species richness estimates (Pfandl et al. 2009).

Evolutionary ecology:

The loss of photosynthesis has occurred often in eukaryotic evolution, even more than its acquisition, which occurred at least nine times independently and which generated the evolution of the supergroups Archaeplastida, Rhizaria, Chromalveolata and Excavata. This secondary loss of autotrophic capability is essential to explain the evolution of eukaryotes

and the high diversity of protists, which has been severely underestimated until recently. However, the ecological and evolutionary scenarios behind this evolutionary “step back” are still largely unknown. Using a dynamic model of heterotrophic and mixotrophic flagellates and two types of prey, large bacteria and ultramicrobacteria, we examine the influence of DOC concentration, mixotroph’s photosynthetic growth rate, and external limitations of photosynthesis on the coexistence of both types of flagellates. Our key premises are: large bacteria grow faster than small ones at high DOC concentrations, and vice versa; and heterotrophic flagellates are more efficient than the mixotrophs grazing small bacteria (both empirically supported; Fig. 13a). We show that differential efficiency in bacteria grazing, which strongly depends on cell size, is a key factor to explain the loss of photosynthesis in mixotrophs (which combine photosynthesis and bacterivory) leading to purely heterotrophic lineages. Further, we show in what conditions a heterotroph mutant can coexist, or even out-compete, its mixotrophic ancestor, suggesting that bacterivory and cell size reduction may have been major triggers for the diversification of eukaryotes (Fig. 13b). Our results suggest that, provided the mixotroph’s photosynthetic advantage is not too large, the (small) heterotroph will also dominate in nutrient-poor environments and will readily invade a community of mixotrophs and bacteria, due to its higher efficiency exploiting the ultramicrobacteria. As carbon-limited conditions were presumably widespread throughout Earth history, such a scenario may explain the numerous transitions from phototrophy to mixotrophy and further to heterotrophy within virtually all major algal lineages. We challenge prevailing concepts that affiliated the evolution of phagotrophy with eutrophic or strongly light-limited environments only (De Castro et al. 2009).

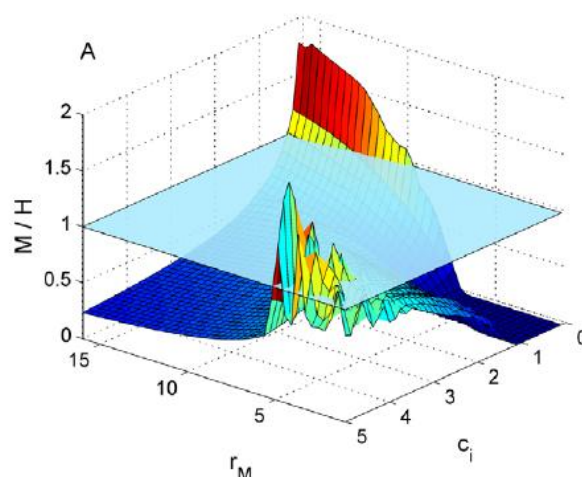
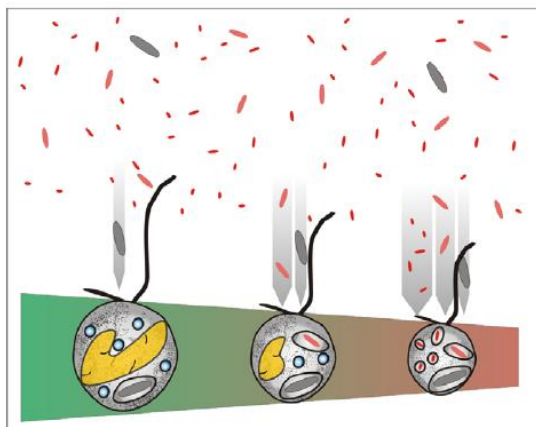


Fig. 13. A) Conceptual scheme of the model. The reduction of intracellular structures is a mean to reduce the cell size of the predatory flagellates. A consequence of this size reduction is an optimised predator-prey-size ratio for the smallest flagellate when preying upon the smallest bacteria, i.e. ultramicrobacteria, which largely escape predation by larger flagellates. B) Relative dominance of Mixotrophs vs. Heterotrophs. Ratio of Mixotroph biomass (M) to Heterotroph biomass (H) at the equilibrium, as a function of carbon input (c_i) and photosynthetic growth rate (r_{M61000}). The horizontal plane marks the 1:1 ratio. The mixotroph dominance is particularly strong at the combination of low c_i and high photosynthesis. However, at high photosynthetic rates the dominance of the mixotroph decreases sharply when carbon input increases, thus allowing a coexistence with heterotrophs at equal densities (De Castro et al. 2009).

Research to be performed in 2010

- The newly proposed single cell multiplex PCR method will be published and the method will further be applied to study protist distribution pattern in Alpine lakes.
- Several so far undescribed chrysophyte cysts will be described.
- We will further analyse the potential and limitation of next-generation sequencing for surveys of molecular diversity of eukaryotic microorganisms and establish a workflow for high-throughput sequencing of environmental samples.

Plankton ecology and ecophysiology

(Thomas Weisse, Peter Stadler, Ulrike Scheffel, Michael Moser, Nicole Laufenstein)

Habitat selection and local adaptation in acid mining lakes

We continued our investigations on the adaptation of planktonic species (flagellates, ciliates, and rotifers) to and their microevolution in acidic mining lakes (AML) within the current FWF project (P20118-B17). AML are extreme aquatic habitats with strongly reduced biodiversity. These environments harbour highly specialized microbial biota. Relative to natural ecosystems, all man-made AML are young habitats. The organisms thriving in these lakes may be highly specialized new colonizers (acidophilic species), or they may be generalists (acidotolerant species) taking refuge from otherwise superior competitors or predators that are less tolerant to the harsh environmental conditions. In contrast to most natural lakes, AML are disconnected from other surface water bodies. With respect to biogeography, they may be portrayed as acid island habitats in circumneutral surroundings. Highly acidic AML (pH <3) are fishless and do not harbour waterfowl which are assumed to act as important vectors of microbial dispersal in circumneutral lakes. Most likely, rates of dispersal are therefore reduced in AML relative to natural, circumneutral lakes. Temporal variation, which favours generalist phenotypes and, similar to dispersal, acts against local adaptation, is low in AML relative to neutral lakes. Accordingly, AML provide a rare case of suitable ecosystem models to test for the significance of strong habitat selection.

Overall, this research project tests two (null) hypotheses, i.e. that

- acidotolerant species benefit from competitive release under conditions of acid stress
- populations of widely dispersed planktonic microorganisms are virtually identical –in similar (acidic) habitats, i.e. the habitat selects and site-specific genetic divergence (microevolution) below the species level is of minor significance

We discussed in ILIM's Annual Report 2008 that we could reject the second hypothesis, based upon our experimental findings obtained during 2008. In the reporting period, we focused on testing the first hypothesis in laboratory experiments. Results from **competition experiments** with two strains of the flagellate *Ochromonas* spp. are shown in Fig. 14 (Dissertation M. Moser). *Ochromonas* sp. strain DS was isolated from circumneutral Lake Constance, *Ochromonas* sp. strain LG originated from the AML at Langau. Results are in

agreement with our first hypothesis only for moderate acidic conditions; at the lowest pH (2.5) tested, the acidophil strain outcompeted its acidotolerant congener. The latter was the superior competitor at neutral pH (Fig. 14). Acidophil specialists prevail at pH <3.

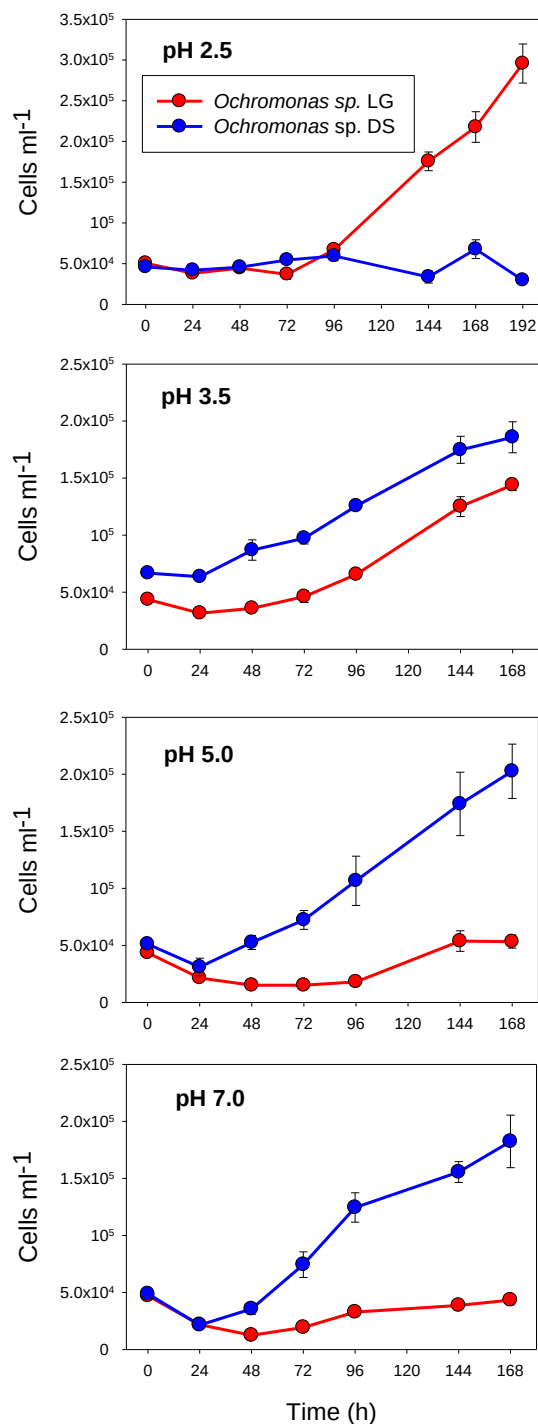


Fig. 14. Competition experiments with the mixotroph flagellate strains *Ochromonas* sp. DS (isolated from circumneutral Lake Constance) and *Ochromonas* sp. LG (isolated from the acid mining lake at Langau). Results presented are means of three replicates each. The error bars denote 1 SD. Cell numbers were measured by flow cytometry (Moser & Weisse, in prep.).

Growth and survival rates in response to pH of the rotifer *Cephalodella* sp. strain isolated from Langau (Fig. 15) were investigated in life table experiments in the laboratory (N. Laufenstein, Diploma thesis).



Fig. 15. The rotifer *Cephalodella* sp. isolated from the acid mining lake at Langau (Lower Austria).

The following fitness-related parameters were measured: survival time (age) of females, eggs per female, and hatching success of the eggs. Using these parameters, the average reproduction rate of the population (offspring per female) was calculated. Experiments were conducted at a combination of 4 different pH (from 2.7 to 7.0), 3 different temperatures (10°C, 17.5°C and 25°C), and 3 different food levels (limiting – moderate – satiating).

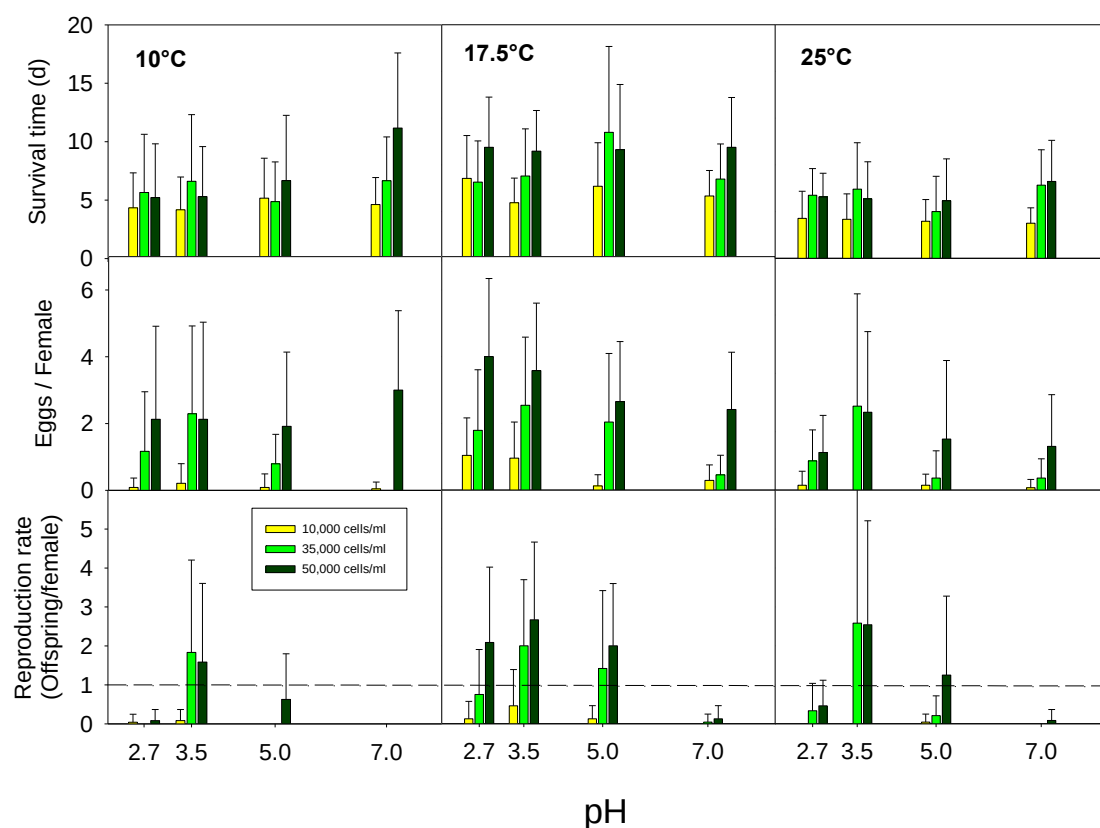


Fig. 16. Life history parameters of the rotifer *Cephalodella* sp. at 4 different pH, 3 temperatures, and 3 different food levels. The mixotrophic flagellate *Chlamydomonas acidophila* served as food. The broken line in the bottom panels indicates the threshold below which the population declines (Laufenstein & Weisse, in prep.).

Firstly, similar to the flagellate *Ochromonas* sp. strain LG (Fig. 14), the results obtained clearly demonstrate that this rotifer is an acidophil species that cannot tolerate circumneutral conditions (Fig. 16). Secondly, the interactive effect of temperature and food narrowed the width of its pH niche. The species was sensitive to both higher (25°C) and lower (10°C) temperatures than the moderate temperature (17.5°C) at which the rotifer is routinely kept in culture. Moderate food levels (35,000 *C. acidophila* cells ml⁻¹) yielded positive population growth of the rotifers only at their pH optimum (3.5), irrespective of temperature (Fig. 16, bottom panels). Similar findings were obtained with the flagellates *C. acidophila* and *Ochromonas* spp. (Moser & Weisse, subm.) and ciliates studied within this project.

We complemented our laboratory experiments by conducting **in situ enclosure experiments** in the AML at Langau in June 2009. Since it is principally impossible to investigate the interactive effect of all environmental factors in laboratory cultures, the primary goal was to verify growth rates measured in the laboratory under simplified assumptions under complex, natural conditions. We incubated three protist (*Chlamydomonas acidophila*, *Ochromonas* sp., *Oxytricha* sp.) and one rotifer (*Cephalodella* sp.) species that we had previously isolated from the study site in diffusion chambers moored in the lake for one week. The flagellates *C. acidophila* and *Ochromonas* sp. were incubated alone or in combination with one predator each (*Oxytricha* sp., *Cephalodella* sp.), serving as food for the latter. Cellular abundance in the experimental containers was similar to ambient cell numbers in the lake. Each experiment was run in duplicate. Subsamples were taken once per day from each container and the ambient lake water.

Since we used the nearby laboratories of the busy field station at Riegersburg that is operated by the University of Vienna, we had to fix the date for this campaign several months in advance. Unfortunately, the weather did not cooperate during our campaign. Continued rain, coupled with low irradiance and air temperature, caused unusually harsh environmental conditions for this season. Accordingly, growth rates of the primarily photoautotrophic *C. acidophila* and the mixotrophic *Ochromonas* sp. did not change significantly during the incubation. The population size of the ciliate *Oxytricha* sp. declined in both treatments. The rotifer population remained stable during the experiments; continued egg production further indicated that the rotifer population is able to survive even unusually harsh environmental conditions (data not shown). In conclusion, the in situ experiments revealed that the protist

and rotifer species are able to survive a period of one week of unusually adverse environmental conditions. However, their population size does not increase under such conditions, even in the absence of predation. We conclude that grazing is also reduced, relative to conditions that are more favourable. Overall, our experimental results confirm the earlier conjecture that turnover is generally low in AML, relative to circumneutral lakes of comparable trophic state.

Species richness in Lake Langau is remarkably low, even for AML with pH <3. Together with our cooperation partners at the University of Potsdam, Germany, we compared the **plankton community and food web structure** of Lake Langau to the chemically similar, but shallower and more wind-exposed AML Lake 130 in Lusatia, Eastern Germany. The increased species richness in the latter, relative to Lake Langau, was made up mainly by mero-planktic species, suggesting a strong benthic/littoral – pelagic coupling. We identified lake morphometry and mixing behaviour as major drivers of the plankton community structure in these mining lakes (Weithoff et al. 2010). Field data from these two and another AML in Lusatia suggest that the mixotroph (i.e., photosynthesizing and bacterial feeding) flagellate *Ochromonas* spp. plays a key role in the food web of these lakes. If *Ochromonas* spp. biomass is below 50 mg C l⁻¹, the grazing pressure on bacteria is low; with increasing *Ochromonas* biomass bacteria decline non-linearly and are strongly reduced if *Ochromonas* spp. biomass reaches ~400 mg C l⁻¹ (Fig. 17). This situation is at times characteristic for Lake Langau.

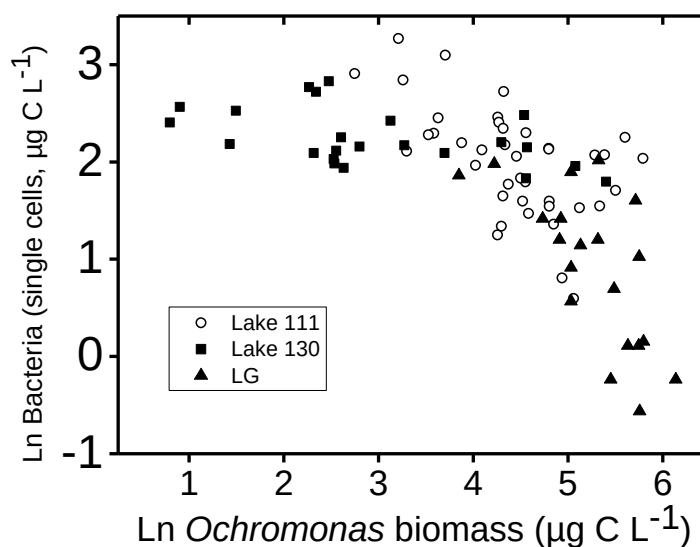


Fig. 17. Relationship of ln-transformed bacterial and *Ochromonas* spp. biomass in the acid mining lakes Lakes 111 and 130 (Lusatia, Germany), and LG (Langau, Lower Austria; Weithoff et al. 2010).

Research to be performed in 2010

Within FWF project P20118-B17

- development of a protocol to measure the intracellular pH of protist species from AML by flow cytometry in order to determine the breakdown of pH cellular regulation
- finishing and publishing the ecophysiological laboratory experiments with protists and rotifers (3 peer-reviewed publications)
- summarizing and publishing the results from the in situ observations at Langau (2 peer-reviewed publications)
- presenting the major results of the project

Within FWF project P20360-B17 (in cooperation with the project leader W. Foissner, Univ. Salzburg)

- establishing stable cultures of several ciliate species endemic to the reservoirs of bromeliads from Jamaica
- conducting ecophysiological experiments with these ciliates in response to temperature, pH, and food level

Molecular & Cytogenetic Evolution of Asexual Aquatic Organisms

(Dunja Lamatsch, Maria Pichler, Michaela Zopf)

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. 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.

Sperm-dependent parthenogenetic fishes

The cooperation with Prof. Jukka Jokela (EAWAG, Zurich) and Dr. Jouni Taskinen (Jyväskylä, Finland) on the invasive sperm-dependent parthenogenetic Prussian carp (<http://www.europe-aliens.org/speciesFactsheet.do?speciesId=53250#>) which was started in 2008 was further extended: We developed microsatellite markers to identify different paternal species which could be involved in ploidy elevation detected by flow cytometry. In addition to the German and Finnish population, we are now also investigating 3 Austrian populations. In 2009, the student (M. Deinhardt M., University of Jyväskylä) co-supervised by the group leader (D.L.) was finishing his bachelor thesis, and is now preparing his master thesis. The preliminary results were presented as a poster on the European Society for Evolutionary Biology (ESEB) meeting in Turin. This successful cooperation will be continued with funding of EAWAG.

As an expert in sperm-dependent fishes the group leader has been invited to write a review article in a comprehensive book on the paradox of sex, called "Lost Sex" (Lamatsch & Stöck 2009). Another manuscript on clonal competition between diploid and triploid Amazon mollies was published during the reporting period (Lamatsch et al 2009, see Chapter 1.6).

Genetic variability in non-marine ostracods with mixed reproductive modes

The PI of this working group supervised a student (S. Adolfsson) from the FH Wels preparing her bachelor thesis in Bio- and Environmental Engineering. She was replenishing a data set on microsatellite sequences in *Eucypris virens* that was started during the EU RTNetwork “Sexasex” and is currently being analysed (Fig. 18). This project produced two other publications on the exceptional cryptic diversity and multiple origins of parthenogenesis that will be published in 2010 (Adolfsson et al. 2010, Bode et al. 2010). Some of these joint results were also presented at 12th Congress of the European Society for Evolutionary Biology (ESEB) at Turin, Italy.

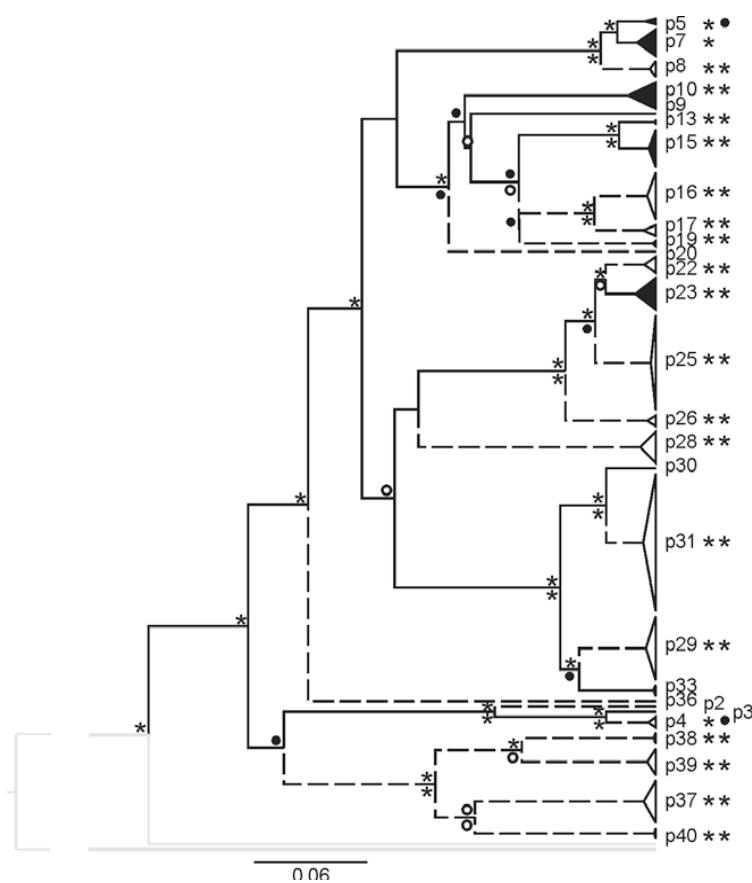


Fig. 18. Bayesian phylogenetic strict clock tree of the concatenated COI and 16S dataset of *E. virens*. It is characterised by many distinct clusters of haplotypes, which are either exclusively sexual or asexual, with only one exception, and are often separated by deep branches. Analysis of the phylogeny reveals an astonishing cryptic diversity, which indicates the existence of a species complex with more than 40 cryptic taxa. The phylogeny indicates multiple transitions from diverse sexual ancestor populations to asexuality (Bode et al. 2010, *Molecular Phylogenetics and Evolution* 54: 542–552).

Polyploidy and hybridization in green toads

In collaboration with Matthias Stöck from the University of Lausanne, we have been investigating the origin of triploid green toads. He presented the results on the ESEB12, and the paper (Stöck et al. 2010) will be published in the journal *Evolution* (impact factor 4.74).

Note:

Since the commencement of the PI's (D.L.) employment in 2008 coincided with the start of the institute's reconstruction, adequate laboratory facilities could not be installed, and the set up of the aquarium was significantly delayed. The interim space needed for the aquarium was generously provided by HR Dr. Albert Jagsch of the Bundesamt für Wasserwirtschaft, Scharfling (<http://www.baw-igf.at/>).

Research to be performed in 2010

The projects will be continued at reduced intensity in 2010, since the PI will be on maternal leave until May 2011.

Experimental Evolutionary Ecology

(Claus-Peter Stelzer, Johanna Schmidt, Anneliese Wiedlroither, Simone Riss, Thomas Scheuerl)

Genetic variation in fitness-related traits is a major prerequisite for adaptive evolution. Without such variation, populations facing a rapid change in their environment are prone to extinction. This working group studies the consequences of genetic variation - or the lack thereof - for evolutionary and ecological processes. In particular, we are interested in the formation of new genotypes by sexual reproduction and its short term (ecological) and long-term (evolutionary) effects. We experimentally study such effects both in laboratory and field populations, using planktonic rotifers as model organisms. We also develop new methods for using rotifers in studies of experimental evolution. Our main achievements in 2009 were:

- Elucidation of the genetic mechanism of obligate parthenogenesis in *Brachionus calyciflorus*
- An initial survey of genome size diversity in monogonont rotifers
- Design and construction a new device for slow-rate freezing, which can be used for long-term cryopreservation of *Brachionus plicatilis*.
- Establishment of highly resolving AFLP markers for *Brachionus calyciflorus* to study genetic variation within populations

Genetic mechanism of obligate parthenogenesis in *Brachionus* rotifers

Within our FWF research project P 20735, we study the causes and consequences of transitions to obligate parthenogenesis in the rotifer *Brachionus calyciflorus*. While in the previous year we focused mainly on fitness consequences of such transitions, research activities during the reporting period were devoted to elucidating the genetic mechanism of obligate parthenogenesis (OP).

Initially we hypothesized that OP represents an extreme end of the quantitative trait “propensity for sexual reproduction (mixis)”. This assumption was based on theoretical expectations and on previous studies demonstrating that this trait exhibited continuous genetic variation. We therefore devised experiments to manipulate genetic variation for the propensity for mixis by inbreeding (self-fertilization, i.e., mating males and sexual females of the same clone) and outbreeding (crossing different clones). To our surprise, our results

pointed to a fundamentally different inheritance pattern: Obligate parthenogenesis appeared to be the result of a recessive loss-of-function mutation, which if homozygous, causes a complete and irreversible loss of sexual reproduction in its carriers and all their offspring.

To date, we have analysed the inheritance pattern of obligate parthenogenesis in large pedigrees consisting of a total of 45 clonal genotypes, by screening more than 4000 of their sexually produced daughters. These data unequivocally supported the hypothesis that obligate parthenogenesis is inherited in a simple Mendelian fashion (Fig. 19). Putative heterozygotes for the OP allele were phenotypically cyclical parthenogens, but they produced OP offspring at the expected 3:1 ratio when self-fertilized or when crossed with another heterozygote (e.g., Florida strain: 12 inbred clones, 1221 offspring, 23.4% OP offspring, $G_{\text{het}} = 7.6$, $P = 0.748$, $G_{\text{pooled}} = 1.64$, $P = 0.2$). This simple inheritance pattern agrees well with earlier results, demonstrating that these obligate parthenogens have lost responsiveness to the sex-inducing chemical (Stelzer 2008): Taken together, this suggests that obligate parthenogenesis in *Brachionus calyciflorus* might be caused by a loss-of-function mutation in the mixis receptor itself, or at some other gene or transcription factor downstream in the signalling cascade. Interestingly, obligate parthenogens were considerably smaller in body size than their cyclical parthenogenetic relatives (see Annual Report 2008). We know that these body size differences are *not* caused by differences in ploidy, since flow-cytometric measurements confirmed that obligate and cyclical parthenogens have the same nuclear genome size (~0.3pg). Thus, the differences in body size are more likely caused by a tightly linked gene causing “dwarfing” in obligate parthenogens, or by pleiotrophy. A manuscript summarizing these results is currently being prepared for publication.

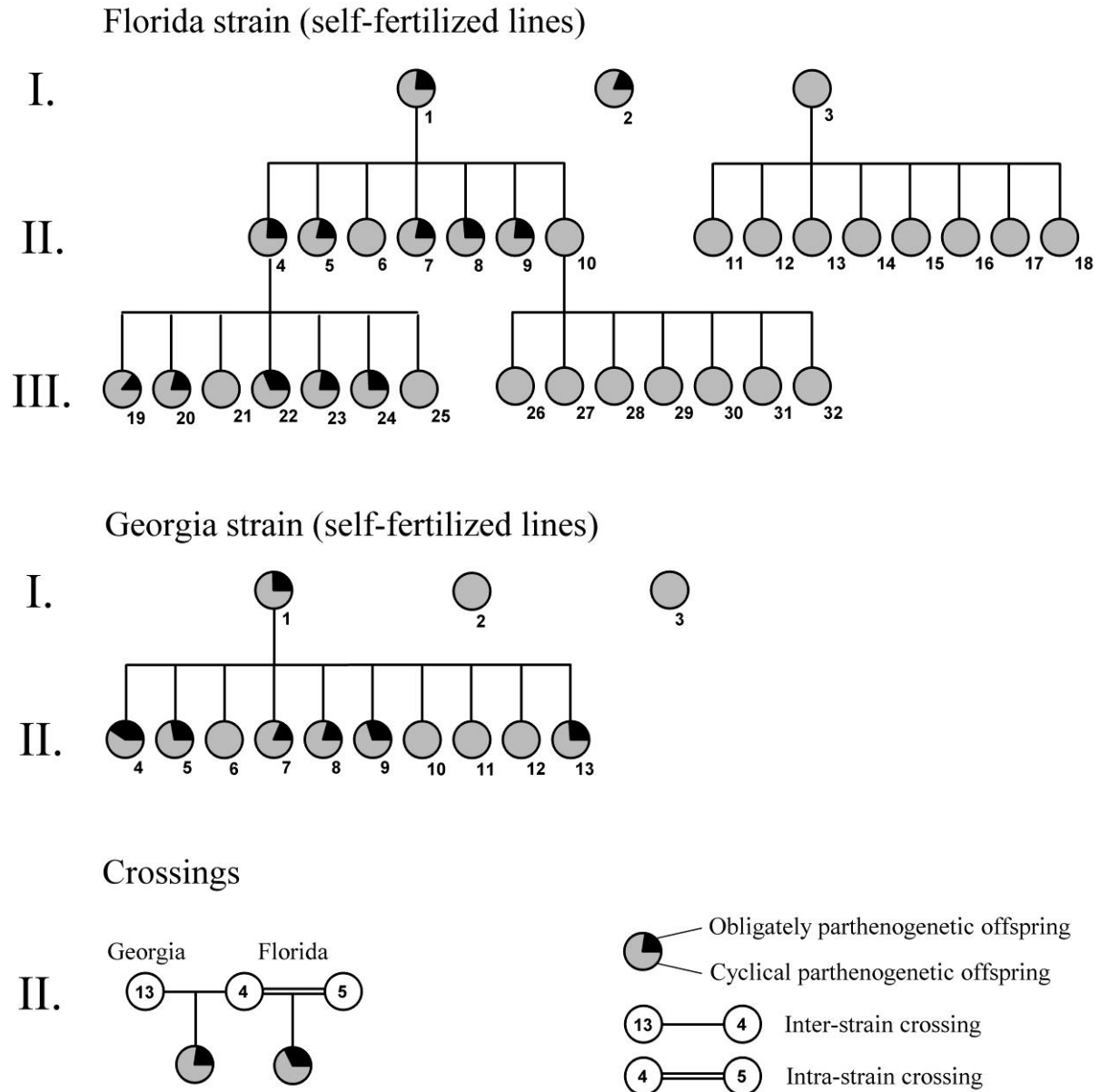


Fig. 19. Mendelian inheritance of obligate parthenogenesis in two strains of the rotifer *Brachionus calyciflorus*. The figure shows an overview of all experimental clones, which were propagated by either self-fertilization or experimental crosses. Roman numerals indicate successive sexual generations; Arabic numerals indicate individual clones of each of the two rotifer strains. Pie charts display the proportion of obligate and cyclical parthenogens in the sexually produced offspring. In total, we analysed 45 different clones and >4000 of their sexually produced offspring.

We have now started introgressing the gene for obligate parthenogenesis into a local Austrian population of *B. calyciflorus* (individuals isolated from the resting egg bank of a

small pond near Salzburg), and preliminary results indicate that this is indeed possible. Such introgression experiments serve two purposes. First, we would like to learn more about the inheritance patterns of obligate parthenogenesis, in particular about its conspicuous link to “dwarfing”. Secondly, we want to create cyclical and obligate parthenogens with the same genetic background as that of a naturally occurring locally adapted population. We intend to use such introgressed hybrids in “bottle” competition experiments in their natural habitat to learn more about the fitness effects of the two reproductive modes.

Genome size diversity of monogonont rotifers

The phylum Rotifera appears to be the playground for different modes of reproduction: Bdelloid rotifers are among the very few ancient asexual clades, while monogonont rotifers can reproduce by parthenogenesis, but undergo sexual cycles regularly every few generations (apart from recent transitions to obligate asexuality, as described above). To study large-scale comparative patterns in bdelloid vs. monogonont rotifers, we conducted an initial survey of genome sizes in monogononts and compared these estimates to published values of bdelloids. Genome size can be viewed as a complex organismic trait, which is shaped by various selective forces. In addition, relaxed selection, e.g. due to low effective population sizes, can facilitate a proliferation of selfish genetic elements and thus lead to increases in genome size. We found that nuclear DNA content (“2C” - assuming diploid genomes) in eight different monogonont rotifer species of four different genera ranged almost 4-fold, from 0.12pg to 0.46pg. A comparison with previously published values for bdelloid rotifers suggested that the genomes of monogononts are significantly smaller than those of bdelloids (Stelzer, submitted). In the course of this study we also obtained results suggesting whole genome duplications in the *Brachionus plicatilis* species complex, a cryptic species complex consisting of >16 different species. We currently conduct flow cytometric analyses to scrutinize this result with a large sample size.

Cryopreservation of *Brachionus plicatilis*

In studies of experimental evolution, it is desirable to preserve individual genotypes (or even the genetic structure of whole populations), to compare evolved states to ancestral states within the same experiment. To meet this requirement, we designed and build a new freezing

device for cryopreservation of *Brachionus* rotifers². The device relies on the thermoelectric cooling principle (using a Peltier element) and allows running slow-rate freezing profiles at a constant rates (in our case: -0.3°C). Using this protocol, rotifer embryos could be slowly cooled to an endpoint temperature of -20°C , without intracellular ice crystal formation, and were then stored in liquid nitrogen. So far, we have tested several different strains of the *Brachionus plicatilis* species complex and obtained survival rates of up to 27%. This project is part of the Ph.D. thesis of Thomas Scheuerl (who joined the working group in June 2009). The actual thesis is aimed at testing some of the major evolutionary theories on the maintenance of sexual reproduction, using experimental evolution in *Brachionus*.

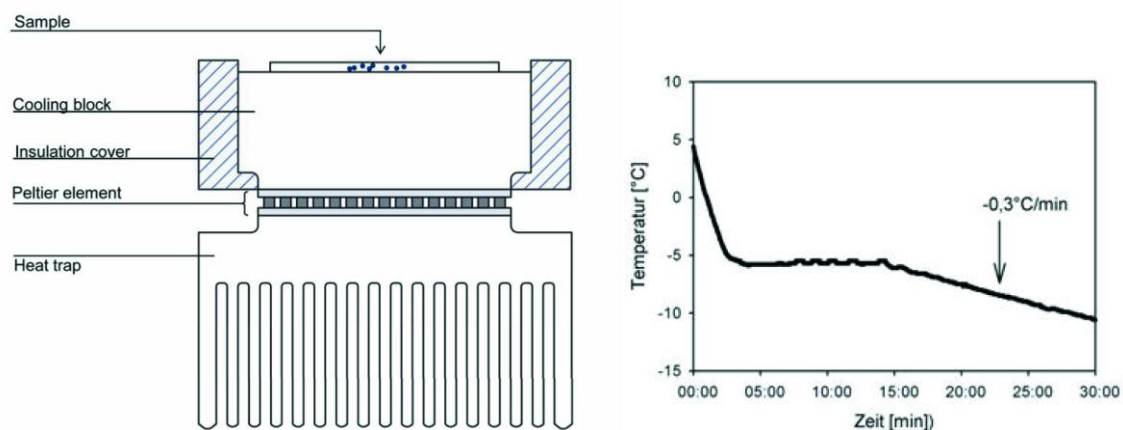


Fig. 20. Cryopreservation of *Brachionus plicatilis*. Left: Schematic representation of the main elements of the freezing device. The cooling intensity of the Peltier element is controlled through a Cooltronic® TC2812 Peltier controller (not shown). Right: Example data of a typical freezing profile used for cryopreservation of *Brachionus plicatilis*.

Genetic marker development

Many of our experiments require the genetic identification of clones, a confirmation of experimental crosses, or estimates about genetic diversity within populations. In our search for suitable genetic markers, we have tried, in cooperation with external collaboration partners and a company specialized on such marker development, to establish microsatellite markers for the freshwater rotifer *Brachionus calyciflorus*. Unfortunately, all these attempts failed; it was not possible to find reasonable markers using the state-of-the-art enrichment protocols. A likely explanation is that the miniaturized genome of *B. calyciflorus* did not

² We thank Hannes Höllerer, the workshop manager of ILIM, and Kurt Mayrhofer, electrician, for technical assistance during the construction of the cooling device.

contain microsatellites at sufficient density required by such techniques. We therefore refocused on the establishment of AFLPs (=Amplified Fragment Length Polymorphisms), which are dominant genetic markers. These experiments were run by Simone Riss, a postdoctoral researcher who joined the working group in November 2009. To date, we have successfully established >100 well-reproducible AFLP markers and identified polymorphisms, which are either diagnostic for individual clones, strains, or subspecies within *Brachionus calyciflorus*.

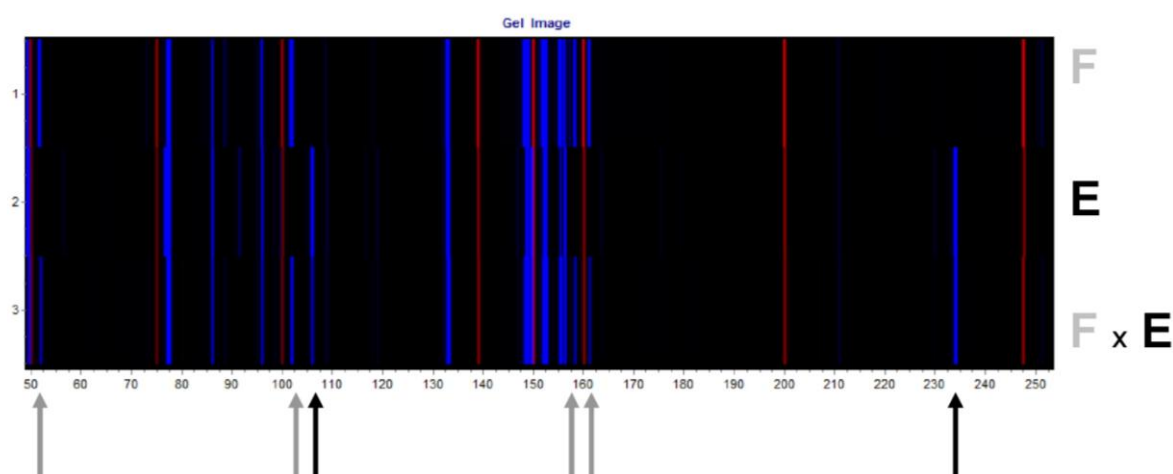


Fig. 21. Genotyping in the rotifer *Brachionus calyciflorus* using AFLPs (=Amplified Fragment Length Polymorphisms). Example shows the verification of an experimental cross between two rotifer strains, F (=Florida strain) and E (=Egelsee strain). Fluorescently labelled fragments were run on an ABI 3730 capillary sequencer. The pseudo-gel image shows the two parental strains (horizontal lanes 1 and 2) and one hybrid offspring (lane 3). Note that the hybrid “F x E” contains polymorphic alleles diagnostic for the F strain (grey arrows) and the E strain (black arrows), respectively.

Research to be performed in 2010

- Introgression of the gene for obligate parthenogenesis into a natural *Brachionus* population (i) to investigate the fitness effects of obligate *vs.* cyclical parthenogenesis under natural conditions, and, (ii) to study the possible genetic linkage of obligate parthenogenesis with “dwarfing”.
- Screening for genome duplications in the *Brachionus plicatilis* species complex using flow-cytometry.
- Continuing the methodological experiments with the new cryopreservation device.
- Experimental evolution in *Brachionus plicatilis* rotifers: Selection experiments with populations of different clonal composition with/without sexual reproduction.

Ecology of Freshwater Fish

(Josef Wanzenböck, Karl Maier, Maria Pichler, Johann Knoll, Barbara Pamminer-Lahnsteiner)

Most of the scientific activities in 2009 were related to the analysis of population genetics in Austrian whitefish within the FWF project “Conservation of natural biological resources in Austria: Identification of indigenous whitefish species and extent of potential hybridization with a Baltic species”. Applying newly developed tetra-nucleotide microsatellites we confirmed that at least some Austrian lakes harbour primarily, if not exclusively pure native populations of whitefish. From the fisheries community this result was largely not expected. Even in lakes where hybridization is common, there is a tendency for the native and introduced gene pools to remain distinct. These results support one of the main objectives of the project, to evaluate the possibility that despite extensive management of Austrian whitefish fisheries with imported strains, native stocks might still exist due to one or more ecologically based isolating mechanisms.

We screened 747 adult individuals from 15 populations, including three of Baltic origin. Using the Waldviertel hatchery strain as a reference for the introduced Maräne, we were able to robustly evaluate levels of introgression in Austrian lakes. Fig. 22 provides an overall view of the categorization of introduced, native and hybrid genotypes found in Austrian lakes.

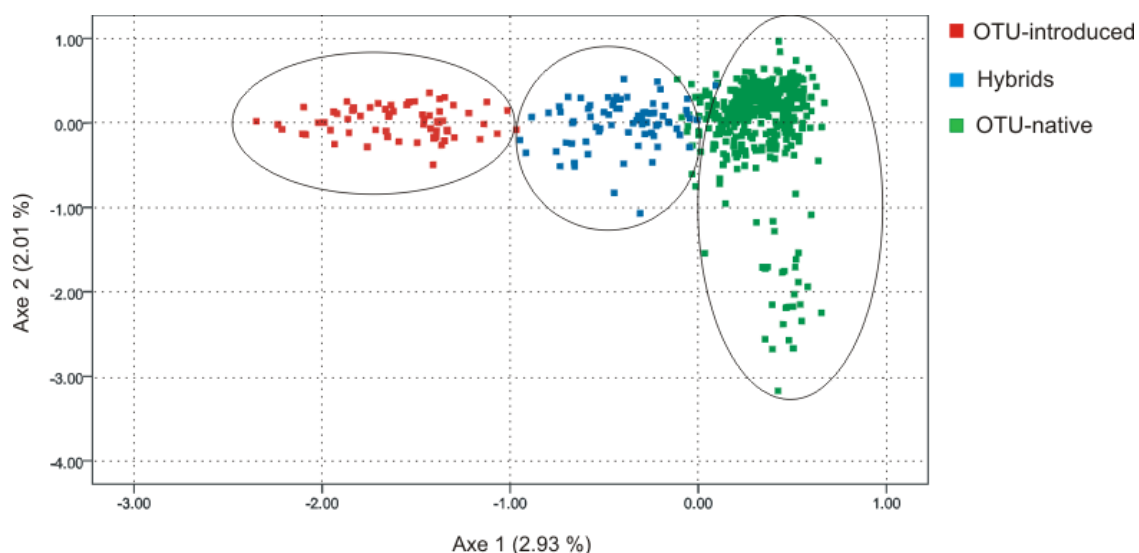


Fig. 22. A Factorial Correspondence Analysis of individual genotypes, colour-coded following comparison with two reference populations and the use of the Bayesian-based algorithms in the programs STRUCTURE and NEWHYBRIDS.

At the population level, we were able to assign most individual fish to one of the two parental classes, or as a hybrid (in the general sense and not distinguishing between F1 or various backcross classes). Figure 23a demonstrates the so-called q-values (genomic contribution or assignment values) for our reference native population (Koppentraun- OTU-native), our referenced introduced lineage (Waldviertel – OUT introduced), and a simulated hybrid population. Q-values approaching 1 represent 100% contribution of the native whitefish genome, whereby values approaching 0 represent 100% contribution of the introduced lineage.

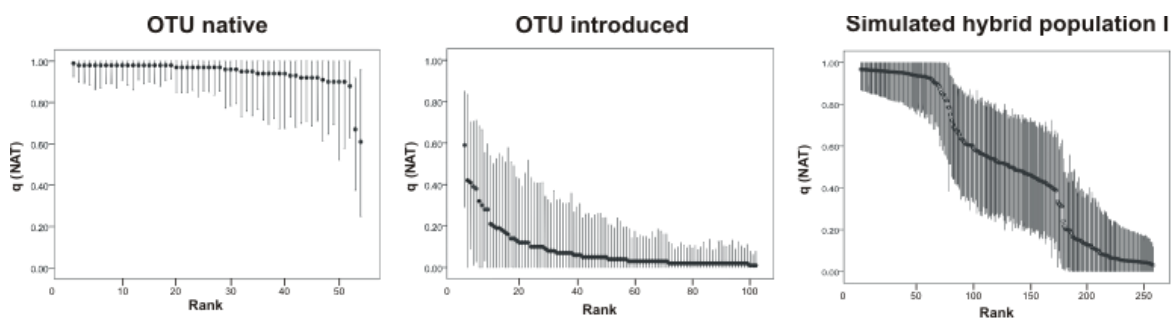


Fig. 23a. Distribution of q-values for our two parental reference populations, as well as a simulated hybrid population.

Using these reference populations, we can demonstrate some representative populations for pure native stocks (Fig 23b), whereby Koppentraun represents the reference.

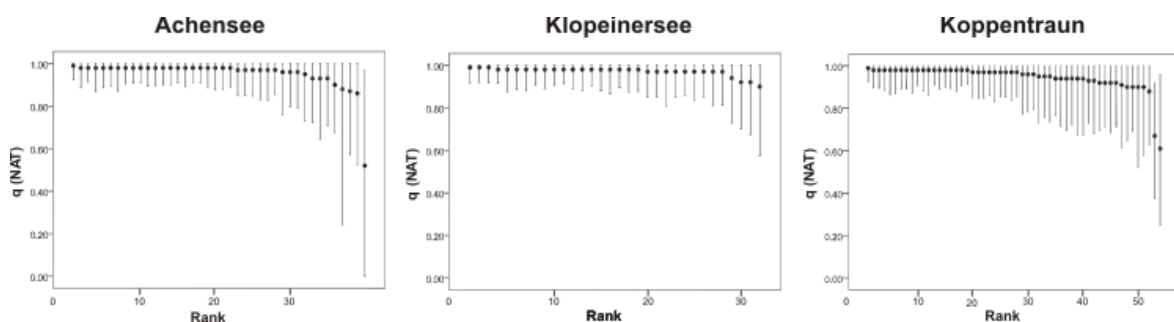


Fig. 23b. Distribution of q-values for Achensee (Tyrol), Klopeinersee (Carinthia), and Koppentraun (Upper Austria, our OTU native reference). These examples best represent the native whitefish genome in Austrian lakes.

In lakes Mondsee, Obertrumersee and Hallstättersee, the presence of the introduced lineage as well as pure native genomes (Fig 23c) is revealed. Hybrids (with values approaching 0.50) as well as introgressed intermediates are clearly seen in Mondsee and Obertrumersee, but not in Hallstättersee. More importantly, and especially clear for Mondsee, the distribution of q-values

is much steeper than the simulated example shown above. This is very strong evidence that a hybrid swarm has not developed and there is one or more operative mechanisms limiting introgression and thus complete amalgamation of these genomes.

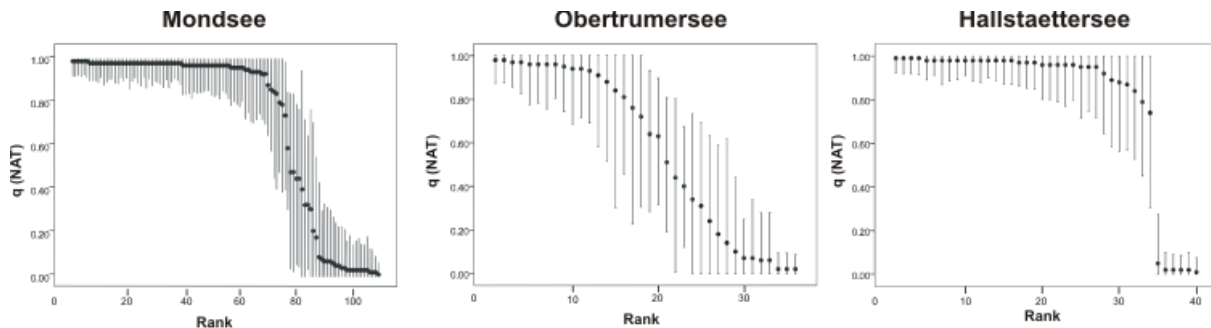


Fig. 23c. Distribution of q-values for Mondsee, Obertrumersee, and Hallstättersee, all in the Salzkammergut region. These examples demonstrate various degrees of hybridization and introgression.

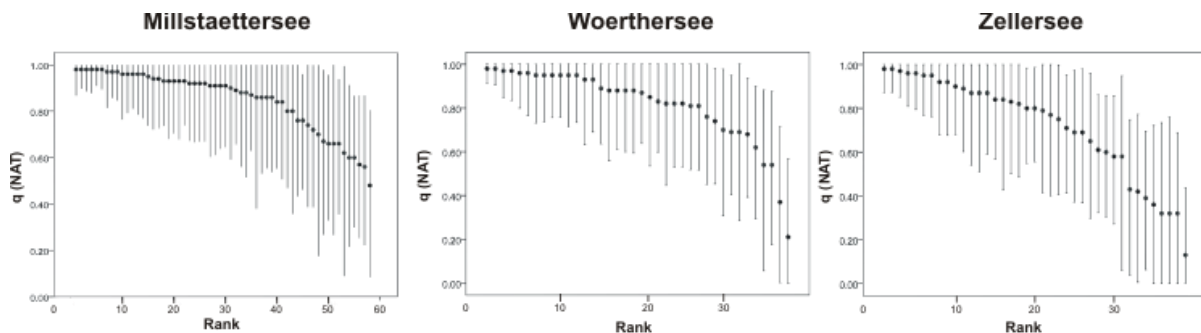


Fig. 23d. Distribution of q-values for Millstättersee, Wörthersee, and Zellersee. These examples demonstrate various degrees of hybridization and introgression, primarily stemming from past, rather than current management regimes.

We demonstrated a high degree of both genetic and phenotypic divergence for two Austrian whitefish populations (Achensee in Tyrol & Klopeinersee in Carinthia) compared to all others investigated. Several aspects of the genetic data from the Klopeinersee population support that this is a native population, and may stem from a glacial refuge and colonization event distinct from that, which is responsible for the post-glaciation colonization of populations on the North Slope of the Alps. This comes as a great surprise to us as the consensus is that European *Coregonus* is not native south of the Alps.

The genetic screening of larval populations in Traunsee demonstrates a third group of genotypes not found elsewhere in Austria. While not planned in our project proposal, this raises the hypothesis of whether or not the dwarf form (so-called Riedling) in Traunsee might

represent a distinct genetic entity in the Lake. This question will be pursued in the near future with some additional samples.

As planned in the initial project proposal, several F2-generation backcross families have been produced to support potential future genetic mapping efforts.

Furthermore, the results from this project are important for ongoing research with regard to the effects of climate change. Financial support for a new project has been awarded to the group leader by the Austrian Climate and Energy Fund, which focuses on whitefish population modelling under future climate scenarios, taking into account indirect effects via toxic blue-green algae (project RADICAL within the Austrian Climate Research Program ACRP).

Fieldwork for a side-project in 2009 was conducted in cooperation with colleagues from the Czech Republic (Jan Kubecka, Institute for Hydrobiology, Czech Academy of Sciences) in order to improve the methodology of active fish sampling. We performed several surveys with two-boat mid-water trawls intercalibrated with various sonar technologies in two Czech reservoirs and one Austrian lake. Data analysis for this project is under way.

Research to be performed in 2010

- Further analysis of datasets on *Coregonus* population genetics, specifically those stemming from hybridisation experiments.
- Analysis of trawl-catch and hydroacoustic data obtained in 2009.
- Re-analysis of a mark-recapture experiment performed in Mondsee between 1997 and 2000 to obtain demographic parameters used for modelling whitefish population development under various management and climate scenarios (project RADICAL).
- Assessment of age-0 fish in Wallersee to be compared with previous assessments in 1989, 1999 and 2002 to investigate effects of reoligotrophication.

Palaeolimnology

(Roland Schmidt, Kerstin Huber, Kaarina Weckström, Johann Knoll)

The project „Late-Pleniglacial climatic and environmental evolution” of the Austrian Science Funds (FWF, P18595-B17) was finished at the end of 2009. Within this project, Kerstin Huber established in her Ph.D. thesis a diatom-based quantitative inference model for summer epilimnetic water temperature (SEWT, model prediction: $R^2_{\text{jack}} = 0.89$, RMSEP = 1.82 °C), which she applied to a sediment core from Lake Längsee in Carinthia (Huber et al. 2009/2010). The core section spans the time of the last glacial termination between ca. 19,000 and 13,000 before present. In order to evaluate the climate reconstruction from Längsee investigated a sediment core section from another Carinthian lake, Lake Jeserzersee. The lake, which is ca. 30 km away from Längsee and the ice margin of the Last Glacial maximum, is smaller and shallower than Längsee. It resulted in different diatom assemblages (analysed by K. Weckström, postdoc fellowship from the Finish Academy of Sciences). Nevertheless, the SEWT reconstruction fitted well to that of Längsee, and on a larger scale, to the frame of Northern Hemispheric climate. The inferred temperature curves were correlated with the GRIP oxygen event stratigraphy from Greenland ice-cores, the ice-rafting event of Heinrich 1 in the North Atlantic, and glacier stadials in the Alps (Gschnitz and Clavadel/Senders glacier re-advances). The presence of a warm period followed by a trend towards a three-partited colder period related to Heinrich 1 fits well to the GRIP data (Fig. 24). However, in Jeserzersee the short-term changes related to the cold period of Heinrich 1 were visible in more detail than in Längsee, e.g. by shifts from benthic to planktonic diatoms and calcite precipitation during warming (Schmidt et al., submitted). Possibly, smaller lakes react more sensitive to short-term environmental changes than larger ones. Jeserzersee confirmed the observation from Längsee that aquatic organisms react much quicker and more sensitive to climatic changes than the terrestrial vegetation indicated by pollen. The prevailing cold-resistant alpine vegetation could be the reason of the uniform geochemical patterns of the Late Pleniglacial times > 15,000 before present. The use of high resolution XRF-scanning (in co-operation with the GFZ in Potsdam, A. Brauer) in the geochemical analyses confirmed the hypothesis of climate-driven changes in meromixis in Längsee during the Late Glacial Interstadial (= Greenland Interstadial 1, GI-1) published previously. Cold climate fluctuations caused temporal mixing resulting mainly in changes of the iron/manganese, calcium, and geogenic element ratios in the sediments.

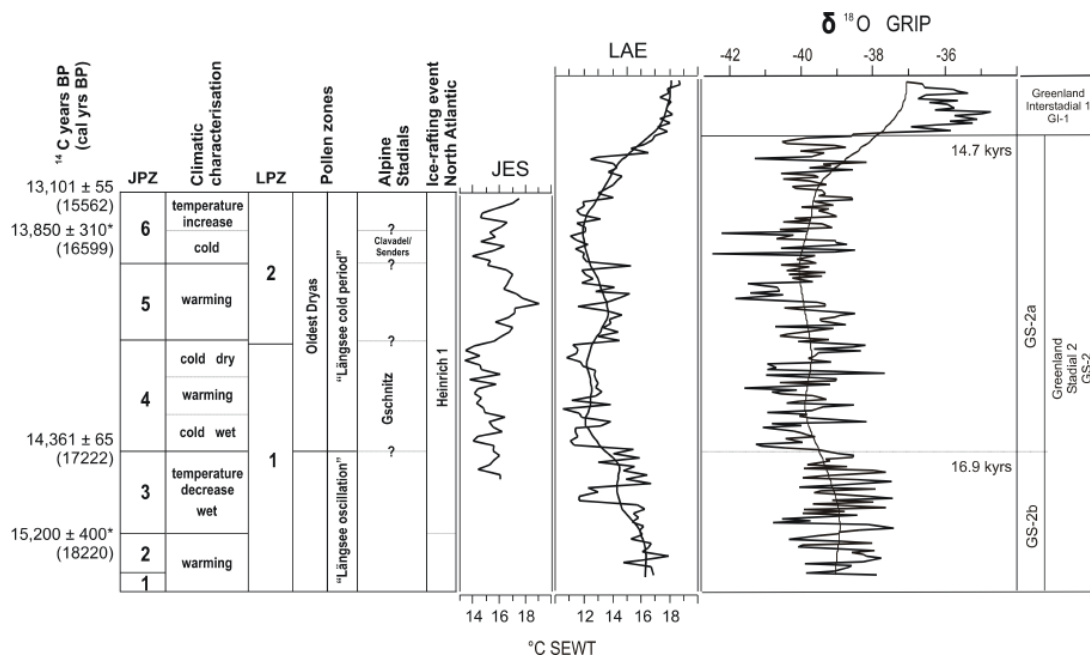
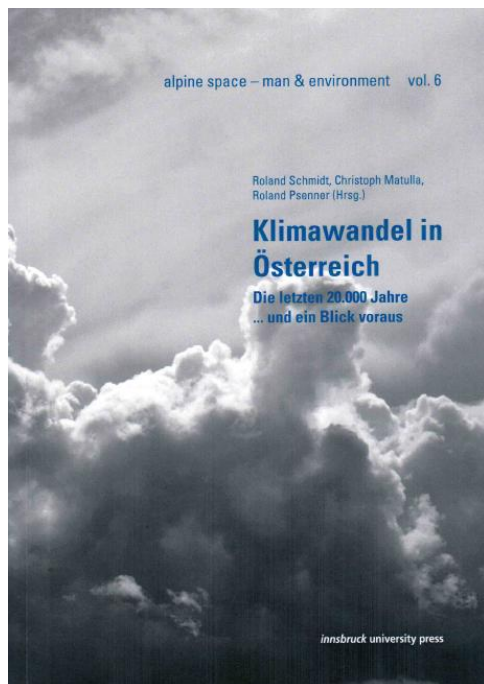


Fig. 24. Summary table of the Late Pleniglacial diatom-inferred summer epilimnetic water temperatures (SEW in °C) in the sediment cores from Längsee (LAE) and Jeserzersee (JES) in relation to the oxygen isotope ($\delta^{18}\text{O}$) event stratigraphy from the Greenland ice-core GRIP (Walker et al. 1999), Alpine glacier advance stadials, the North Atlantic ice-rafting event Heinrich 1, local pollen zones (LPZ and JPZ), climatic characterisation inferred from the multi-proxy results, and radiocarbon dates (AMS 14C, calibrated years in brackets) (Schmidt et al., submitted).



The palaeolimnological investigations in the Carinthian lakes Längsee and Jeserzersee, and from Oberer Landschitzsee in the Central Austrian Alps (Niedere Tauern, Lungau) as a key-site for Holocene climate reconstruction, supported the potential of long-term series to improve the understanding of climatic and environmental dynamics since the end of the last Ice Age in Austria. With regard to the increasing interest on climate change and global warming by the public, we made our results, together with other proxy-data (PALDAT), available to a larger audience (Fig. 25).

Fig. 25. "Klimawandel in Österreich – Die letzten 20.000 Jahre...und ein Blick voraus" (Schmidt R., Matulla C., Psenner R., Hrg.; see www.uibk.ac.at/iup, www.uibk.ac.at/alpinerraum/publications/).

Modern Global Warming/Change impact alpine lakes and their catchments by, e.g. changes in weathering, melting of permafrost, and warming of lakes. The long-term trends in metal deposition in the sediment core Oberer Landschitzsee (ObLAN) show a significant correlation with climate during the past 4,000 years. As an example, Fig. 26 shows the Nickel (Ni) contents versus air temperature anomalies inferred from a chrysophyte cyst-based spring temperature model (Kamenik & Schmidt 2005, Schmidt et al. 2007). At the present stage the responsible processes for Ni-enrichment during periods of warming and vice versa their decline during cold periods are unknown. Processes that are related to the melting of permafrost in alpine areas during Global Warming are recently gaining in interest. There is a current co-operation in this topic with the University Innsbruck.

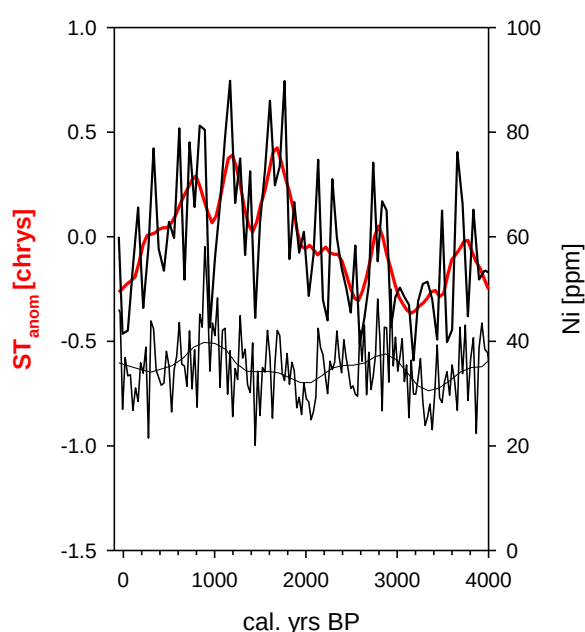


Fig. 26. The Nickel (Ni) contents and the chrysophyte cyst-inferred spring temperature anomalies in the sediment core Oberer Landschitzsee (ObLAN) show similar trends during the last 4,000 years; increased Ni corresponds with warm periods during early Bronze, Hallstatt, Roman and high Medieval times (unpublished data).

The chemical and physical dataset from 45 lakes in the Niedere Tauern that was established in a previous Ph.D. work (C. Kamenik) was used to generate the diatom and chrysophyte-based temperature inference models. This dataset and possible recent changes in diatom assemblage composition are now part of a current project of ILIM and the ÖAW/Alpenforschung on the impact of modern climate change/warming on alpine lakes in the Niedere Tauern (for details see project PRECISE).

Research to be performed in 2010

The long-term, successful palaeolimnological research by Roland Schmidt and his co-workers will be finished with his retirement in spring 2010. The research position has been advertised at the beginning of 2010, with an emphasis on Evolutionary Palaeolimnology. Ideally, the successful candidate will begin his/her research at ILIM in the course of this year.

Stream Ecology

(Maria Leichtfried, Anneliese Wiedlroither and external cooperation partners)

- In an extension of the project “Initiative in River Ecology in Sri Lanka: from Science to Application” (IRESA) financed by KEF and OEAD Austria, ecological experiments on leaf decomposition processes have been continued on a perennial low order stream (Eswathu Oya) in a wet climatic zone of Sri Lanka. The experiments in the field were finished in early 2009; further work focused on chemical and biological laboratory work, statistical analyses and manuscript preparation. The research results were already presented at one national and two international meetings (SIL Austria, SIL CZ/SK, SEFS6) in 2009.
- We followed also the invitation from organizers of “12th International Riversymposium” in Brisbane, Australia, and presented there successful all our research activities in Sri Lanka.
- First activities for the institute project “Global warming threatens biodiversity in (ultra)-sensitive high Alpine lakes: An assessment of past, present and future scenarios” were done. We took the responsibility for the module “Sediments and benthic fauna”.
- Activities as acting national representative in the SIL (International Society for Limnology) and IAD (International Association for Danube Research).
- Activities as editor und reviewer for international journals, e.g. “Microbial Ecology“, “International Review of Hydrobiology“, “Limnology & Oceanography“, “Fundamental and Applied Limnology”.

Leaf litter decomposition of three riparian tree species and associated macro-invertebrates of Eswathu Oya, a low order tropical stream in Sri Lanka

Leaf decomposition, an important component of organic matter dynamics in streams, has been widely examined in temperate regions, but is much less documented in tropical regions. We report here the first study on leaf decomposition in a Sri Lankan stream. The litterbag technique was applied to investigate leaf breakdown and macroinvertebrate colonization in Eswathu Oya, a 1st order reach of a low order stream in the wet climatic zone of Sri Lanka. Coarse and fine-mesh litterbags that included or excluded macroinvertebrates were used to enclose leaves of three dominant riparian tree species (Fig. 27):

- (1) *Ochlandra stridula* (bamboo), a native component of the riparian vegetation,
- (2) The exotic *Alstonia macrophylla* used as timber, and
- (3) The introduced *Hevea brasiliensis* (rubber tree), used in adjacent plantations for latex production, but now also occurring in the riparian vegetation.
- (4) A fourth set of litterbags contained a mixture of these three species.

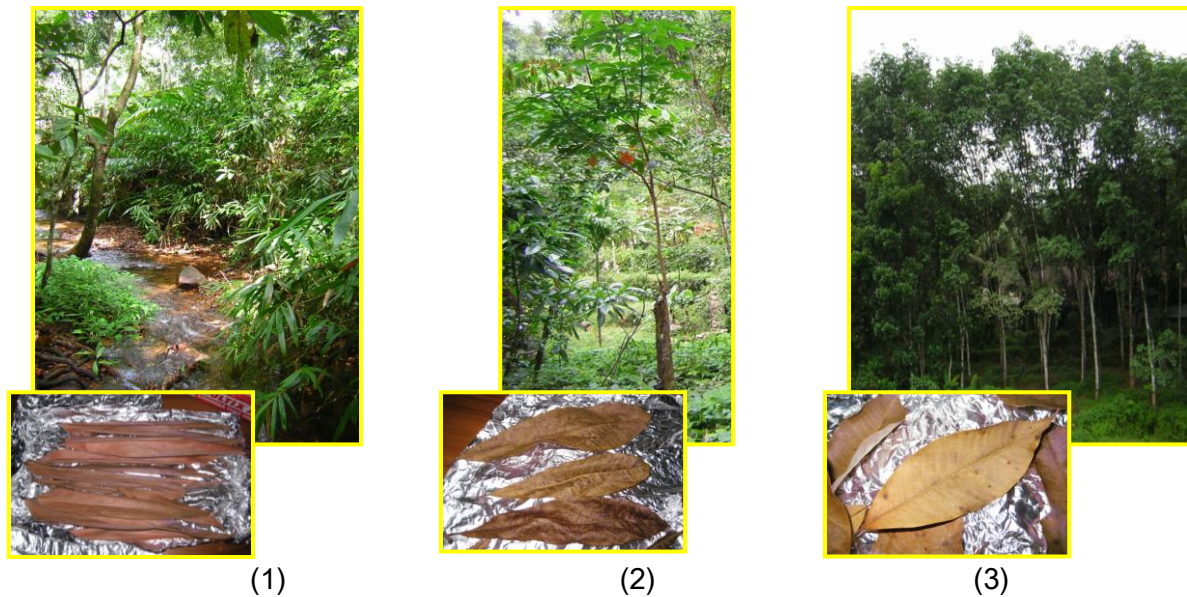


Fig. 27. The three plant species used for decomposition experiments: (1) native *Ochlandra stridula* (bamboo), (2) exotic *Alstonia macrophylla*, (3) introduced *Hevea brasiliensis* (rubber).

A total of 228 coarse and 228 fine mesh size bags were exposed. Twenty-four bags were removed from the stream on 19 occasions coinciding with sampling intervals of 10 to 20 days (depending of the intensity of decomposition). The remaining leaf dry mass, ash-free dry mass and k-rates (Tab. 1) were determined for each litterbag (Fig. 28 and Fig. 29).

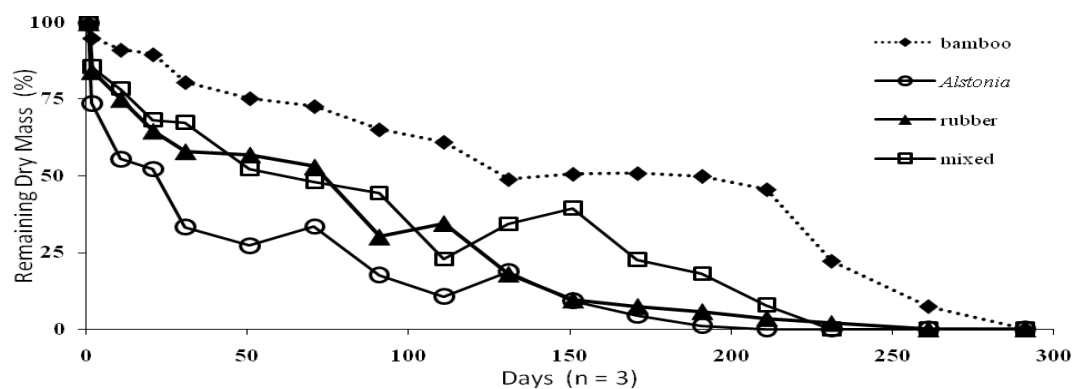


Fig. 28. Leaf litter decomposition of native bamboo, introduced rubber and exotic *Alstonia*, as well as mixture of all in fine mesh size bags.

The leaf-associated macroinvertebrates were counted and identified to families (where possible). Leaf colonization by macroinvertebrates was highest at early stages of the decomposition process on rubber leaves, but invertebrate densities were decreasing thereafter (Fig. 29, right). An opposite colonization occurred on the native bamboo leaves, i.e. slow colonization with continued low densities from the beginning to the end of the process (Fig. 29, right).

Decomposition of all three species was faster in the coarse than in the fine mesh bags (Fig. 28 and Fig. 29, left). The access of the macrobenthic fauna together with the increased exposure to mechanic abrasion in the coarse bags is the likely reason for this difference.

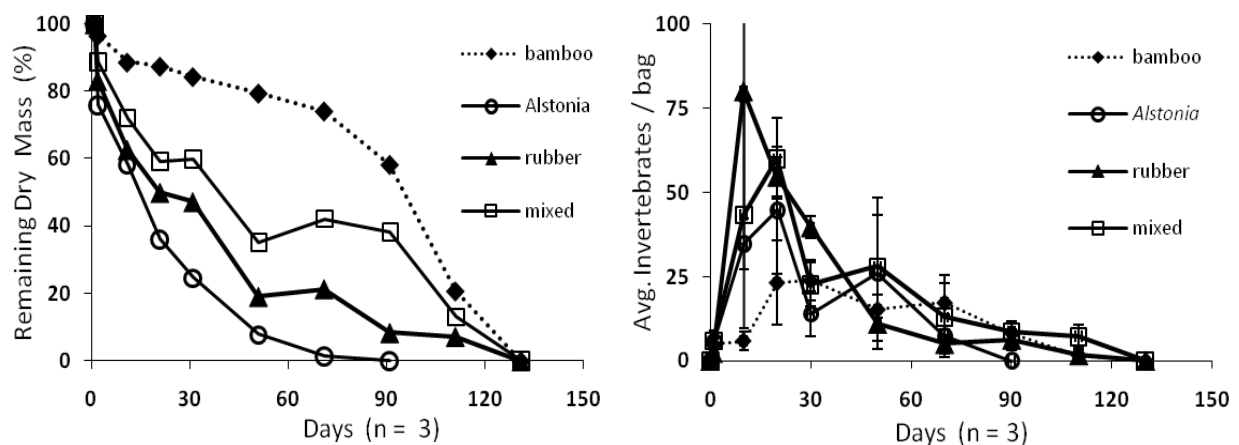


Fig. 29. Leaf litter decomposition of native bamboo, exotic *Alstonia* and introduced rubber, as well as of mixture of all in coarse mesh bags (left) and macroinvertebrates colonization in these bags (right).

Alstonia macrophylla, which exhibits the softest leaf tissue, was the fastest to decompose while the native bamboo, with its tough structure, was the slowest (Fig. 27, Tab. 1).

Tab. 1. Breakdown rates (k) of the three investigated leaf species in coarse and fine mesh size bags and the decomposition time in days (d).

Species	Coarse bags				Fine bags			
	$-k$ (d^{-1})	R^2	n	Research time (d)	$-k$ (d^{-1})	R^2	n	Research time (d)
<i>Ochlandra stridula</i>	0.0090	0.6895	9	130	0.0059	0.7262	16	290
<i>Alstonia macrophylla</i>	0.0550	0.9720	7	90	0.0180	0.8730	13	210
<i>Hevea brasiliensis</i>	0.0253	0.9524	9	130	0.0151	0.9544	15	260
Mixed leaves	0.0155	0.8352	9	130	0.0097	0.8610	14	230

Comparing the leaves of the three species in both types of bags, the breakdown rates (k) show fastest breakdown of *Alstonia*, medium fast of rubber, followed by mixture of all three species, and slowest of the native bamboo (Tab. 1).

Breakdown rates were significantly different when the three species were compared; showing that leaf type with its tissue structure is the dominating factor for the decomposition process in the investigated stream (two-way ANOVA - general linear model for unbalanced design, $P < 0.001$). For all mixed-leaves bags (coarse and fine mesh), the predictions for the decomposition rates calculated based on data from the single leaf bags were significantly different (one-way ANOVA, $P < 0.05$) when compared to measured actual data from the mixed bags (Fig. 28 and Fig. 29 left, Tab. 1).

In all bags, *Alstonia macrophylla* leaves decomposed fastest; six times faster than *Ochlandra stridula* (bamboo); four times faster than the leave mixture, and two times faster than *Hevea brasiliensis* (rubber) in coarse bags. In fine mesh bags is the process two times slower for all leaf species (Table 2, Fig. 28 and Fig. 29, left).

In coarse mesh bags, the colonization by macroinvertebrates started shortly after their exposition into the stream. Maximum abundances (mean 80 ind. per bag) were observed in rubber leaves already after 10 days, followed by a fast and steadily decrease (Fig. 29, right). Highest macrobenthic densities were measured in the mixed leaves (mean 60 ind. per bag) and *Alstonia* leaves (mean 45 ind. per bag) after 20 days, again with a strong decrease after (Fig. 29, right).

A different temporal colonization pattern was observed for bamboo (*Ochlandra stridula*). Highest densities were also found after 20 days (mean 25 ind. per bag), but decreased slowly until the end of the decomposition process (Fig. 29, right).

Among invertebrates, insects were the most important leaf colonizing animals with Diptera, Coleoptera and Trichoptera as the dominant taxa. Based on their dominance and in the lack of shredders that are typically found in temperate rivers, we conclude that they occupy this feeding guild in tropical rivers.

In conclusion, the first part of our study clearly showed that toughness and the quality of leaves were more important than their origin. Therefore, the introduction of leaves may not only affect terrestrial vegetation but also the functional organization of river ecosystems.

Research to be performed in 2010

- Edition and publication of papers in the framework of the IRESA project and the IRESA Workshop in cooperation with colleagues from University of Innsbruck and University of Kelaniya. We intend to publish the main results in a double issue of a peer reviewed journal.
- Investigations within the Institute's project "Global warming threatens biodiversity in (ultra)-sensitive high Alpine lakes: An assessment of past, present and future scenarios". Contribution to the module "Sediments and benthic fauna".
- To intensify research around aquatic hyphomycetes. After the German partner returned from USA to Germany, we will try to apply for a short-term cooperative project (short period, because the PI may retire in the second half of 2011).

International Post-Graduate Training Programmes in Limnology (IPGL)

(Gerold Winkler, Regina Brandstaetter and many national and international partners)

IPGL is acting as a hub for international post-graduated training, research and networking in the area of limnology and freshwater ecosystem management for more than 35 years. During 2009, 22 experts in aquatic ecology and water resource management attended academic training courses organized and implemented by IPGL. The IPGL participants were drawn from Botswana (1), Ecuador (1), Ethiopia (2), Ghana (2), Indonesia (1), Jordan (1), Kenya (3), Macedonia (1), Nepal (1), Rwanda (1), Tanzania (3), Uganda (4) and Zambia (1). The Austrian Development Cooperation funded 8 participants, 6 participants were sponsored via NFP (The Netherlands Fellowship Programme), 2 participants from Worldbank and 6 participants were funded via other fellowship programmes. Five M.Sc. projects were organized by IPGL and supervised by partner institutions in Austria and Africa (Ethiopia, Kenya, Uganda and Tanzania). All five students finished their theses successfully and were awarded the academic title “Master of Science” in April 2009. The results of two IPGL M.Sc. theses (Mrs. A. M. Sherpa; Ms. R. Nalwanga) were published in a peer-reviewed journal.

One of the core activities in 2009 was to restructure the M.Sc. programme “Environmental Sciences, specialization Limnology & Wetland Ecosystems” towards a truly joint programme with Eastern African institutions. Two international workshops were organized to establish the programme curriculum and to align academic quality assurance measures to both European and East African standards in order to pave the way for a European-African joint degree in 2012. The new M.Sc. programme structure/curriculum became operative in October 2009 and consists of three trimesters of 4-months each, which are held in The Netherlands (UNESCO-IHE), Kenya (Egerton University) and Austria (IPGL/AAS), followed by a 6-months research period in Eastern Africa. A tailor-made master-plan was established to update teaching and research equipment/infrastructure at Egerton University to implement the Kenyan trimester at an international standard level and to enhance the research capacity of Egerton University. Funds were acquired from the Austrian Development Cooperation to purchase research equipment and to establish a “Water Resource Centre” at Egerton University. Training programmes/workshops on project management were organized, as well as academic quality assurance, teaching methods and fund acquisition for academic personnel of East African

partner institutions. Funded and facilitated was the development of a strategic-plan to achieve financial and operative sustainability of EAWA (Eastern Africa Water Association).

The EU-funded research project “BOMOSA” was completed in 2009. The international BOMOSA project conference was co-organized by IPGL in September 2009 in Machakos, Kenya (Fig. 30). The conference was structured towards the goal of improving the livelihood of Eastern Africa people through promotion and extension of sustainable inland aquaculture. The conference was attended by more than 70 participants from 8 countries. The conference participants included scientists, technologists, aquaculture professionals, representatives of international organizations (FAO), community leaders and key-stakeholder groups. The conference announcement flyer and a detailed book of abstract (including abstracts of all 38 scientific presentations/publications) were widely disseminated and are downloadable from the BOMOSA webpage. The conference was covered by mass media and two articles were published in daily newspapers.

Two general articles on BOMOSA approach/technology were published in magazines featuring innovative technologies in natural resource management. One article was published in an Austrian daily newspaper with high reputation. One M.Sc. research project was organized and sponsored via IPGL (B. T. Bedanie). The environmental impacts of BOMOSA fish farming systems were investigated within the Ph.D. thesis “Effects of cage fish farming systems on phytoplankton and water quality in small ponds of East Africa”, carried out by Nadja Straubinger under the supervision of R. Kurmayer.

Highlights 2009

- Project CAPAQUA (Development of Educational and Research CAPacity in Eastern Africa for the Sustainable Management of AQUAatic Ecosystems) granted by ADC (Austrian Development Cooperation), EURO 1.5 million, October 2009 to September 2012
- Start of restructured M.Sc. programme “Environmental Sciences, specialization Limnology & Wetland Ecosystems” in October 2009
- Successful completion of EU-funded project “BOMOSA”.



Fig. 30. International BOMOSA conference, September 2009, Machakos, Kenya. "Extension of inland aquaculture in Africa: BOMOSA, pioneering small-cage fish farming in reservoirs, ponds & temporary water bodies in Eastern Africa".

IPGL activities planned for 2010

- Successful implementation of the restructured M.Sc. programme and internal evaluation of the restructuring measures
- Completion of 8 M.Sc. theses and launch of at least 4 M.Sc. research projects organized by IPGL
- Update of teaching and research equipment/infrastructure and establishment of a “Water Resource Centre” at Egerton University
- Organization of a participatory and transdisciplinary conference/exhibition on “innovative concepts, technologies and tools for the sustainable management of aquatic ecosystems” in Eastern Africa.

1.4 Research program 2010

The specific research that shall be conducted in the current year was listed in the previous chapter, in relation to the respective research projects. The majority of the projects will be continued from the previous year. CAPAQUA, funded by the Austrian Development Agency, is an extended follow-up of the previous activities within IPGL, with an even stronger focus on capacity building in Eastern Africa. DETECTIVE and RADICAL, funded by the Austrian Alpine Commission and the Austrian Climate Research Program, respectively, are interdisciplinary projects that will investigate the impact of climate change on Lake Mondsee and high Alpine lakes. The in situ monitoring system, which should be used for the implementation of microevolutionary laboratories in Lake Mondsee and elsewhere in the future ('Vision 2020'), will be installed at a smaller scale. This is partly for financial restrictions, but mainly because the Institute was deprived of its direct access to the lake when the main building had to be evacuated in 2008. With its currently limited logistics, fieldwork of ILIM will be seriously hampered in the third, consecutive year. The presently unsatisfactory infrastructure also impedes the formation of a new working group, succeeding Roland Schmidt's palaeolimnological team. Once again, it is of highest priority for continued, successful research of ILM that the reconstruction of the main building will be finished.

1.5 Current version of the medium-term research program for 2011-2013

The five years' [Medium-term Research Programme](#) (MTRP), originally formulated in German in April 2005, outlined ambitious goals within the Institute's research focus, i.e. investigating the origin and maintenance of (intraspecific) diversity of aquatic organisms and communities. Those goals referred mainly to the establishment of new research fields such as Evolutionary Ecology of Asexual Aquatic Organisms and of new, interdisciplinary co-operations. The former has been achieved (see reports by C.-P. Stelzer and D. Lamatsch in the previous chapter), the latter had to be postponed for the following reasons.

The MTRP lists as prerequisites to reach those goals that the renovation and expansion of the Institute's building at Mondsee will be completed within the next two years (i.e., until mid-2007) and that vacant research positions can be renewed. The Annual Report 2007, however, stated the following under this heading: "It is at present impossible to forecast precisely the extent of impairment of our research by the construction work in the course of the rebuilding and expansion of the laboratory building at Mondsee; this is because a detailed scenario of the reconstruction is pending (state of mid-February, 2008). We currently favour to rent office and laboratory containers at an alternative site to ensure the progress of our research activities in the course of the construction work, which will begin in spring, 2008. Due to the uncertainties resulting from the unknown duration of the reconstruction and the specific expertise of the scientists succeeding U. Humpesch and M. Dokulil in 2009, a more detailed outlook on the Institute's research programme beyond 2010 appears impossible at present." Two years later, in February 2010, the situation is even worse. The Institute for Limnology was forced to evacuate the main building at the lakeshore at very short notice and moved to various interim facilities in summer, 2008. The Institute is currently spread over five different localities at Mondsee and its surroundings, operating in makeshift laboratories and interim offices. Rebuilding of the Institute's main building was stopped in November 2008 for half a year, and an end of the reconstruction period is, even now, not in sight. Since over 1.5 years, we do not have the means to host guest researchers, and it has become increasingly difficult to attract graduate and undergraduate students within our research projects. The Institute's library is not working, because, due to the limited space, all books, older volumes of journals, and most other items had to be stored in boxes and are thus unavailable. The mechanical and electronic workshops had to be closed. The vacant positions of two scientists could not be filled, because of a general freeze of employment at the Austrian Academy of Sciences effective since the beginning of 2009. The reason is that the AAS and, accordingly, the Institute for Limnology did not have an ordinary budget at their disposal until December 2009. Therefore, all research and outreach activities of the Institute had to be cut to the minimum. In short, long and even

medium-term planning have been replaced by erratic decision making. In view of this state of Limbo, we refrain from updating and even extending our current research program beyond 2011. Instead, we quote from the 'Vision 2020' submitted by the director of ILIM on demand of the presiding committee to the AAS in October 2009:

"Provided that the budgetary and organizational prerequisites will be met, we expect to reach the following milestones and deliverables:

- Installing a lake diagnostic system in Lake Mondsee in 2010
- Establishing central laboratories for molecular biology and water chemistry in 2011
- Installing real-time in situ flow cytometry in Lake Mondsee in 2011
- Installing cell sorting in 2012
- Beginning in situ enclosure experiments in Lake Mondsee in 2012
- Publishing the first scenarios of past and future change of biodiversity in high alpine lakes in 2012
- Delivering a protocol for real-time phytoplankton monitoring in lakes for wide use in relation to water quality assessment according to the European Water Framework Directive (in 2013-2014)
- Providing an automatic early-warning system for toxic cyanobacteria in 2014
- Continuously, and enhanced from 2012 onwards: significantly increased publishing in high-ranked international journals open to evolutionary and climate change research (Nature, Science, Trends in Ecology and Evolution, BMC Evolutionary Biology, Ecology, Global Change Biology)."

(Source: Weisse, T. (2009). The Institute for Aquatic and Evolutionary Ecology (formerly Institute for Limnology) in the year 2020 – a look ahead, 5 pp. Internal document of the AAS)

1.6 Publications/talks/poster presentations 2009

Peer-reviewed publications (ILIM scientists and collaborators in bold face)

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- De Castro F, Gaedke U, **Boenigk J** (2009) Reverse evolution: Driving forces behind the loss of acquired photosynthetic traits. [PLOS One 4:e8465](#)
- Dokulil, M.T.** and Herzig, A., (2009): An analysis of long-term winter data on phytoplankton and zooplankton in Neusiedler See, a shallow temperate lake, Austria. *Aquatic Ecology*. DOI 10.1007/s10452-009-9282-3 [PDF](#)
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- Kurmayer, R.**, and **Christiansen, G.** (2009): The genetic basis of toxin production in Cyanobacteria. *Freshwater Reviews* 2:31-50.

- Lamatsch, DK & Stöck, M.** (2009). Paternal leakage in unisexual fishes. In: Lost sex! The Evolutionary Biology of Parthenogenesis (eds. I. Schön, K. Martens & P. Van Dijk), Springer Berlin/Heidelberg, pp. 399-432. [doi:10.1007/978-90-481-2770-2_19](https://doi.org/10.1007/978-90-481-2770-2_19)
- Lamatsch, D.K., Fischer P., Geiger M., Lampert K.P., Schlupp I., Scharl M.** (2009): Diploid Amazon mollies (*P. formosa*) show a higher fitness than triploids in clonal competition experiments. *Evolutionary Ecology* 23:687-697.
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- Wanzenböck, J.** (2009): Die Österreichische Akademie der Wissenschaften und ihre Rolle in der Fischforschung. Österreichs Fischerei 62, 11/12: 297-302.

- Weisse, T.** (2009): The European Journal of Protistology – Changes, chances and challenges. Eur. J. Protistol. 45: 163–164 .
- Weisse, T., Boenigk, J., and Müller, H.** (2009): Ecological methods for the study of heterotrophic nano- and microplankton of fresh and marine waters. In: A course in Protozoology, Röttger, R., Knight, R. & Foissner, W. (eds), Protozool. Monographs 4: 232-242.
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Diploma Theses

- Schöttl, P.** (2009): Embryonic development and mortality in crossing experiments of a Baltic and Alpine whitefish lineage (*Coregonus lavaretus* species complex). Diplomarbeit Universität Salzburg (supervision: Wanzenböck, J.) .
- Gimbo, R.** (2009): Spatial variability of zooplankton along a section of River Sio under different habitat conditions. Diplomarbeit UNESCO-IHE ES 09.31-Kooperation IPGL Mondsee.
- Kyule, N.D.**(2009): Dynamics and abundance of bacterio- and virioplankton in saline-alkaline East-African Rift Valley Lakes, Kenya. Diplomarbeit UNESCO-IHE ES 09.32-Kooperation IPGL Mondsee.
- Mgana, H.F.** (2009): Zooplankton distribution and abundance in Lake Tanganyika with special reference to *Tropodiatomus simplex*. Kigoma, Tanzania. Diplomarbeit UNESCO-IHE ES 09.33-Kooperation IPGL Mondsee.
- Ong'ondo, G.O.** (2009): The Ecology of ciliated protists and intra-specific variation of *Frontonia* sp. in two saline - alkaline Rift Valley lakes in Kenya. Diplomarbeit UNESCO-IHE ES 09.35-Kooperation IPGL Mondsee (supervision: Boenigk, J.).
- Tadesse, B.** (2009): Prevalence and abundance of fish parasites in BOMOSA cage systems and lakes Babogaya and Awassa, Ethiopia. Diplomarbeit UNESCO-IHE ES 09.29-Kooperation IPGL Mondsee.
-

Dissertations

- Huber, K.** (2009): Late glacial climatic and palaeoecological investigations of Längsee (Austria) using diatoms and chrysophyte cysts. University Vienna, 143 pages. (supervision: Schmidt, R.)
- Okello, W.** (2009): Molecular and chemical characterisation of microcystin-producing cyanobacteria in Ugandan freshwater habitats. University of Vienna, 109 pages (supervision: Kurmayer, R.)

1.7 Scientific cooperation 2009

15. Externe Partner von Forschungsprojekten	
	gesamt
Anzahl der externen Partner	20
Kooperationspartner	
- Privatwirtschaft	1
- Universität	8
- Sonstige externe Einheiten	2
- Außeruniversitäre F-Einrichtung	4
- Universitäre Lehr- und Forschungseinheit	5
Herkunftsinstitutionen der Partner	
- im Inland	4
- innerhalb EU (ohne Österreich)	10
- außerhalb EU	6

Liste:

Academy of Sciences CR, Hydrobiological Institute, Ceske Budejovice, CZECH REPUBLIC

(Project: Adaptation of Active Fisheries Methods: Pair trawling (Einzelforschungsprojekt);

Project: Genetic and ecological diversity of a narrow phylogenetic group of abundant freshwater bacteria, FWF P19853)

Bigelow Laboratory for Ocean Science, Bigelow, UNITED STATES

(Project: Niche separation and coexistence of chrysophytes in an alpine gradient)

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

(International Post-Graduate Training Programmes in Limnology)

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

(Project: Patterns and processes of adaptation and tolerance to low pH of freshwater plankton, FWF P20118;

Project: Morphology and ecology of endemic ciliates from bromeliads, FWF P20360)

Institut für Ökologie, Universität Innsbruck, Innsbruck, AUSTRIA

(Project: Niche separation and coexistence of chrysophytes in an alpine gradient)

Lunds universitet, Lund, SWEDEN

(Project: Niche separation and coexistence of chrysophytes in an alpine gradient)

Nanjing Institute of Geography and Limnology, Nanjing, CHINA

(Project: Allgemeine Limnologische Grundlagenforschung)

National Fisheries Resources Research Institute (NAFIRRI), Jinja, UGANDA

(Dissertation within IPGL: Molecular and chemical characterisation of toxic cyanobacteria in Ugandan freshwater)

Norwegian Institute for Water Research (NIVA), Oslo, NORWAY

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

Sanofi Aventis, Frankfurt, GERMANY

(Project: Habitat specificity of flagellates and ecophysiological significance of microdiversity)

School of Biological Sciences, Liverpool, UNITED KINGDOM

(Project: Allgemeine Limnologische Grundlagenforschung)

UNESCO-IHE, Institute for Water Education, Delft, NETHERLANDS

(International Post-Graduate Training Programmes in Limnology)

Umweltforschungszentrum Leipzig Halle, Leipzig, GERMANY

(Project: Habitat specificity of flagellates and ecophysiological significance of microdiversity)

Università di Pisa, Pisa, ITALY

(Project: Genetic and ecological diversity of a narrow phylogenetic group of abundant freshwater bacteria)

Universität Leipzig, Leipzig, GERMANY

(Project: Patterns and processes of adaptation and tolerance to low pH of freshwater plankton, FWF P20118)

Technische Universität Dresden, Dresden, GERMANY

(Project: Patterns and processes of adaptation and tolerance to low pH of freshwater plankton, FWF P20118);

Universität Potsdam, Potsdam, GERMANY

(Project: Patterns and processes of adaptation and tolerance to low pH of freshwater plankton, FWF P20118);

(Project: Niche separation and coexistence of chrysophytes in an alpine gradient)

Universität Stuttgart , Stuttgart, GERMANY

(Project: Habitat specificity of flagellates and ecophysiological significance of microdiversity)

Universität Wien, Fakultät für Lebenswissenschaften, Department für Meeresbiologie, Wien, AUSTRIA

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

Universität Zürich, Zürich, SWITZERLAND

(Project: Niche separation and coexistence of chrysophytes in an alpine gradient)

Veterinärmedizinische Universität Wien, Wien, AUSTRIA

(Project: Niche separation and coexistence of chrysophytes in an alpine gradient)

2. Explanations for the budgets 2009-2013

2.1 Explanations to the final budget (Rechnungsabschluss) 2009

Last year was determined by severe budget cuts in the course of the financial crisis of the Austrian Academy of Sciences. Every purchase exceeding 1000 € needed approval by the central administration of the AAS. For similar financial restrictions, the Austrian Science Fund (FWF) could not approve new projects during the first 5 months in 2009. Accordingly, the Institute for Limnology was hit hard and had to cut its expenses drastically. Even more importantly, the ongoing, unsatisfactory situation of ILIM in its interim offices and makeshift laboratories does not allow to employ new personnel and to invite scientific collaborators and guest researchers. Therefore, research and outreach activities of ILIM had to be significantly reduced compared to previous years. For instance, ILIM's participation in scientific conferences declined from 67 (10 by junior scientists) in 2007, the last year when the Institute was operating in its regular building, to 39 (8) in 2008 and 20 (3) in 2009. Similarly, the number of guest researchers visiting the Institute from abroad dropped drastically since 2007.

The final budget of 2009 reflects this unsatisfactory situation clearly. The ordinary budget was seemingly 7.5% lower than in 2008, but the money available for research was even more reduced. Investment was 188.500 € in 2008 but zero in 2009. Money spent for the salaries of researchers were reduced by 11.2% compared to the previous year, since two vacant positions could not be filled in 2009. Even though, the total costs for personnel amounted to 83.7% of the total expenses of the ordinary budget in 2009. Of the remaining 237,800 €, 75,200 € (31.6%) had to be spent for rent of the interim facilities of ILIM. According to a decision by the previous presiding committee of the AAS, costs for rent and maintenance should be paid centrally, i.e. are not part of the expenses of an institute. The continued, high proportion of third party funding (~1.02 Mio €, equivalent to 40.2% of the total budget in 2009) could only partly compensate for the severe cuts of the ordinary budget. Investment for, e.g. typical laboratory equipment, cannot be applied for in stand-alone projects of the FWF or the EU. To what extent the Institute's research relies upon extramural funds is obvious from the list of research projects; 25 out of 27 projects were externally financed (see Table 14 in annex 4, AkademIS report). Expenses of

third-party projects were seemingly lower in 2009 than the respective third party funds because the final budget was not available for all projects in early February 2010.

Finally, a word of caution. The savings of ILIM, 452,000 € at the beginning of 2009, were completely withdrawn from the Institute's account by the AAS. The Institute's intention was to spend this money, to a smaller extent, for investment and, to a larger part, for laboratory equipment of the new rooms in the expanded main building at the lakeshore. The latter costs were not considered by AAS in the budget breakdown of the reconstruction work of the main building and are now lacking.

2.2 Explanations to the budget allocation (Budgetvoranschlag) 2010

The ordinary budget amounts to 1,238,000 € allocated for personnel plus 295,000 € for all other costs, i.e. it is virtually the same as in 2009. Since the Institute will have to spend >75,000 € for rent of its interim facilities, the budget that is freely available is equivalent to only ~60% of the budget provided by AAS in 2008 (357,745 € plus 47,255 € centrally administered for rent and maintenance). Considering the inflation rate, the budget for personnel is approximately 8% lower in 2010 than in 2008. From the tables listed in Annex 3, it is obvious that an even state of account at the end of the year can only be achieved if the Institute does not spend any money for investment or does not use up the money allocated for personnel. The former is a non-option, considering last year's slowdown in investment, and the more so since one research post (succeeding R. Schmidt) will be filled by an external candidate in the course of this year. Please note that the high amount (1,1 million €) of third-party revenue in 2010 is only a best guess that is not guaranteed.

2.3 Explanations to the budget application (Budgetantrag) 2011-2013

Considering all the uncertainties outlined above, the budget application for the years 2011-2013 can only be a crude estimate. It was written under the assumption that reconstruction of the main building will be finished in spring 2011 and that the Institute can move back from its 5 interim facilities to its original premises at the lakeshore in early summer 2011. Accordingly, costs for rent were reduced to 50% in 2011 and no longer considered thereafter. The future

scenario for ILIM outlined in the medium-term research program (see Chapter 1.5) and in the conceptual 'Vision 2020' submitted to the AAS on demand of the presiding committee in October 2009 was taken as a framework for the cost estimate. Since resuming the activities at the main building in the current year appears now unrealistic, the framework was shifted by one year. The costs for investment, in particular, have been reduced and cannot cover the costs needed within the initial 3 years as outlined in the 'Vision 2020' scenario. The budget application assumes that the ordinary budget can be brought back next year to the level reached in 2008 and then remains stable. A compensation for inflation in the order of 1% p.a. is taken into account. Since one more research scientist was financed by the Austrian Federal Ministry of Science and Research until 2008, which did not show up in the ordinary budget of former years, this implies a reduction of the Institute's budget by ~6%, relative to 2008. Even under these modest assumptions, ILIM will reach a deficit of 150,000 € by the end of 2013.

3. Annex: Budgetblätter 2009-2013 (deutsch)

Finanzierungsübersicht Gesamt 2120: Limnologie							
.	Text	2008 RA (endgültig)	2009 RA (vorläufig)	2009 BVA	Abweichung Soll-Ist in %	2010 BVA	2011 BA

I. G E S A M T

Saldoübertrag Vorjahr gesamt	418,244	421,564	251,800	40.27	271,300	-23,200
EINNAHMEN gesamt	2,594,068	2,540,479	2,746,700	-8.12	2,413,000	2,715,700
Budget inkl. Drittmittel	2,556,940	2,540,408	2,746,700	-8.12	2,413,000	2,715,700
Sonstige Einnahmen	37,128	70	0	100.00	0	0
AUSGABEN gesamt	-2,596,293	-2,223,922	-2,804,500	-26.11	-2,699,500	-2,789,900
Investitionen	2,874,950	-9,119	-188,500	-1,967.18	-88,000	-137,500
Personalaufwand	-1,784,055	-1,699,877	-1,989,200	-17.02	-1,868,000	-1,950,700
Werkverträge, Freie Dienstverträge	-93,401	-40,533	-80,000	-97.37	-95,000	-100,000
Materialaufwand	-123,952	-69,080	-203,400	-194.44	-248,800	-266,000
Betriebsaufwand	-3,469,834	-405,314	-343,400	15.28	-399,700	-335,700
Interne Verrechnung	6,966	-11,940	0	100.00	0	0
Budgetumbuchungen	-1,420	-460,258	-8,100	98.24	-8,000	-8,000
Saldoübertrag Folgejahr	421,564	265,923	185,900	30.09	-23,200	-105,400

II. B U D G E T

Saldoübertrag Vorjahr	471,811	452,258	411,900	8.92	50,400	-24,100
EINNAHMEN gesamt	1,641,984	1,518,237	1,696,700	-11.75	1,533,000	1,665,700
Ordentliches Budget	1,639,745	1,518,189	1,696,700	-11.76	1,533,000	1,665,700
Sonstige Einnahmen	2,239	48	0	100.00	0	0
AUSGABEN gesamt	-1,653,251	-1,462,835	-1,923,500	-31.49	-1,599,500	-1,739,000
Investitionen	2,937,101	0	-188,500	0.00	-88,000	-137,500
Personalaufwand	-1,285,283	-1,225,002	-1,368,200	-11.69	-1,238,000	-1,315,700
Werkverträge, Freie Dienstverträge	-1,600	0	-20,000	0.00	-5,000	-10,000
Materialaufwand	-64,913	-57,541	-103,400	-79.70	-68,800	-86,000
Betriebsaufwand	-3,238,556	-180,292	-243,400	-35.00	-199,700	-189,800
Interne Verrechnung	-3,039	-2,391	0	100.00	0	0
Budgetumbuchungen	-5,247	-460,258	-8,100	98.24	-8,000	-8,000
Saldoübertrag Folgejahr	452,258	45,012	177,000	-293.23	-24,100	-105,400

III. DRITTMITTEL

Saldoübertrag Vorjahr	-53,567	-30,693	-160,100	-421.62	220,900	900
EINNAHMEN gesamt	952,084	1,022,241	1,050,000	-2.72	880,000	1,050,000
Drittmittel	917,195	1,022,219	1,050,000	-2.72	880,000	1,050,000
Sonstige Einnahmen	34,889	22	0	100.00	0	0
AUSGABEN gesamt	-943,042	-761,088	-881,000	-15.76	-1,100,000	-1,050,900
Investitionen	-62,151	-9,119	0	100.00	0	0
Personalaufwand	-498,772	-474,875	-621,000	-30.77	-630,000	-635,000
Werkverträge, Freie Dienstverträge	-91,801	-40,533	-60,000	-48.03	-90,000	-90,000
Materialaufwand	-59,039	-11,540	-100,000	-766.58	-180,000	-180,000
Betriebsaufwand	-231,278	-225,022	-100,000	55.56	-200,000	-145,900
Interne Verrechnung	10,005	-9,549	0	100.00	0	0
Budgetumbuchungen	3,826	0	0	0.00	0	0
Saldoübertrag Folgejahr	-30,693	220,912	8,900	95.97	900	0

Fiktivkosten Lebende Subventionen -87,000

Detailübersicht Ord. Budget
2120: Limnologie

.	Text	2008 RA (endgültig)	2009 RA (vorläufig)	2009 BVA	2010 BVA	2011 BA
	Saldoübertrag Vorjahr	471,811	452,258	411,900	50,400	-24,100
I.	EINNAHMEN GESAMT	1,641,984	1,518,237	1,696,700	1,533,000	1,665,700
1.	Ordentliches Budget					
40000	Ordentliches Budget	1,639,745	1,518,189	1,696,700	1,533,000	1,665,700
		1,639,745	1,518,189	1,696,700	1,533,000	1,665,700
2.	Sonstige Einnahmen					
44550	Erlöse Kopienabrechnungen Extern	0	47	0	0	0
48000	Sonstige Erlöse	2,236	0	0	0	0
		2,236	47			
3.	Finanzerträge					
81100	Zinsertrag Banken	3	2	0	0	0
		3	2			
II.	AUSGABEN GESAMT	5,601,420	-1,459,265	-1,923,500	-1,599,500	-1,739,000
1.	INVESTITIONEN	7,168,428	0	-188,500	-88,000	-137,500
1.1.	Gebäude, baul. Investitionen					
1.2.	Wissenschaftliche Geräte					
04010	Wissenschaftliche Geräte	53,289	0	-120,000	-60,000	-100,000
		53,289		-120,000	-60,000	-100,000
1.3.	Bauteile wissensch. Geräte					
04020	Bauteile wissenschaftliche Geräte	-4,738	0	-7,000	-9,000	-8,000
		-4,738		-7,000	-9,000	-8,000
1.4.	EDV- und Bürogeräte					
06200	EDV- und Bürogeräte	93,510	0	-10,000	-6,000	-15,000
		93,510		-10,000	-6,000	-15,000
1.5.	Software					
01200	Software	249	0	-9,000	-9,000	-9,500
		249		-9,000	-9,000	-9,500
1.6.	Maschinelle Ausstattung					
05000	Maschinelle Ausstattung und	40,657	0	-2,500	-2,500	-2,500
		40,657		-2,500	-2,500	-2,500
1.7.	Einrichtungsgegenstände					
06100	Einrichtungsgegenstände	3,440	0	-10,000	-1,500	-2,500
		3,440		-10,000	-1,500	-2,500
1.8.	Fahrzeuge					
06300	Fahrzeuge (nicht PKW, LKW)	2,108	0	0	0	0
06310	Personenkraftwagen	0	0	-30,000	0	0
		2,108		-30,000		

1.9. Anzahlungen für Investitionen

1.10 Sonstige Investitionen

02100	Gebäude auf eigenen Grundstücken	6,979,915	0	0	0	0
		6,979,915				

2. PERSONALAUFWAND -1,288,728 -1,225,172 -1,371,700 -1,238,500 -1,318,200

2.1. Wissenschaftler

61100	Wissenschaftler - Bruttogehalt	-536,230	-467,277	-704,500	-577,000	-664,000
61110	Wissenschaftler - Dienstgeberbeitrag SV	-94,131	-89,437	0	0	0
61111	Wissenschaftler - MVK-Beiträge	-1,331	-1,539	0	0	0
61120	Wissenschaftler - FLAG	-15,136	-15,730	0	0	0
61140	Wissenschaftler - Vorsorge Abfertigung	-16,312	-13,927	0	0	0
61150	Grundbeitrag Pensionskasse	-4,771	-4,724	0	0	0
61151	Zusatzbeitrag Pensionskasse	-2,600	-2,545	0	0	0
		-670,511	-595,179	-704,500	-577,000	-664,000

2.2. Technisches Personal

61200	Technisches Personal - Bruttogehalt	-360,012	-368,515	-552,600	-549,000	-560,000
61210	Technisches Personal - Dienstgeberbeitrag SV	-76,524	-78,200	0	0	0
61211	Technisches Personal - MVK-Beiträge	-1,031	-986	0	0	0
61220	Technisches Personal - FLAG	-16,214	-16,395	0	0	0
61240	Technisches Personal - Vorsorge Abfertigung	-10,972	-11,456	0	0	0
61250	Grundbeitrag Pensionskasse	-2,180	-2,334	0	0	0
61251	Zusatzbeitrag Pensionskasse	-1,082	-1,182	0	0	0
69220	Technisches Personal - FLAG	-11	0	0	0	0
		-468,025	-479,067	-552,600	-549,000	-560,000

2.3. Administratives Personal

61300	Admin. Personal - Bruttogehalt	-79,272	-81,647	-75,600	-76,000	-55,000
61310	Admin. Personal - Dienstgeberbeitrag SV	-16,003	-16,268	0	0	0
61320	Admin. Personal - FLAG	-3,567	-3,674	0	0	0
61340	Admin. Personal - Vorsorge Abfertigung	-2,987	-3,093	0	0	0
61350	Grundbeitrag Pensionskasse	-625	-655	0	0	0
61351	Zusatzbeitrag Pensionskasse	-339	-358	0	0	0
69300	Admin. Personal - Bruttogehalt	-7,001	-7,149	0	0	0
69310	Admin. Personal - Dienstgeberbeitrag SV	-1,523	-1,556	0	0	0
69311	Admin. Personal - MVK-Beiträge	-107	-109	0	0	0
69320	Admin. Personal - FLAG	-315	-322	0	0	0
		-111,738	-114,830	-75,600	-76,000	-55,000

2.4. Reinigungspersonal

61400	Reinigungspersonal - Bruttogehalt	-26,775	-27,466	-35,500	-36,000	-36,700
61410	Reinigungspersonal - Dienstgeberbeitrag SV	-5,826	-5,977	0	0	0
61420	Reinigungspersonal - FLAG	-1,205	-1,236	0	0	0
61440	Reinigungspersonal - Vorsorge Abfertigung	-1,005	-1,040	0	0	0
61450	Grundbeitrag Pensionskasse	-199	-206	0	0	0
		-35,009	-35,925	-35,500	-36,000	-36,700

2.5. Sonstiger Personalaufwand

73350	Teilnahme Schulungen, Kurse etc.	-3,445	-170	-3,500	-500	-2,500
		-3,445	-170	-3,500	-500	-2,500

2.6. Auslandszulagen

3.	WERKVERTRÄGE, FREIE DIENSTVERTRÄGE	-1,600	0	-20,000	-5,000	-10,000
3.1.	Werkverträge für Forschung					
58100	Klassische Werkverträge	-1,600	0	0	0	0
		-1,600				
3.2.	Freie Dienstverträge Forschung					
58200	Freie Dienstverträge	0	0	-20,000	-5,000	-10,000
				-20,000	-5,000	-10,000
3.3.	Sonstige Werkverträge					
4.	MATERIALAUFWAND	-64,913	-57,541	-103,400	-68,800	-86,000
4.1.	Adaptierungen Gebäude					
56010	Adaptierungen Gebäude (unter Euro 400,-)	0	0	-100	-100	-100
				-100	-100	-100
4.2.	Wissensch. Geräte und Bauteile					
56100	Wissenschaftliche Geräte (unter Euro 400,-)	-2,301	-887	0	0	0
56110	Bauteile wissenschaftliche Geräte	0	0	-2,000	-2,000	-2,500
56120	Elektronischer Bedarf (unter Euro 400,-)	-319	-821	-500	-900	-600
		-2,620	-1,708	-2,500	-2,900	-3,100
4.3.	EDV-Verbrauchsmaterial, Software					
56200	Software (unter Euro 400,-)	0	0	-3,500	-500	-500
56420	EDV - Zubehör inkl. Verbrauchsmaterial	-2,696	-1,193	-8,000	-3,500	-7,500
		-2,696	-1,193	-11,500	-4,000	-8,000
4.4.	Maschinelle Ausstattung					
56130	Maschinelle Ausstattung (unter Euro 400,-)	-515	-353	-1,000	-1,000	-1,200
56140	Werkzeuge (unter Euro 400,-)	-663	-769	-3,700	-800	-1,000
56600	Fahrzeuge und Zubehör (unter Euro 400,-)	0	-70	0	0	0
		-1,179	-1,192	-4,700	-1,800	-2,200
4.5.	Einrichtung und Bürogeräte					
56400	Einrichtungsgegenstände (unter Euro 400,-)	-526	-10	-10,000	-500	-4,000
56410	Bürogeräte (unter Euro 400,-)	-542	-139	-1,000	-200	-1,000
		-1,068	-149	-11,000	-700	-5,000
4.6.	Wissenschaftlicher Bedarf					
54100	Chemikalien	-5,202	-10,030	-10,500	-11,000	-11,500
54200	Filme	0	0	-200	-100	-200
54300	Sonstiger wissenschaftlicher Bedarf	-34,111	-34,891	-42,000	-37,000	-42,000
54400	Futtermittel	-269	-8	-200	-200	-200
58700	Druckkosten	0	-67	-1,000	-500	-500
		-39,582	-44,995	-53,900	-48,800	-54,400
4.7.	Nichtwissenschaftlicher Bedarf					
56300	Verbrauchsmaterial	-12,400	-2,267	-14,000	-3,500	-5,000
56500	Reinigungsmaterial	-1,905	-1,930	-3,000	-2,000	-3,200
56510	Arbeitskleidung	-147	-95	-1,500	-500	-500
		-14,452	-4,292	-18,500	-6,000	-8,700
4.8.	Energiebezug, Betriebsstoffe					
57100	Stromkosten	-800	-699	0	-800	-700
57400	Fernwärme	-2,196	-3,312	0	-3,400	-3,500
57600	Wassergebühr	-321	0	-1,200	-300	-300
		-3,317	-4,011	-1,200	-4,500	-4,500

5.	BETRIEBSAUFWAND	-211,767	-176,552	-239,900	-199,200	-187,300
5.1.	Gebäude, Unterbringung					
71100	Grundsteuer und andere Gemeindeabgaben	-95	0	-400	0	0
72100	Instandhaltung Gebäude	-4,123	-719	-15,000	-1,000	-1,000
72110	Serviceverträge Gebäude	-434	0	-500	0	-500
74100	Mieten für Räume	-48,367	-68,169	-50,000	-69,000	-35,000
74110	Betriebskosten für gemietete Räume	-4,360	-6,336	0	0	0
		-57,380	-75,224	-65,900	-70,000	-36,500
5.2.	Wissenschaftliche Geräte					
72310	Instandhaltung wissenschaftliche Geräte	-22,477	-9,789	-15,000	-12,000	-15,000
72320	Serviceverträge wissenschaftliche Geräte	-1,225	0	-1,800	-2,000	-2,000
		-23,702	-9,789	-16,800	-14,000	-17,000
5.3.	EDV-Anlagen					
72340	Instandhaltung EDV - Anlagen	0	0	-1,000	0	-500
72360	Wartungsverträge Software	0	0	-300	0	-300
				-1,300		-800
5.4.	Maschinelle Ausstattung					
72220	Instandhaltung maschinelle Ausstattung	0	0	-300	0	-400
				-300		-400
5.5.	Einrichtungsgegenstände					
72210	Instandhaltung Einrichtung	0	0	-200	-200	-200
				-200	-200	-200
5.6.	Bürogeräte					
72330	Instandhaltung Bürogeräte	-169	0	0	0	0
74300	Mieten für Büro - und Kopiergeräte	-8,420	-8,827	-8,700	-8,900	-8,900
		-8,588	-8,827	-8,700	-8,900	-8,900
5.7.	Fahrzeuge					
72400	Instandhaltung Fahrzeuge	-2,272	-1,909	-5,000	-2,500	-3,000
72800	Betriebskosten Fahrzeuge	-4,254	-3,277	-6,500	-4,000	-7,000
74500	Mieten für Fahrzeuge	-2,625	0	0	0	0
77340	Fahrzeugversicherung	-4,284	-4,241	-4,900	-4,500	-5,100
		-13,434	-9,427	-16,400	-11,000	-15,100
5.8.	Betriebsstoffe					
72920	Kanalgebühr	-773	0	-3,000	-800	0
72930	Müllabfuhr	-2,730	-907	-2,600	-1,000	-2,700
		-3,503	-907	-5,600	-1,800	-2,700
5.9.	Reinigung durch Dritte					
72500	Reinigung durch Dritte	-707	-684	-1,700	-800	-1,900
		-707	-684	-1,700	-800	-1,900
5.10	Sonst. Leistungen durch Dritte					
72370	Zugangsberechtigungen Datenbanken	0	0	-200	0	-200
72380	Lizenzen / Jährliche Wartung	-2,700	0	0	0	0
72510	Sonstige Leistungen durch Dritte	-3,638	-248	-6,000	-1,000	-6,000
72600	Sonstige Instandhaltungen	-110	-151	-500	-200	-500
		-6,448	-399	-6,700	-1,200	-6,700
5.11	Reise- und Transportkosten					
73100	Reisekosten	-10,788	-9,797	-11,000	-12,000	-10,000
73200	Taxi	0	0	-500	-100	-100
73400	Transporte durch Dritte	-5,371	-2,781	-3,000	-3,000	-3,000

76040	Medikamente	-6	-13	-500	-100	-200
		-16,165	-12,592	-15,000	-15,200	-13,300
5.12	Teilnahme an wiss. Veranstaltungen					
73300	Teilnahme an wissenschaftlichen Veranstaltungen	-20,344	-7,157	-23,000	-12,000	-12,000
		-20,344	-7,157	-23,000	-12,000	-12,000
5.13	Kommunikationsaufwand					
73810	Telephonkosten	-7,680	-3,686	-9,500	-4,000	-4,500
73820	Porti	-1,754	-1,796	-3,500	-2,000	-2,100
73840	Sonstige Postkosten	0	0	-300	0	0
73850	Datenleitungen	-14,580	-12,744	-10,800	-13,000	-13,000
		-24,014	-18,226	-24,100	-19,000	-19,600
5.14	Bürobedarf					
76010	Papier - und Drucksorten	-1,695	-926	-1,700	-1,000	-1,200
76020	Bürobedarf	-1,744	-1,157	-3,100	-1,500	-1,500
76030	Photokopierkosten (ohne Gerätemiete)	-1,452	-1,050	-1,300	-1,400	-1,500
		-4,892	-3,134	-6,100	-3,900	-4,200
5.15	Bücher, Zeitschriften					
76050	Buchbindekosten	0	0	-6,000	-6,000	-6,000
76201	Bücher - Zeitschriften	-19,532	-19,770	-22,200	-20,500	-22,500
76210	Leihgebühren Bücher-Zeitschriften	-198	-39	0	0	0
76220	Sonderdrucke	-3,798	-1,119	-4,500	-2,500	-2,500
		-23,528	-20,929	-32,700	-29,000	-31,000
5.16	Repräsentationsaufwand					
76060	Inserate	0	-354	-2,500	-1,500	-2,500
76090	Repräsentationsaufwand	-146	-1,164	-2,300	-2,000	-2,500
79000	Kleinmaterialaufwand	0	-407	0	0	0
		-146	-1,925	-4,800	-3,500	-5,000
5.17	Einladung wiss. Gäste - Beiträge wiss. Org.					
76500	Einladung wissenschaftliche Gäste	-3,814	-4,995	-8,000	-6,000	-9,000
77800	Beiträge zu wissenschaftlichen Organisationen	-308	-253	-200	-300	-300
		-4,122	-5,248	-8,200	-6,300	-9,300
5.18	Versicherungen					
77400	Sonstige Versicherung	-803	-803	-1,000	-900	-1,000
		-803	-803	-1,000	-900	-1,000
5.19	Sonst. Aufwand und Spesen					
71200	Sonstige öffentliche Gebühren und Abgaben	-2,796	-414	-200	-400	-500
74600	Sonstige Mieten	-85	-223	-500	-300	-300
77900	Bankspesen	-854	-652	-700	-800	-900
77950	Kursdifferenzen Aufwand	-257	7	0	0	0
		-3,991	-1,282	-1,400	-1,500	-1,700
6.	FINANZAUFWAND - STEUERN	-1	0	0	0	0
6.1.	Steuern					
71000	Kapitalertragssteuer	-1	0	0	0	0
		-1	0			
6.2.	Zinsen und sonst. Spesen					
III.	INTERNE VERRECHNUNG					
22410	Interne Verrechnung ARZ - Leistungen	-3,058	-4,923	0	0	0

22420	Interne Verrechnung Kopien/Drucker	18	345	0	0	0
22490	Interne Verrechnung Sonstiges	0	2,186	0	0	0
		-3,039	-2,391			

IV.	BUDGETUMBUCHUNGEN					
99900	Geldumbuchungen	2,753	0	0	0	0
99901	Dotierung Reparaturrücklage	-8,000	-8,000	-8,100	-8,000	-8,000
99909	Kostenstellensalden-Abgleich	0	-452,258	0	0	0
		-5,247	-460,258	-8,100	-8,000	-8,000
	Saldoübertrag Folgejahr	7,706,929	48,582	177,000	-24,100	-105,400

3-Jahres-Budgetantrag
2120 / 10: Limnologie Ordentliches Budget

.	Text	2011 BA	2012 BA	2013 BA
	Saldoübertrag Vorjahr	-24,100	-105,400	-143,100
I.	EINNAHMEN GESAMT	1,665,700	1,688,200	1,725,100
	Ordentliches Budget	1,665,700	1,688,200	1,725,100
II.	AUSGABEN GESAMT	-1,739,000	-1,717,900	-1,725,000
1.	INVESTITIONEN	-137,500	-133,600	-103,600
1.2.	Wissenschaftliche Geräte	-100,000	-100,000	-70,000
1.3.	Bauteile wissensch. Geräte	-8,000	-9,000	-9,000
1.4.	EDV- und Bürogeräte	-15,000	-10,000	-10,000
1.5.	Software	-9,500	-9,500	-9,500
1.6.	Maschinelle Ausstattung	-2,500	-2,600	-2,600
1.7.	Einrichtungsgegenstände	-2,500	-2,500	-2,500
2.	PERSONALAUFWAND	-1,318,200	-1,330,700	-1,356,600
2.1.	Wissenschaftler	-664,000	-677,000	-691,000
2.2.	Technisches Personal	-560,000	-571,200	-582,600
2.3.	Administratives Personal	-55,000	-42,000	-42,800
2.4.	Reinigungspersonal	-36,700	-38,000	-38,700
2.5.	Sonstiger Personalaufwand	-2,500	-2,500	-1,500
3.	WERKVERTRÄGE, FREIE DIENSTVERTRÄGE	-10,000	-10,000	-10,000
3.2.	Freie Dienstverträge Forschung	-10,000	-10,000	-10,000
4.	MATERIALAUFWAND	-86,000	-90,900	-94,200
4.1.	Adaptierungen Gebäude	-100	-100	-100
4.2.	Wissensch. Geräte und Bauteile	-3,100	-3,200	-3,200
4.3.	EDV-Verbrauchsmaterial, Software	-8,000	-5,000	-6,000
4.4.	Maschinelle Ausstattung	-2,200	-3,200	-3,200
4.5.	Einrichtung und Bürogeräte	-5,000	-4,500	-2,500
4.6.	Wissenschaftlicher Bedarf	-54,400	-60,500	-61,600
4.7.	Nichtwissenschaftlicher Bedarf	-8,700	-10,800	-13,900
4.8.	Energiebezug, Betriebsstoffe	-4,500	-3,600	-3,700
5.	BETRIEBSAUFWAND	-187,300	-152,700	-160,600
5.1.	Gebäude, Unterbringung	-36,500	-2,200	-2,200
5.2.	Wissenschaftliche Geräte	-17,000	-17,100	-17,100
5.3.	EDV-Anlagen	-800	-800	-800
5.4.	Maschinelle Ausstattung	-400	-400	-400
5.5.	Einrichtungsgegenstände	-200	-200	-200
5.6.	Bürogeräte	-8,900	-9,000	-9,000
5.7.	Fahrzeuge	-15,100	-16,200	-16,800
5.8.	Betriebsstoffe	-2,700	-2,800	-2,800
5.9.	Reinigung durch Dritte	-1,900	-2,000	-2,000

5.10	Sonst. Leistungen durch Dritte	-6,700	-6,700	-6,700
5.11	Reise- und Transportkosten	-13,300	-14,300	-15,300
5.12	Teilnahme an wiss. Veranstaltungen	-12,000	-13,000	-14,000
5.13	Kommunikationsaufwand	-19,600	-20,700	-21,300
5.14	Bürobedarf	-4,200	-4,900	-5,000
5.15	Bücher, Zeitschriften	-31,000	-26,300	-30,700
5.16	Repräsentationsaufwand	-5,000	-4,000	-4,000
5.17	Einladung wissensch. Gäste	-9,300	-9,300	-9,300
5.18	Versicherungen	-1,000	-1,000	-1,000
5.19	Sonst. Aufwand und Spesen	-1,700	-1,800	-2,000

IV.	BUDGETUMBUCHUNGEN	-8,000	-8,000	-8,000
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	Saldoübertrag Folgejahr	-105,400	-143,100	-151,000
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in 1000 €

Budgetblatt Personal				BA 2012		BA 2013	
	Planstellen Mitarbeiterzahl			Planstellen Mitarbeiterzahl			
ÖAW	unbefristet	befristet	Kosten		befristet	Kosten	
WISSENSCHAFTLER	6.00	4.00	677.0	6.00	4.00	691.0	
TECHN. PERSONAL	9.00	2.00	571.2	10.00	1.00	582.6	
ADMIN. PERSONAL		1.00	42.0		1.00	42.8	
REINUNGSPERSONAL	1.00		38.0	1.00		38.8	
AUSLANDSZULAGE			2.5			1.5	
PERSONALAUFWAND ÖAW			1330.7	1356.6			
WERKVERTRÄGE+FDV							
Fremdfinanziert							
WISSENSCHAFTLER		7.50	388.0		7.50	395.8	
TECHN. PERSONAL		3.50	129.5		3.50	132.1	
ADMIN. PERSONAL	1.00	1.00	120.0	1.00	1.00	122.4	
REINUNGSPERSONAL							
AUSLANDSZULAGE							
PERSONALAUFWAND (fremdfinanziert)			637.5	650.3			
WERKVERTRÄGE+FDV							
Gesamt							
WISSENSCHAFTLER	6.00	11.50	1065.3	6.00	11.50	1086.6	
TECHN. PERSONAL	9.00	5.50	700.7	10.00	4.50	714.7	
ADMIN. PERSONAL	1.00	2.00	165.0	1.00	2.00	168.3	
REINUNGSPERSONAL	1.00		38.0	1.00		38.8	
AUSLANDSZULAGE							
PERSONALAUFWAND gesamt			1969.0	2008.4			
WERKVERTRÄGE+FDV			50.00	55.00			

Drittmittel (in €)

Abteilung/Projekttitlel	Förder einrichtung:*)	nicht über ÖAW über ÖAW abgerechnet abgerechnet		Summe:
		RA 2009	RA 2009	
FWF20118 Anpassung und Toleranz an niedrigen pH-Wert	FWF	67723	12732	80455
FWF 19706 Nischendifferenzierung und Koexistenz von alpinen Goldalgen	FWF	37593	9413	47006
FWF 18767 „Microdiversity und habitat specificity of flagellates“	FWF	2597	6615	9212
FWF 21151 Population heterogeneity of flagellates	FWF		2820	2820
FWFP20231 Genetische Determinierung des Toxingehalts in Cyanobakterien	FWF	134866	22000	156866
FWF 20735 Evolution von Asexualität bei Rädertierpopulationen	FWF	57559	8733	66292
FWF19853 Ökologische Diversität von Polynucleobacter Bakterien	FWF		6135	6135
FWF0001 Overheads	FWF	3480		3480
NAP0015 Global warming threatens, biodiversity in (ultra)-sensitive high Alpine lakes: an assessment of past, present and future scenarios (DETECTIVE)	ÖAW Alpenkomm.	1000		1000
Characterization of toxin-producing cyanobacteria in Ugandan freshwater	ÖAAD		10800	10800
FIR0100 Exploiting natural products of cyanobacteria	CyanoBiotech GmbH	12102		12102
FWF-18595 Late-Pleniglacial climatic and environmental evolution	FWF		12831	12831
International Post-Graduate Training Programmes in Limnology (IPGL)	ADA	324000		324000
EUP0125 Integrating Bomosa cage fish farming system in reservoirs, ponds and temporary water bodies in Easter Africa (BOMOSA)	EU 6. Rahmenpr.	44340		44340
BAA0013 Development if Educational and Research CAPacity in Eastern Africa for the Sustainable Management of AQUATIC Ecosystems (CAPAQUA)	ADA	200000		200000
PRI0427 WV Forsttechn. Dienst (Traunseestudie)	WLV Oö	18164		18164
BWK0198 Doc fForte (Ostermaier)	BMBWK	22384		22384
Summe		925808.00	92077.90	1017885.90

Drittmittel (in €)

Abteilung/Projekttitel	Förder einrichtung:*)	BVA 2010
NAP0015 Global warming threatens, biodiversity in (ultra)-sensitive high Alpine lakes: an assessment of past, present and future scenarios (DETECTIVE)	ÖAW Alpenkomm	50000
FWF 20735 Evolution von Asexualität bei Rädertierpopulationen	FWF	60000
FWFP20231 Genetische Determinierung des Toxingehalts in Cyanobakterien	FWF	93231
Time in microevolution of toxin synthesis	ÖAW DOC Forte	30000
Exploiting natural products of cyanobacteria	CyanoBiotech GmbH	40000
BAA0013 Development if Educational and Research CAPacity in Eastern Africa for the Sustainable Management of AQUAatic Ecosystems (CAPAQUA)	ADA	520000
FWF20118 Anpassung und Toleranz an niedrigen pH-Wert	FWF	90000
FWF P20360 Morphology and ecology of endemic ciliates from bromeliads	FWF	16000
FWF 19706 Nischendifferenzierung und Koexistenz von alpinen Goldalgen	FWF	25000
FWF 21151 Population heterogeneity of flagellates	FWF	150000
ABA Ecuador	FWF	30000
RADICAL	ACRP	73000
Summe		1,177,231

Drittmittel (in €)

beabsichtigte Anträge				
Abteilung/Projekttitel	Förder einrichtung:*)	BA 2011	BA 2012	BA 2013
NAP0015 Global warming threatens, biodiversity in (ultra)-sensitive high Alpine lakes: an assessment of past, present and future scenarios (DETECTIVE)	ÖAW Alpenkomm	50000	59000	
Functional role and ecotype divergence in freshwater ultramicrobacteria (FREDI)	ESF	100000	100000	80000
Microbial Biodiversity and Humic Matter decomposition in Lakes (MetaHumic). (Mittel sind Anteil für ÖAW-Projektteil)	EU	100000	100000	100000
Investigation of different expression patterns between triploid and tetraploid invasive Prussian carp (Carassius gibelio), and how ploidy influences the immune system.	FWF	50000	90000	90000
FWF 20735 Evolution von Asexualität bei Rädertierpopulationen	FWF	50000		
Cyberpep	EU	50000		
Support of Educational and Research CAPacity in Eastern Africa for the Sustainable Management of AQUAatic Ecosystems (CAPAQUA II)	ADA	350000	350000	600000
FWF 19706 Nischendifferenzierung und Koexistenz von alpinen Goldalgen	FWF	25000		
FWF 21151 Population heterogeneity of flagellates	FWF	100000	30000	
ABA Ecuador	FWF	120000	120000	
FWF P20360 Morphology and ecology of endemic ciliates from bromeliads	FWF	37000		
RADICAL	ACRP	86000	53000	53000
Summe		1,118,000	902,000	923,000

4. Attachment: Data report from AkademIS (CD-ROM)

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

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

1. Mitarbeiter(innen)			
	gesamt	m	w
Anzahl der Mitarbeiter(innen)	39	20	19
Anzahl der Mitarbeiter(innen) im Durchschnitt	34	19	16
Vollzeitäquivalente	31.98	17.54	14.44
davon			
· fremdfinanziert	10.23	5.04	5.19
· eigenfinanziert	21.75	12.5	9.25
· befristet	5	3	2
· unbefristet	16.75	9.5	7.25
· wissenschaftlich	14.95	11.04	3.91
· administrativ, technisch	16.03	6.5	9.53
· sonstige	1	0	1
Vollzeitäquivalente der Nachwuchswissenschaftler	3.45	1.6	1.85

1. A) Leiter	
Weisse, Thomas (m)	
DirektorIn, 01.01.2009-31.12.2009	

1. B) Personalstand	
Boenigk, Jens (m)	01.01.2009 - 31.12.2009 (365Tage), eigenfinanziert, unbefristet, wissenschaftlich, 100% => VZÄ: 1,000
Brandstätter, Regina (w)	01.01.2009 - 30.11.2009 (334Tage), fremdfinanziert, befristet, administrativ/technisch, 90% => VZÄ: 0,824
	01.12.2009 - 31.12.2009 (31Tage), fremdfinanziert, befristet, administrativ/technisch, 100% => VZÄ: 0,085
Brandt, Ulrike (w)	01.01.2009 - 31.12.2009 (365Tage), eigenfinanziert, befristet, administrativ/technisch, 100% => VZÄ: 1,000
Christiansen, Guntram (m)	01.01.2009 - 31.12.2009 (365Tage), fremdfinanziert, befristet, wissenschaftlich, 100% => VZÄ: 1,000
Eisl, Liselotte (w)	01.01.2009 - 31.12.2009 (365Tage), eigenfinanziert, unbefristet, administrativ/technisch, 100% => VZÄ: 1,000
Findenig, Barbara (w)	01.01.2009 - 31.03.2009 (90Tage), fremdfinanziert, befristet, wissenschaftlich, Nachwuchswiss., 75% => VZÄ: 0,185
Gratl, Ingrid (w)	

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

1. B) Personalstand

Gradl, Ingrid (w)

01.01.2009 - 31.12.2009 (365Tage), eigenfinanziert, unbefristet, administrativ/technisch, 100% => VZÄ: 1,000

Hahn, Martin (m)

01.01.2009 - 31.12.2009 (365Tage), eigenfinanziert, unbefristet, wissenschaftlich, 100% => VZÄ: 1,000

Huber, Kerstin (w)

01.01.2009 - 31.03.2009 (90Tage), fremdfinanziert, befristet, wissenschaftlich, Nachwuchswiss., 75% => VZÄ: 0,185

Höllerer, Hannes (m)

01.01.2009 - 31.12.2009 (365Tage), eigenfinanziert, unbefristet, administrativ/technisch, 100% => VZÄ: 1,000

Jost, Steffen (m)

01.01.2009 - 31.12.2009 (365Tage), fremdfinanziert, befristet, wissenschaftlich, Nachwuchswiss., 73% => VZÄ: 0,730

Knoblechner, Josef (m)

01.01.2009 - 31.12.2009 (365Tage), fremdfinanziert, befristet, administrativ/technisch, 100% => VZÄ: 1,000

Knoll, Johann (m)

01.01.2009 - 31.12.2009 (365Tage), eigenfinanziert, unbefristet, administrativ/technisch, 50% => VZÄ: 0,500

Kurmayer, Rainer (m)

01.01.2009 - 31.12.2009 (365Tage), eigenfinanziert, unbefristet, wissenschaftlich, 100% => VZÄ: 1,000

Lamatsch, Dunja (w)

01.01.2009 - 31.12.2009 (365Tage), eigenfinanziert, befristet, wissenschaftlich, 100% => VZÄ: 1,000

Leichtfried, Maria (w)

01.01.2009 - 31.12.2009 (365Tage), eigenfinanziert, unbefristet, wissenschaftlich, 100% => VZÄ: 1,000

Maier, Karl (m)

01.01.2009 - 31.12.2009 (365Tage), eigenfinanziert, befristet, administrativ/technisch, 100% => VZÄ: 1,000

Mayrhofer, Kurt (m)

01.01.2009 - 31.12.2009 (365Tage), eigenfinanziert, unbefristet, administrativ/technisch, 100% => VZÄ: 1,000

Moser, Michael (m)

01.01.2009 - 31.12.2009 (365Tage), fremdfinanziert, befristet, wissenschaftlich, Nachwuchswiss., 75% => VZÄ: 0,750

Nagiller, Karin (w)

01.02.2009 - 27.02.2009 (27Tage), fremdfinanziert, befristet, wissenschaftlich, 75% => VZÄ: 0,055

Ostermaier, Veronika (w)

19.01.2009 - 31.03.2009 (72Tage), fremdfinanziert, befristet, wissenschaftlich, Nachwuchswiss., 35% => VZÄ: 0,069

01.04.2009 - 31.12.2009 (275Tage), fremdfinanziert, befristet, wissenschaftlich, Nachwuchswiss., 70% => VZÄ: 0,527

Pichler, Maria (w)

01.01.2009 - 31.12.2009 (365Tage), eigenfinanziert, unbefristet, administrativ/technisch, 100% => VZÄ: 1,000

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

1. B) Personalstand

Ployer, Harald (m)

01.01.2009 - 31.12.2009 (365Tage), eigenfinanziert, unbefristet, administrativ/technisch, 100% => VZÄ: 1,000

Reischauer, Maria (w)

01.01.2009 - 31.12.2009 (365Tage), fremdfinanziert, befristet, administrativ/technisch, 100% => VZÄ: 1,000

Riß, Simone (w)

01.11.2009 - 31.12.2009 (61Tage), fremdfinanziert, befristet, wissenschaftlich, Nachwuchswiss., 70% => VZÄ: 0,117

Rösner, Ralph (m)

01.02.2009 - 31.03.2009 (59Tage), fremdfinanziert, befristet, wissenschaftlich, Nachwuchswiss., 75% => VZÄ: 0,121

Scheffel, Ulrike (w)

01.01.2009 - 31.12.2009 (365Tage), fremdfinanziert, befristet, administrativ/technisch, 75% => VZÄ: 0,750

Scheuerl, Thomas (m)

01.06.2009 - 31.12.2009 (214Tage), fremdfinanziert, befristet, wissenschaftlich, 75% => VZÄ: 0,440

Schmidt, Johanna (w)

01.01.2009 - 31.12.2009 (365Tage), eigenfinanziert, unbefristet, administrativ/technisch, 100% => VZÄ: 1,000

Schmidt, Roland (m)

01.01.2009 - 31.12.2009 (365Tage), eigenfinanziert, befristet, wissenschaftlich, 100% => VZÄ: 1,000

Stadler, Peter (m)

01.01.2009 - 31.12.2009 (365Tage), eigenfinanziert, unbefristet, administrativ/technisch, 100% => VZÄ: 1,000

Steinkogler, Hildegard (w)

01.01.2009 - 31.12.2009 (365Tage), eigenfinanziert, unbefristet, sonstige, 100% => VZÄ: 1,000

Stelzer, Claus-Peter (m)

01.01.2009 - 31.12.2009 (365Tage), eigenfinanziert, befristet, wissenschaftlich, 100% => VZÄ: 1,000

Straubinger, Nadja (w)

01.01.2009 - 31.12.2009 (365Tage), fremdfinanziert, befristet, wissenschaftlich, Nachwuchswiss., 75% => VZÄ: 0,750

Wanzenböck, Josef (m)

01.01.2009 - 31.12.2009 (365Tage), eigenfinanziert, unbefristet, wissenschaftlich, 100% => VZÄ: 1,000

Wanzenböck, Sabine (w)

01.01.2009 - 31.12.2009 (365Tage), eigenfinanziert, unbefristet, administrativ/technisch, 100% => VZÄ: 1,000

Weisse, Thomas (m)

01.01.2009 - 31.12.2009 (365Tage), eigenfinanziert, unbefristet, wissenschaftlich, 100% => VZÄ: 1,000

Wiedroither, Anneliese (w)

01.01.2009 - 30.06.2009 (181Tage), fremdfinanziert, unbefristet, administrativ/technisch, 75% => VZÄ: 0,372

01.01.2009 - 30.06.2009 (181Tage), eigenfinanziert, unbefristet, administrativ/technisch, 25% => VZÄ: 0,124

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

1. B) Personalstand

Wiedlroither, Anneliese (w)

01.07.2009 - 31.12.2009 (184Tage), fremdfinanziert, unbefristet, administrativ/technisch, 50,25% => VZÄ: 0,253

01.07.2009 - 31.12.2009 (184Tage), eigenfinanziert, unbefristet, administrativ/technisch, 24,75% => VZÄ: 0,125

Winkler, Gerold (m)

01.01.2009 - 31.12.2009 (365Tage), fremdfinanziert, unbefristet, wissenschaftlich, 100% => VZÄ: 1,000

1. C) weitere Mitarbeiter(innen)

Degefu Abera, Fasil (m)

DiplomandIn: 01.01.2009-31.12.2009

Lakew Haile, Aschalew (m)

DiplomandIn: 01.01.2009-31.12.2009

Laufenstein, Nicole (w)

DiplomandIn: 01.04.2009-31.12.2009

Lopes Dos Santos Monteiro, Raquel Alfama (w)

DiplomandIn: 01.01.2009-31.12.2009

Mukama, Shelard Ch. (m)

DiplomandIn: 01.01.2009-31.12.2009

Mwiche, Monica M. (w)

DiplomandIn: 01.01.2009-31.12.2009

Nalwanga, Rosemary (w)

DiplomandIn: 01.01.2009-31.12.2009

Okello, William (m)

DissertantIn: 01.01.2009-14.06.2009

Scheuerl, Thomas (m)

DiplomandIn: 01.01.2009-31.12.2009

Schober, Eva Maria (w)

DissertantIn: 01.01.2009-31.12.2009

Schärfl, Sophie (w)

DiplomandIn: 01.01.2009-31.12.2009

Schöttl, Patrick (m)

StudentIn/PraktikantIn: 01.01.2009-31.12.2009

Weckström, Kaarina (w)

GastforscherIn: 01.01.2009-15.03.2009

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

2. Nachwuchswissenschaftler(innen) und Qualifizierungen I: Nachwuchswissenschaftler(innen)			
	gesamt	m	w
Anzahl der Nachwuchswissenschaftler(innen)	15	6	9
· Diplomand(inn)en	3	1	2
· Dissertant(inn)en, Junior Scientists	11	5	6
· Postdocs	1		1
· Junior Group Leader o.ä.	0		
Finanzierung			
· fremdfinanziert	15	6	9

2. Liste			
Findenig, Barbara (w); Junior Scientist; fremdfinanziert			
Finster, Martin (m); Dissertant(in); fremdfinanziert			
Huber, Kerstin (w); Junior Scientist; fremdfinanziert			
Jost, Steffen (m); Junior Scientist; fremdfinanziert			
Laufenstein, Nicole (w); Diplomand(in); fremdfinanziert			
Moser, Michael (m); Junior Scientist; fremdfinanziert			
Okello, William (m); Dissertant(in); fremdfinanziert			
Ostermaier, Veronika (w); Junior Scientist; fremdfinanziert			
Pamminger-Lahnsteiner, Barbara (w); Dissertant(in); fremdfinanziert			
Riß, Simone (w); Postdoc; fremdfinanziert			
Rösner, Ralph (m); Junior Scientist; fremdfinanziert			
Schärfl, Sophie (w); Diplomand(in); fremdfinanziert			
Schober, Eva Maria (w); Dissertant(in); fremdfinanziert			
Schöttl, Patrick (m); Diplomand(in); fremdfinanziert			
Straubinger, Nadja (w); Junior Scientist; fremdfinanziert			

3. Nachwuchswissenschaftler(innen) und Qualifizierungen II: promovierte wissenschaftliche Mitarbeiter(innen) unter 33			
	gesamt	m	w
Promovierte wissenschaftliche Mitarbeiter(innen) unter 33 Jahren	0		

3. Liste			

4. Nachwuchswissenschaftler(innen) und Qualifizierungen III: Diplomabschlüsse, Promotionen und Habilitationen			
	gesamt	m	w
Ausbildungs-/Qualifizierungsabschlüsse in Verbindung mit einem Forschungsprojekt:	3	2	1
· Dissertation	2	1	1
· Diplomarbeit/Master Thesis	1	1	

4. Liste			
Okello, William (m) (NW), 13.09.2009, Dissertation: "Toxic cyanobacteria in Ungandan freshwater"			

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

4. Liste

Huber, Kerstin (w) (NW), 30.09.2009, Dissertation: "Late glacial climatic and palaeoecological investigations of Längsee"

Schöttli, Patrick (m) (NW), 27.04.2009, Diplomarbeit/Master Thesis: "Schöttli - Kreuzungsversuche Coregonen"

5. Wissenschaftliche Mitarbeiter(innen) in Projektleitungsfunktion

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

5. Liste

Boenigk, Jens (m); eigenfinanziert; unbefristet

(Einzelforschungsprojekt): Diversity and population heterogeneity of chrysomonad flagellates within an alpine gradient; Projektleitung; 01.09.2009 -
(Einzelforschungsprojekt): Niche separation and coexistence of chrysophytes in an alpine gradient; Projektleitung; 01.04.2007 - 31.03.2010

Hahn, Martin (m); eigenfinanziert; unbefristet

(Einzelforschungsprojekt): Biogeography and within-taxon ecological differentiation of Polynucleobacter necessarius subsp. asymbioticus and Limnolobos planctonicus (Betaproteobacteria); Projektleitung; 01.06.2009 - 31.12.2010

Kurmayer, Rainer (m); eigenfinanziert; unbefristet

(Einzelforschungsprojekt): Genotype determined toxin content in cyanobacteria, FWFP20231; Projektleitung; 29.03.2007 - 30.06.2011

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

(Einzelforschungsprojekt): Evolution of asexuality in experimental rotifer populations; Projektleitung; 01.01.2007 - 30.06.2010

Wanzenböck, Josef (m); eigenfinanziert; unbefristet

(Einzelforschungsprojekt): Adaptation of Active Fisheries Methods: Pair trawling; Projektleitung; 01.04.2009 - 31.12.2010

Weisse, Thomas (m); eigenfinanziert; unbefristet

((allgemeines) Forschungsprojekt der Forschungseinrichtung): Allgemeine Limnologische Grundlagenforschung; Projektleitung; 01.04.1998 - 31.03.2010
(Einzelforschungsprojekt): Patterns and processes of adaptation and tolerance to low pH of freshwater plankton; Projektleitung; 01.01.2007 - 31.03.2011

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	1		1

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

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

	gesamt	m	w
Anzahl der Besuche von Weiterbildungsmaßnahmen	1		1

7. Liste

Wanzenböck, Sabine (w)

Digitale Pressefotografie für Public Relation Zwecke

Ziel: Fachliche Weiterbildung, Zeitraum: 09.02.2009 - 09.02.2009, frauenspezifisch: nein

Strukturpotenzial

8. Nutzfläche der Forschungseinrichtung

	gesamt
Gesamtfläche in m²	626.81
davon Nutzungsart:	
· Verkehrerschließung	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	30.2
(z.B. Wohn- und Aufenthaltsräume, medizinisch ausgestattete Räume etc.)	

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)	48	28	20
davon im Rahmen des Wissenschafteraustauschprogramms der ÖAW	0		
davon Nachwuchswissenschaftler(innen)	4	2	2
Zweck			
· sonstiger Aufenthalt mit wissenschaftlichem Bezug	19	6	13
· Forschungstätigkeit im Rahmen eines ÖAW-Forschungsprojekts	9	5	4
· wiss. Beratungstätigkeit	3	3	
· Weiterbildung	3	1	2
· wiss. Vortragstätigkeit	14	13	1
Aufenthaltort			
· innerhalb EU (ohne Österreich)	23	15	8
· außerhalb EU	9	5	4
· im Inland	16	8	8
Finanzierung			

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

9. Aufenthalte im In- und Ausland

	gesamt	m	w
· extern	23	17	6
· misch	6	6	
· keine Finanzierung angegeben	3	2	1
· intern	16	3	13
Dauer			
· <= 1 Tag	3	2	1
· > 1 <= 5 Tage	33	18	15
· > 5 Tage	12	8	4

9. Liste

außerhalb EU

Forschungstätigkeit im Rahmen eines ÖAW-Forschungsprojekts

Lamatsch, Dunja (w)

(30.06.2009 - 13.07.2009)

Besuchte Institution: EAWAG, Dübendorf, Zürich; Land: SWITZERLAND; Finanzierung: intern

(04.12.2009 - 16.12.2009)

Besuchte Institution: EAWAG, Dübendorf, Zürich; Land: SWITZERLAND; Finanzierung: intern

sonstiger Aufenthalt mit wissenschaftlichem Bezug

Kurmayer, Rainer (m)

(09.08.2009 - 14.08.2009)

Besuchte Institution: ; Land: CANADA; Finanzierung: misch

BOMOSA Final meeting (31.08.2009 - 04.09.2009)

Besuchte Institution: Hotel Machakos, Nairobi; Land: KENYA; Finanzierung: extern

Opposition PhD defense Ronald Semyalo "The effects of cyanobacteria on the growth, survival, and behaviour of a tropical fish (Nile Tilapia) and zooplankton (Daphnia lumholzi)", University of Bergen (29.10.2009 - 31.10.2009)

Besuchte Institution: University of Bergen, Bergen; Land: NORWAY; Finanzierung: extern

Leichtfried, Maria (w)

(21.09.2009 - 24.09.2009)

Besuchte Institution: 12th International Riversymposium; Land: AUSTRALIA; Finanzierung: extern

(21.09.2009 - 24.09.2009)

Besuchte Institution: 12th International Riversymposium, Brisbane; Land: AUSTRALIA; Finanzierung: extern

Okello, William (m) (NW)

13th World Lake Conference (01.11.2009 - 06.11.2009)

Besuchte Institution: Wuhan International Convention & Exhibition Centre, Wuhan, China; Land: CHINA; Finanzierung: extern

wiss. Beratungstätigkeit

Okello, William (m) (NW)

5th World Water Forum (16.03.2009 - 22.03.2009)

Besuchte Institution: Sütlüce Congress and Cultural Center, Istanbul, Turkey; Land: TURKEY; Finanzierung: extern

im Inland

Forschungstätigkeit im Rahmen eines ÖAW-Forschungsprojekts

Wanzenböck, Josef (m)

(21.09.2009 - 25.09.2009)

Besuchte Institution: Hallstatt; Land: AUSTRIA; Finanzierung: misch

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

9. Liste

im Inland

Weiterbildung

Kurmayer, Rainer (m)

(16.06.2009 - 19.06.2009)

Besuchte Institution: Wasser Cluster Lunz; Land: AUSTRIA; Finanzierung: extern

Lamatsch, Dunja (w)

(26.10.2009 - 28.10.2009)

Besuchte Institution: University of Salzburg, Salzburg; Land: AUSTRIA; Finanzierung: intern

Wanzenböck, Sabine (w)

Digitale Pressefotografie für Public Relation Zwecke (09.02.2009 - 09.02.2009)

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

sonstiger Aufenthalt mit wissenschaftlichem Bezug

Kurmayer, Rainer (m)

SIL Austria meeting 2009 (26.10.2009 - 28.10.2009)

Besuchte Institution: St Virgil Bildungs und Konferenzzentrum, Salzburg; Land: AUSTRIA; Finanzierung: keine Finanzierung angegeben

Leichtfried, Maria (w)

(26.10.2009 - 28.10.2009)

Besuchte Institution: SIL Austria Meeting, Salzburg; Land: AUSTRIA; Finanzierung: intern

Ostermaier, Veronika (w) (NW)

SIL Austria Tagung 2009 in Salzburg (26.10.2009 - 28.10.2009)

Besuchte Institution: ; Land: AUSTRIA; Finanzierung: keine Finanzierung angegeben

Wanzenböck, Sabine (w)

SciCom09 - Fachtagung Möglichkeiten und Grenzen der Wissenschaftskommunikation (16.10.2009 - 18.10.2009)

Besuchte Institution: Technical University Vienna; Land: AUSTRIA; Finanzierung: intern

SIL-Austria 2009 (26.10.2009 - 28.10.2009)

Besuchte Institution: St. Virgil Konferenzzentrum, Salzburg; Land: AUSTRIA; Finanzierung: intern

Lange Nacht der Forschung 2009: Station W-W10 Institut für Limnologie "Gibt es Aliens in unseren Gewässern?" (06.11.2009 - 08.11.2009)

Besuchte Institution: BMWF, Aula der Wissenschaften, Vienna; Land: AUSTRIA; Finanzierung: intern

wiss. Beratungstätigkeit

Wanzenböck, Josef (m)

(29.06.2009 - 29.06.2009)

Besuchte Institution: Wassercluster Lunz; Land: AUSTRIA; Finanzierung: extern

wiss. Vortragstätigkeit

Kurmayer, Rainer (m)

(21.12.2009 - 23.12.2009)

Besuchte Institution: University of Vienna, Vienna; Land: AUSTRIA; Finanzierung: keine Finanzierung angegeben

Lamatsch, Dunja (w)

(06.11.2009 - 08.11.2009)

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

Schmidt, Roland (m)

Alpenseen als Archive für die Klimageschichte (20.11.2009 - 20.11.2009)

Besuchte Institution: Naturwissenschaftlicher Verein für Kärnten, Fachgruppe Meteorologie; Land: AUSTRIA; Finanzierung: intern

Wanzenböck, Josef (m)

(08.06.2009 - 10.06.2009)

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

9. Liste

im Inland

wiss. Vortragstätigkeit

Wanzenböck, Josef (m)

Besuchte Institution: Wassercluster Lunz; Land: AUSTRIA; Finanzierung: extern

SIL-Austria Meeting (26.10.2009 - 28.10.2009)

Besuchte Institution: SIL-Austria Meeting, Salzburg; Land: AUSTRIA; Finanzierung: extern

innerhalb EU (ohne Österreich)

Forschungstätigkeit im Rahmen eines ÖAW-Forschungsprojekts

Brandt, Ulrike (w)

(30.09.2009 - 02.10.2009)

Besuchte Institution: Biology Centre AS CR, v.v.i., Hydrobiological Institute, Ceske Budejovice; Land: CZECH REPUBLIC; Finanzierung: extern

(09.11.2009 - 12.11.2009)

Besuchte Institution: Biology Centre AS CR, v.v.i., Hydrobiological Institute, Ceske Budejovice; Land: CZECH REPUBLIC; Finanzierung: extern

Hahn, Martin (m)

(30.09.2009 - 02.10.2009)

Besuchte Institution: Biology Centre AS CR, v.v.i., Hydrobiological Institute, Ceske Budejovice; Land: CZECH REPUBLIC; Finanzierung: extern

(09.11.2009 - 12.11.2009)

Besuchte Institution: Biology Centre AS CR, v.v.i., Hydrobiological Institute, Ceske Budejovice; Land: CZECH REPUBLIC; Finanzierung: extern

Wanzenböck, Josef (m)

(05.08.2009 - 13.08.2009)

Besuchte Institution: Hydrobiological Institute - Czech Academy of Sciences, Ceske Budejovice; Land: CZECH REPUBLIC; Finanzierung: misch

(17.08.2009 - 21.08.2009)

Besuchte Institution: Hydrobiological Institute - Czech Academy of Sciences, Ceske Budejovice; Land: CZECH REPUBLIC; Finanzierung: misch

sonstiger Aufenthalt mit wissenschaftlichem Bezug

Hahn, Martin (m)

Vorbereitung eines EU-FP7 Antrages (25.11.2009 - 27.12.2009)

Besuchte Institution: IGB; Land: GERMANY; Finanzierung: misch

Lamatsch, Dunja (w)

(11.01.2009 - 31.01.2009)

Besuchte Institution: Workshop on Molecular Evolution, Cesky Krumlov; Land: CZECH REPUBLIC; Finanzierung: intern

(27.07.2009 - 29.07.2009)

Besuchte Institution: Laboratory of Fish Genetics, Czech Academy of Sciences, Libechov; Land: CZECH REPUBLIC; Finanzierung: intern

(23.08.2009 - 30.08.2009)

Besuchte Institution: University of Turin; Land: ITALY; Finanzierung: intern

Leichtfried, Maria (w)

(22.06.2009 - 26.06.2009)

Besuchte Institution: 15th Conference of Czech and Slovak Limnological Society, Třeboň, Czech Republic; Land: CZECH REPUBLIC; Finanzierung: extern

(17.08.2009 - 21.08.2009)

Besuchte Institution: 6th Symposium for European Freshwater Sciences, (SEFS6), Sinaia, Romania; Land: ROMANIA; Finanzierung: extern

Ostermaier, Veronika (w) (NW)

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

9. Liste

innerhalb EU (ohne Österreich)

sonstiger Aufenthalt mit wissenschaftlichem Bezug

Ostermaier, Veronika (w) (NW)

(17.08.2009 - 21.08.2009)

Besuchte Institution: ; Land: ROMANIA; Finanzierung: intern

wiss. Beratungstätigkeit

Weisse, Thomas (m)

(24.09.2009 - 27.09.2009)

Besuchte Institution: IGB Berlin; Land: GERMANY; Finanzierung: extern

wiss. Vortragstätigkeit

Hahn, Martin (m)

EuroMicrobe: Exploring the rationale for conservation of environmental microbial communities and associated habitats

Participation (08.12.2009 - 10.12.2009)

Besuchte Institution: Netherlands Institute of Ecology; Land: NETHERLANDS; Finanzierung: extern

Stelzer, Claus-Peter (m)

(18.03.2009 - 20.03.2009)

Besuchte Institution: Universität Oldenburg; Land: GERMANY; Finanzierung: extern

(18.03.2009 - 20.03.2009)

Besuchte Institution: University of Oldenburg; Land: GERMANY; Finanzierung: extern

(15.08.2009 - 22.08.2009)

Besuchte Institution: Humboldt University, Berlin; Land: GERMANY; Finanzierung: extern

(15.08.2009 - 22.08.2009)

Besuchte Institution: Rotifer Symposium XII, Berlin; Land: GERMANY; Finanzierung: extern

Wanzenböck, Josef (m)

Evolutionary Ecology of Fishes (23.11.2009 - 26.11.2009)

Besuchte Institution: Evolutionary Ecology of Fishes, Berlin; Land: GERMANY; Finanzierung: intern

Weisse, Thomas (m)

(25.01.2009 - 01.02.2009)

Besuchte Institution: ; Land: FRANCE; Finanzierung: intern

(25.02.2009 - 28.02.2009)

Besuchte Institution: ; Land: GERMANY; Finanzierung: misch

(12.10.2009 - 15.10.2009)

Besuchte Institution: Karlsruhe Institute of Technology, Karlsruhe; Land: GERMANY; Finanzierung: extern

10. Tagungsteilnahmen von wissenschaftlichen Mitarbeiter(inne)n

	gesamt	m	w
Anzahl der Teilnahmen an wissenschaftlichen Tagungen	28	19	9
davon Teilnahmen von Nachwuchswissenschaftler(innen)	3	2	1
davon auf internationalen	22	14	8
Tagungsort			
· Kein Land eingetragen	6	5	1
· im Inland	6	4	2
· innerhalb EU (ohne Österreich)	10	5	5
· außerhalb EU	6	5	1

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

10. Liste

Kongress/Symposium/Konferenz/Tagung

12th International Riversymposium (21.09.2009 - 24.09.2009)

Leichtfried, Maria (w), ReferentIn

13th International Symposium on Phototrophic Prokaryotes, Montreal (09.08.2009 - 14.08.2009)

Kurmayer, Rainer (m), ReferentIn

13th World Lake Conference in Wuhan, China (01.11.2009 - 05.11.2009)

Okello, William (m) (NW), ReferentIn

15th Conference of Czech and Slovak Limnological Society, Třeboň, Czech Republic (22.06.2009 - 26.06.2009)

Leichtfried, Maria (w), ReferentIn

Leichtfried, Maria (w), ReferentIn

28. Wissenschaftliche Jahrestagung der Deutschen Gesellschaft für Protozoologie (25.02.2009 - 28.02.2009)

Weisse, Thomas (m), ReferentIn

5th World Water Forum, Istanbul (16.03.2009 - 22.03.2009)

Okello, William (m) (NW), TeilnehmerIn

ASLO Aquatic Science Meeting 2009 (25.01.2009 - 30.01.2009)

Hahn, Martin (m), ReferentIn

Algae: problems of taxonomy, ecology and application in monitoring (05.10.2009 - 09.10.2009)

Kurmayer, Rainer (m), PosterpräsentatorIn

BOMOSA Abschluss Projektkonferenz (31.08.2009 - 04.09.2009)

Kurmayer, Rainer (m), ReferentIn

European Society of Evolutionary Biology (24.08.2009 - 29.08.2009)

Lamatsch, Dunja (w), PosterpräsentatorIn, TeilnehmerIn

Evolutionary Ecology of Fishes (23.11.2009 - 25.11.2009)

Wanzenböck, Josef (m), PosterpräsentatorIn

Federation of European Biological Systematic Societies (10.08.2009 - 13.08.2009)

Boenigk, Jens (m), ReferentIn

Gemeinsame Konferenz über "Technologisch veränderte Umwelt - umweltgerecht veränderte Technologien" (12.10.2009 - 15.10.2009)

Weisse, Thomas (m), Session Chair

IDK Sitzung der ÖAW (03.04.2009 - 03.04.2009)

Weisse, Thomas (m), TeilnehmerIn

International Rotifer Symposium XII (16.08.2009 - 21.08.2009)

Stelzer, Claus-Peter (m), ReferentIn

Jahrestagung der Deutschen Botanischen Gesellschaft (07.09.2009 - 11.09.2009)

Boenigk, Jens (m), ReferentIn

Meeting of the Federation of European Biological Systematic Societies (10.08.2009 - 14.08.2009)

Boenigk, Jens (m), ReferentIn

SEFS-6 Symposium for European Freshwater Sciences (17.08.2009 - 21.08.2009)

Ostermaier, Veronika (w) (NW), ReferentIn

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

10. Liste

Kongress/Symposium/Konferenz/Tagung

SIL Austria 2009 (26.10.2009 - 28.10.2009)

Lamatsch, Dunja (w), PosterpräsentatorIn
 Wanzenböck, Josef (m), ReferentIn
 Wanzenböck, Sabine (w), TeilnehmerIn
 Weisse, Thomas (m), ReferentIn

SIL-Austria Meeting (26.10.2009 - 28.10.2009)

Leichtfried, Maria (w), ReferentIn

The 6th Symposium for European Freshwater Sciences (SEFS6) (17.08.2009 - 21.08.2009)

Leichtfried, Maria (w), ReferentIn

Publikumsabend

Klima im Wandel (20.11.2009 - 20.11.2009)

Schmidt, Roland (m), ReferentIn

Workshop/Seminar

Institutskolloquium Biologie und Umweltwissenschaften der Universität Oldenburg (19.03.2009 - 19.03.2009)

Stelzer, Claus-Peter (m), ReferentIn

SFB Bodenseelitoral, Uni Konstanz (23.11.2009 - 23.11.2009)

Boenigk, Jens (m), ReferentIn

11. Wissenschaftliche Gäste aus dem Ausland

	gesamt	m	w
Anzahl der wissenschaftlich tätigen Gäste aus dem Ausland	11	8	3
davon im Rahmen des Wissenschafteraustauschprogramms der ÖAW	0		
Aufenthaltszweck			
· Forschungstätigkeit im Rahmen eines ÖAW-Forschungsprojektes (Projekttreffen)	3	2	1
· wissenschaftliche Vortragstätigkeit	8	6	2
Herkunftsort			
· innerhalb EU (ohne Österreich)	9	6	3
· außerhalb EU	2	2	
Finanzierung			
· intern	7	5	2
· extern	4	3	1
Dauer			
· <= 1 Tag	7	5	2
· > 1 <= 5 Tage	1	1	
· > 5 Tage	3	2	1

11. Liste

Dr. Claudia Wiegand, w; Herkunft: IGB Berlin, GERMANY

Aufenthaltsdauer: 05.02.2009 - 05.02.2009; Finanzierung: Eigenmittel der Forschungseinrichtung; Zweck: wissenschaftliche Vortragstätigkeit

Dr. David Fewer, m; Herkunft: University of Helsinki, Helsinki, FINLAND

Aufenthaltsdauer: 27.05.2009 - 30.05.2009; Finanzierung: sonst. Stipendium; Zweck: wissenschaftliche Vortragstätigkeit

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

11. Liste

Dr. Jan Jezbera, m; Herkunft: Biology Centre AS CR, v.v.i.

Hydrobiological Institute

Na Sadkach 7

370 05 Ceske Budejovice

Czech Republic, CZECH REPUBLIC

Aufenthaltsdauer: 13.08.2009 - 19.08.2009; Finanzierung: sonst. Stipendium; Zweck: Forschungstätigkeit

Dr. Jitka Jezberova, w; Herkunft: Biology Centre AS CR, v.v.i.

Hydrobiological Institute

Na Sadkach 7

370 05 Ceske Budejovice

Czech Republic, CZECH REPUBLIC

Aufenthaltsdauer: 13.08.2009 - 19.08.2009; Finanzierung: sonst. Stipendium; Zweck: Forschungstätigkeit

Dr. Matthias Gum, m; Herkunft: Bildungs- und Wissenszentrum Aulendorf, Fischereiforschungsstelle Baden-Württemberg, GERMANY

Aufenthaltsdauer: 07.05.2009 - 07.05.2009; Finanzierung: Eigenmittel der Forschungseinrichtung; Zweck: wissenschaftliche Vortragstätigkeit

Dr. Matthias Stöck, m; Herkunft: Department of Ecology and Evolution (DEE), University of Lausanne, SWITZERLAND

Aufenthaltsdauer: 02.04.2009 - 02.04.2009; Finanzierung: Eigenmittel der Forschungseinrichtung; Zweck: wissenschaftliche Vortragstätigkeit

Dr. Pascal Vonlanthen, m; Herkunft: University Bern und EAWAG, SWITZERLAND

Aufenthaltsdauer: 08.10.2009 - 08.10.2009; Finanzierung: Eigenmittel der Forschungseinrichtung; Zweck: wissenschaftliche Vortragstätigkeit

Dr. Tanja Schulz-Mirbach, w; Herkunft: Department für Geo- und Umweltwissenschaften, Sektion Paläontologie, LMU München, GERMANY

Aufenthaltsdauer: 25.06.2009 - 25.06.2009; Finanzierung: Eigenmittel der Forschungseinrichtung; Zweck: wissenschaftliche Vortragstätigkeit

Manuel Deinhardt, m; Herkunft: University of Jyväskylä, FINLAND

Aufenthaltsdauer: 19.11.2009 - 19.11.2009; Finanzierung: Eigenmittel der Forschungseinrichtung; Zweck: wissenschaftliche Vortragstätigkeit

Prof. Dr. Antonio Camacho, m; Herkunft: Universitat de València, SPAIN

Aufenthaltsdauer: 18.03.2009 - 25.03.2009; Finanzierung: sonst. Stipendium; Zweck: Forschungstätigkeit

Prof. Luc de Meesters, m; Herkunft: Aquatic Ecology & Evolutionary Biology, Universität Leuven, Leuven, Belgium, BELGIUM

Aufenthaltsdauer: 12.03.2009 - 12.03.2009; 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	49	47	2
davon in indizierten Publikationsorganen	44	42	2
davon als			
· Gutachter (Referee, Reviewer)	39	37	2
· Herausgeber(in), Editor-in-chief	1	1	
· Mitglied eines Editorial Advisory Board	1	1	
· Editorial Board Member, Subject/Associate Editor	8	8	

12. Liste

Hahn, Martin (m)

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

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

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

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

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

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

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

12. Liste

Hahn, Martin (m)

Gutachter (Referee, Reviewer); Bezeichnung: "WATER AIR AND SOIL POLLUTION"; angeführt in Index: ja
Gutachter (Referee, Reviewer); Bezeichnung: "LIMNOLOGY AND OCEANOGRAPHY"; angeführt in Index: ja
Gutachter (Referee, Reviewer); Bezeichnung: "CURRENT MICROBIOLOGY"; angeführt in Index: ja
Editorial Board Member, Subject/Associate Editor; Bezeichnung: "APPLIED AND ENVIRONMENTAL MICROBIOLOGY"; angeführt in Index: ja
Gutachter (Referee, Reviewer); Bezeichnung: "Archiv für Hydrobiologie - Advances in Limnology"; angeführt in Index: ja
Gutachter (Referee, Reviewer); Bezeichnung: "JOURNAL OF EUKARYOTIC MICROBIOLOGY"; angeführt in Index: ja
Gutachter (Referee, Reviewer); Bezeichnung: "TRENDS IN MICROBIOLOGY"; angeführt in Index: ja
Gutachter (Referee, Reviewer); Bezeichnung: "AQUATIC MICROBIAL ECOLOGY"; angeführt in Index: ja
Gutachter (Referee, Reviewer); Bezeichnung: "NATURE BIOTECHNOLOGY"; angeführt in Index: ja
Gutachter (Referee, Reviewer); Bezeichnung: "FEMS MICROBIOLOGY ECOLOGY"; angeführt in Index: ja
Editorial Board Member, Subject/Associate Editor; Bezeichnung: "ENVIRONMENTAL MICROBIOLOGY"; angeführt in Index: ja
Gutachter (Referee, Reviewer); Bezeichnung: "ENVIRONMENTAL MICROBIOLOGY"; angeführt in Index: ja
Gutachter (Referee, Reviewer); Bezeichnung: "AQUATIC ECOLOGY"; angeführt in Index: ja
Gutachter (Referee, Reviewer); Bezeichnung: "APPLIED AND ENVIRONMENTAL MICROBIOLOGY"; angeführt in Index: ja
Gutachter (Referee, Reviewer); Bezeichnung: "ENVIRONMENTAL MONITORING AND ASSESSMENT"; angeführt in Index: ja
Gutachter (Referee, Reviewer); Bezeichnung: "COLLOIDS AND SURFACES B-BIOINTERFACES"; angeführt in Index: ja
Gutachter (Referee, Reviewer); Bezeichnung: "JOURNAL OF GEOPHYSICAL RESEARCH-BIOGEOSCIENCES"; angeführt in Index: ja
Gutachter (Referee, Reviewer); Bezeichnung: "JOURNAL OF PLANKTON RESEARCH"; angeführt in Index: ja
Gutachter (Referee, Reviewer); Bezeichnung: "MICROBIAL ECOLOGY"; angeführt in Index: ja

Kurmayer, Rainer (m)

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

Lamatsch, Dunja (w)

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

Schmidt, Roland (m)

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

Stelzer, Claus-Peter (m)

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

Wanzenböck, Josef (m)

Gutachter (Referee, Reviewer); Bezeichnung: "Reviews in Fish Biology and Fisheries"; angeführt in Index: nein
Gutachter (Referee, Reviewer); Bezeichnung: "Environmental Biology of Fishes"; angeführt in Index: nein
Editorial Board Member, Subject/Associate Editor; Bezeichnung: "Österreichs Fischerei"; angeführt in Index: nein

Weisse, Thomas (m)

Gutachter (Referee, Reviewer); Bezeichnung: "MOLECULAR ECOLOGY"; angeführt in Index: ja
Gutachter (Referee, Reviewer); Bezeichnung: "ENVIRONMENTAL MICROBIOLOGY"; angeführt in Index: ja
Gutachter (Referee, Reviewer); Bezeichnung: "PROCEEDINGS OF THE ROYAL SOCIETY B-BIOLOGICAL SCIENCES"; angeführt in Index: ja
Editorial Board Member, Subject/Associate Editor; Bezeichnung: "JOURNAL OF EUKARYOTIC MICROBIOLOGY"; angeführt in Index: ja
Gutachter (Referee, Reviewer); Bezeichnung: "POLISH JOURNAL OF ECOLOGY"; angeführt in Index: ja
Gutachter (Referee, Reviewer); Bezeichnung: "LIMNOLOGY AND OCEANOGRAPHY"; angeführt in Index: ja
Editorial Board Member, Subject/Associate Editor; Bezeichnung: "LIMNOLOGICA"; 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

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

12. Liste

Weisse, Thomas (m)

Gutachter (Referee, Reviewer); Bezeichnung: "FUNDAMENTAL AND APPLIED LIMNOLOGY"; angeführt in Index: ja
Gutachter (Referee, Reviewer); Bezeichnung: "JOURNAL OF EUKARYOTIC MICROBIOLOGY"; angeführt in Index: ja
Herausgeber(in), Editor-in-chief; Bezeichnung: "EUROPEAN JOURNAL OF PROTISTOLOGY"; angeführt in Index: ja
Gutachter (Referee, Reviewer); Bezeichnung: "MICROBIOLOGICAL RESEARCH"; angeführt in Index: ja
Editorial Board Member, Subject/Associate Editor; Bezeichnung: "Protozoological Monographs"; angeführt in Index: nein

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)

El Fondo Nacional de Desarrollo Científico y Tecnológico, FONDECYT, Santiago de Chile, CHILE, Funktionsdauer: 01.01.2009 - 31.12.2009
Estonian Science Foundation, Tallinn, ESTONIA, Funktionsdauer: 01.01.2009 - 31.12.2009
Deutsche Forschungsgemeinschaft (DFG), Bonn, GERMANY, Funktionsdauer: 01.01.2009 -

Weisse, Thomas (m)

WasserKluster Lunz GmbH, Lunz am See (NÖ), AUSTRIA, Funktionsdauer: 05.03.2007 -
Natural Environment Research Council, Swindon, Wiltshire, UNITED KINGDOM, Funktionsdauer: 15.05.1998 -
The impact of climate variability on aquatic ecosystems (AQUASHIFT), Bonn, GERMANY, Funktionsdauer: 01.06.2004 -
Deutsche Forschungsgemeinschaft (DFG), Bonn, GERMANY, Funktionsdauer: 01.01.2000 -
National Science Foundation (NSF), Arlington, UNITED STATES, Funktionsdauer: 01.04.1998 -
Estonian Science Foundation, Tallinn, ESTONIA, Funktionsdauer: 19.10.2007 -

Leistungen der Forschungsträgereinrichtung (Forschungsportfolio, Projektstrukturen und -kooperationen, Drittmittelerwerb, Resultate, Dissemination wissenschaftlicher Erkenntnis)

14. Forschungsportfolio

	gesamt
Anzahl der laufenden Forschungsprojekte	28
· drittfianziert	26
· eigenfinanziert	2
interdisziplinär	32,14 %

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

14. Forschungsportfolio	
	gesamt
· Langfristprojekt	21,43 %
· Mittelfristprojekt	67,86 %
· Kurzfristprojekt	10,71 %
Projekte mit externen Partnern	10
· davon EU-Projekte	1
· Grundlagenforschung	78,57 %
· Experimentelle Entwicklung	3,57 %
· Angewandte Forschung	17,86 %
· Förderung der allgemeinen Erweiterung des Wissens	10,71 %
· Förderung von Handel, Gewerbe und Industrie	7,14 %
· Förderung der Erforschung der Erde, der Meere, der Atmosphäre und des Weltraumes	67,86 %
· N/A	7,14 %
· Förderung des Unterrichts- und Bildungswesens	3,57 %
· Förderung der Land- und Forstwirtschaft	3,57 %

14. Liste
(allgemeines) Forschungsprojekt der Forschungseinrichtung Allgemeine Limnologische Grundlagenforschung Laufzeit (Istdaten): 01.04.1998 - ; Laufzeit (Solldaten): 01.04.1998 - 31.03.2010; 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: 1 Kooperations-Partner: School of Biological Sciences; Partnerschaft Cyanobakterien - Luftstickstoff für die Landwirtschaft Laufzeit (Istdaten): 30.10.2008 - 30.06.2009 ; Laufzeit (Solldaten): 15.10.2008 - 30.06.2009; Sozio-ökonomische Zielsetzung: Förderung der Land- und Forstwirtschaft; Forschungsart: Experimentelle Entwicklung; Finanzierung: drittfinanziert; Interdisziplinarität: ja ; Fristigkeit: Kurzfristprojekt; Anzahl der Kooperationspartner: 0 : Höhere Bundeslehranstalt für Landwirtschaft, Ursprung , Salzburg; Projektmanagement Use cyanobacteria for the production of ethanol part I Laufzeit (Istdaten): 01.02.2008 - 31.01.2009 ; Laufzeit (Solldaten): 01.02.2008 - 31.01.2009; Sozio-ökonomische Zielsetzung: Förderung von Handel, Gewerbe und Industrie; Forschungsart: Angewandte Forschung; Finanzierung: drittfinanziert; Interdisziplinarität: nein ; Fristigkeit: Kurzfristprojekt; Anzahl der Kooperationspartner: 0 Geldgeber: Cyano BioFuels GmbH; Projektleitung 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: 0 Integrating BOMOSA cage fish farming system in reservoirs, ponds and temporary water bodies in Eastern Africa Laufzeit (Istdaten): 01.10.2006 - 30.09.2009 ; Laufzeit (Solldaten): 01.10.2006 - 30.09.2009; Sozio-ökonomische Zielsetzung: Förderung der Erforschung der Erde, der Meere, der Atmosphäre und des Weltraumes; Forschungsart: Angewandte Forschung; Finanzierung: drittfinanziert; Interdisziplinarität: ja ; Fristigkeit: Mittelfristprojekt; Anzahl der Kooperationspartner: 0; EU-Projekt

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

14. Liste

Bündelprojekt

Förderprogramm: Sechstes Rahmenprogramm; EU
Geldgeber: Sixth Framework Programme; EU-Kontraktor; (EU-Geldgeber)

International Post-Graduate Training Programmes in Limnology, 2008-2009

Laufzeit (Istdaten): 01.04.2008 - 31.12.2009 ; Laufzeit (Solldaten): 01.04.2008 - 30.09.2009; Sozio-ökonomische Zielsetzung: N/A;
Forschungsart: Angewandte Forschung; Finanzierung: drittfinanziert; Interdisziplinarität: ja ; Fristigkeit: Mittelfristprojekt; Anzahl der Kooperationspartner: 2

Förderprogramm: Austrian Development Agency
Kooperations-Partner: Egerton University; Partnerschaft
Kooperations-Partner: UNESCO-IHE, Institute for Water Education; Partnerschaft

Dissertationsprojekt

Chrysophyte diversity and encystment pattern

Laufzeit (Istdaten): 01.02.2006 - 30.06.2009 ; Laufzeit (Solldaten): 01.02.2006 - 31.01.2009; Sozio-ökonomische Zielsetzung: Förderung der allgemeinen Erweiterung des Wissens; Forschungsart: Grundlagenforschung; Finanzierung: drittfinanziert; Interdisziplinarität: nein ; Fristigkeit: Mittelfristprojekt; Anzahl der Kooperationspartner: 0

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 - 30.09.2009; 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: 2

Kooperations-Partner: Norwegian Institute for Water Research (NIVA)
Kooperations-Partner: Universität Wien, Fakultät für Lebenswissenschaften, Department für Meeresbiologie

Habitat specificity of flagellates

Laufzeit (Istdaten): 01.01.2007 - 31.12.2009 ; Laufzeit (Solldaten): 01.01.2007 - 31.12.2009; Sozio-ökonomische Zielsetzung: Förderung der allgemeinen Erweiterung des Wissens; Forschungsart: Grundlagenforschung; Finanzierung: drittfinanziert; Interdisziplinarität: nein ; Fristigkeit: Mittelfristprojekt; Anzahl der Kooperationspartner: 0

Influence of environmental factors on the abundance of toxic peptide genotypes of cyanobacteria in water

Laufzeit (Istdaten): 15.02.2003 - ; Laufzeit (Solldaten): 01.02.2003 - 31.12.2005; 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

Molecular and chemical characterisation of toxic cyanobacteria in Ugandan freshwater

Laufzeit (Istdaten): 15.06.2006 - 15.01.2010 ; Laufzeit (Solldaten): 01.03.2006 - 14.06.2009; 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: National Fisheries Resources Research Institute (NAFIRRI); Partnerschaft

Time in Microevolution of Microcystin Synthesis, Doc-ffORTE

Laufzeit (Istdaten): 15.04.2009 - ; 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: 0

Einzelforschungsprojekt

Adaptation of Active Fisheries Methods: Pair trawling

Laufzeit (Istdaten): 01.04.2009 - ; Laufzeit (Solldaten): 01.04.2009 - 31.12.2010; 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

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

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Einzelforschungsprojekt

Kooperations-Partner: Academy of Sciences CR, Hydrobiological Institute; Partnerschaft

Biogeography and within-taxon ecological differentiation of *Polynucleobacter necessarius* subsp. *asymbioticus* and *Limnohabitans planctonicus* (Betaproteobacteria)

Laufzeit (Istdaten): 01.01.2009 - ; Laufzeit (Solldaten): 01.01.2009 - 31.12.2010; 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

Förderprogramm: Zukunftsfonds Steiermark

Chrysophyte diversity and encystment pattern in alpine lakes: Merging molecular microbiology, recent and palaeoecology in C32#

Laufzeit (Istdaten): 15.12.2005 - ; Laufzeit (Solldaten): 15.12.2005 - 14.06.2009; 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

: Universität Bern; Partnerschaft

Conservation of natural biological resources in Austria: Identification of indigenous whitefish species and extent of potential hybridization with a Baltic species

Laufzeit (Istdaten): 01.01.2006 - 30.09.2009 ; Laufzeit (Solldaten): 01.01.2006 - 31.12.2008; 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: Universität Graz; Partnerschaft

Diversity and population heterogeneity of chrysomonad flagellates within an alpine gradient

Laufzeit (Istdaten): 01.09.2009 - ; Laufzeit (Solldaten): 01.09.2009 - 31.08.2012; Sozio-ökonomische Zielsetzung: Förderung der allgemeinen Erweiterung des Wissens; Forschungsart: Grundlagenforschung; Finanzierung: drittfinanziert; Interdisziplinarität: nein ; Fristigkeit: Mittelfristprojekt; Anzahl der Kooperationspartner: 0

Ecological and phylogenetic comparison of bacterial populations inhabiting Antarctic and European lakes

Laufzeit (Istdaten): 01.05.2007 - ; Laufzeit (Solldaten): 01.01.2007 - 31.12.2008; 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

Evolution of asexuality in experimental rotifer populations

Laufzeit (Istdaten): 01.05.2008 - 30.04.2011 ; Laufzeit (Solldaten): 01.05.2008 - 30.04.2011; 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

Exploiting bioactive compounds in cyanobacteria I

Laufzeit (Istdaten): 01.12.2008 - 30.11.2009 ; Laufzeit (Solldaten): 01.12.2008 - 30.11.2009; Sozio-ökonomische Zielsetzung: Förderung von Handel, Gewerbe und Industrie; Forschungsart: Angewandte Forschung; Finanzierung: drittfinanziert; Interdisziplinarität: ja ; Fristigkeit: Kurzfristprojekt; Anzahl der Kooperationspartner: 0

Geldgeber: Cyano Biotech GmbH; Partnerschaft

Genetic and ecological diversity of a narrow phylogenetic group of abundant freshwater bacteria. (FWF19853)

Laufzeit (Istdaten): 01.03.2007 - 31.12.2009 ; Laufzeit (Solldaten): 01.03.2007 - 28.02.2009; 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: 2

Kooperations-Partner: Academy of Sciences CR, Hydrobiological Institute; Partnerschaft

Kooperations-Partner: Università di Pisa; Partnerschaft

Genotype determined toxin content in cyanobacteria, FWP20231

Laufzeit (Istdaten): 01.07.2008 - ; Laufzeit (Solldaten): 01.07.2008 - 30.06.2011; Sozio-ökonomische Zielsetzung: Förderung der Erforschung

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

14. Liste

Einzelforschungsprojekt

der Erde, der Meere, der Atmosphäre und des Weltraumes; Forschungsart: Grundlagenforschung; Finanzierung: drittfinanziert; Interdisziplinarität: nein ; Fristigkeit: Mittelfristprojekt; Anzahl der Kooperationspartner: 0

Habitat specificity of flagellates and ecophysiological significance of microdiversity

Laufzeit (Istdaten): 01.01.2006 - 30.06.2009 ; Laufzeit (Solldaten): 01.01.2006 - 31.12.2008; 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: 4

Kooperations-Partner: Nanjing Institute of Geography and Limnology; Partnerschaft

Kooperations-Partner: Sanofi Aventis; Partnerschaft

Kooperations-Partner: Umweltforschungszentrum Leipzig Halle; Partnerschaft

Kooperations-Partner: Universität Stuttgart ; Partnerschaft

Late-Pleniglacial climatic and environmental evolution in the southern prealpine lowland: a multi-proxy and quantitative lake sediment core study (Längsee, Austria)(FWF-P18595-B17)

Laufzeit (Istdaten): 01.01.2006 - 31.12.2009 ; Laufzeit (Solldaten): 01.01.2006 - 31.12.2009; 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

Niche separation and coexistence of chrysophytes in an alpine gradient

Laufzeit (Istdaten): 15.03.2007 - ; Laufzeit (Solldaten): 01.04.2007 - 31.03.2010; 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: 6

Kooperations-Partner: Bigelow Laboratory for Ocean Science; Partnerschaft

Kooperations-Partner: Institut für Ökologie, Universität Innsbruck; Partnerschaft

Kooperations-Partner: Lunds universitet; Partnerschaft

Kooperations-Partner: Universität Potsdam; Partnerschaft

Kooperations-Partner: Universität Zürich; Partnerschaft

Kooperations-Partner: Veterinärmedizinische Universität Wien; Partnerschaft

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

Laufzeit (Istdaten): 01.07.2007 - ; 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: 3

Kooperations-Partner: Fachbereich Organismische Biologie der Naturwissenschaftlichen Fakultät der Universität Salzburg; Partnerschaft

Geldgeber: Fonds zur Förderung der wissenschaftlichen Forschung (FWF); Projektmanagement

: Sea Education Association; Partnerschaft

Kooperations-Partner: Universität Leipzig; Partnerschaft

Kooperations-Partner: Universität Potsdam; Partnerschaft

Polynucleobacter Genome Project

Laufzeit (Istdaten): 01.08.2005 - ; Laufzeit (Solldaten): 01.08.2005 - 31.12.2008; 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

Toxic and other bioactive PEPTIDES in CYANOBACTERIA

Laufzeit (Istdaten): 01.12.2002 - ; Laufzeit (Solldaten): 01.12.2002 - 31.05.2006; Sozio-ökonomische Zielsetzung: N/A; Forschungsart: Grundlagenforschung; Finanzierung: drittfinanziert; Interdisziplinarität: nein ; Fristigkeit: Langfristprojekt; Anzahl der Kooperationspartner: 0

15. Externe Partner von Forschungsprojekten

gesamt

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

15. Externe Partner von Forschungsprojekten	
	gesamt
Anzahl der externen Partner	21
Kooperationspartner	
· Privatwirtschaft	1
· Universität	9
· Sonstige externe Einheiten	2
· Außeruniversitäre F-Einrichtung	4
· Universitäre Lehr- und Forschungseinheit	5
Herkunftsinstitutionen der Partner	
· im Inland	5
· innerhalb EU (ohne Österreich)	10
· außerhalb EU	6

15. Liste
Academy of Sciences CR, Hydrobiological Institute, Ceske Budejovice, CZECH REPUBLIC, Typ: Außeruniversitäre FuE-Einrichtung Adaptation of Active Fisheries Methods: Pair trawling (Einzelforschungsprojekt) Genetic and ecological diversity of a narrow phylogenetic group of abundant freshwater bacteria. (FWF19853) (Einzelforschungsprojekt)
Bigelow Laboratory for Ocean Science, Bigelow, UNITED STATES, Typ: Sonstige externe Einheiten Niche separation and coexistence of chrysophytes in an alpine gradient (Einzelforschungsprojekt)
Egerton University, Njoro, KENYA, Typ: Universitäre Lehr- und Forschungseinheit International Post-Graduate Training Programmes in Limnology, 2008-2009 (Bündelprojekt)
Fachbereich Organismische Biologie der Naturwissenschaftlichen Fakultät der Universität Salzburg, Salzburg, AUSTRIA, Typ: Universität Patterns and processes of adaptation and tolerance to low pH of freshwater plankton (Einzelforschungsprojekt)
Institut für Ökologie, Universität Innsbruck, Innsbruck, AUSTRIA, Typ: Universitäre Lehr- und Forschungseinheit Niche separation and coexistence of chrysophytes in an alpine gradient (Einzelforschungsprojekt)
Lunds universitet, Lund, SWEDEN, Typ: Universität Niche separation and coexistence of chrysophytes in an alpine gradient (Einzelforschungsprojekt)
Nanjing Institute of Geography and Limnology, Nanjing, CHINA, Typ: Sonstige externe Einheiten
National Fisheries Resources Research Institute (NAFIRRI), Jinja, UGANDA, Typ: Außeruniversitäre FuE-Einrichtung Molecular and chemical characterisation of toxic cyanobacteria in Ugandan freshwater (Dissertationsprojekt)
Norwegian Institute for Water Research (NIVA), Oslo, NORWAY, Typ: Außeruniversitäre FuE-Einrichtung Dissertation: Effects of cage fish farming systems on phytoplankton and water quality in small ponds of East Africa (Dissertationsprojekt)
Sanofi Aventis, Frankfurt, GERMANY, Typ: Privatwirtschaft

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

15. Liste

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

Allgemeine Limnologische Grundlagenforschung ((allgemeines) Forschungsprojekt der Forschungseinrichtung)

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

International Post-Graduate Training Programmes in Limnology, 2008-2009 (Bündelprojekt)

Umweltforschungszentrum Leipzig Halle, Leipzig, GERMANY, Typ: Außeruniversitäre FuE-Einrichtung

Università di Pisa, Pisa, ITALY, Typ: Universitäre Lehr- und Forschungseinheit

Genetic and ecological diversity of a narrow phylogenetic group of abundant freshwater bacteria. (FWF19853) (Einzelforschungsprojekt)

Universität Graz, Graz, AUSTRIA, Typ: Universität

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

Niche separation and coexistence of chrysophytes in an alpine gradient (Einzelforschungsprojekt)

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

Universität Stuttgart, Stuttgart, GERMANY, Typ: Universität

Universität Wien, Fakultät für Lebenswissenschaften, Department für Meeresbiologie, Wien, AUSTRIA, Typ: Universität

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

Universität Zürich, Zürich, SWITZERLAND, Typ: Universität

Niche separation and coexistence of chrysophytes in an alpine gradient (Einzelforschungsprojekt)

Veterinärmedizinische Universität Wien, Wien, AUSTRIA, Typ: Universität

Niche separation and coexistence of chrysophytes in an alpine gradient (Einzelforschungsprojekt)

16. Drittmittelzuflüsse und –geber

	gesamt
Drittmittelzuflüsse an FE	1022219.17
davon eingeworben bei:	
· FWF Sachmittel	
· FWF Personalmittel	300338.67
· FWF Overheads	474.92
· Bund (ohne FWF und FFG)	579574.37
· OeNB	
· FFG	

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

16. Drittmittelzuflüsse und –geber	
	gesamt
· Bundesländer:	
· Burgenland	
· Kärnten	
· Niederösterreich	
· Oberösterreich	
· Salzburg	
· Steiermark	
· Tirol	
· Vorarlberg	
· Wien	
· Gemeinden:	
· Enns	
· Krems	
· EU	21065.58
· Stiftungen	
· davon im Inland	
· davon im Ausland	
· Organisationen	
· davon im Inland	
· davon im Ausland	50765.63
· Unternehmen	
· davon im Inland	
· davon im Ausland	70000
· Spenden	

17. Wissenschaftliche Publikationen	
	gesamt
A) Bücher / Monographien oder Editionen	0
A) Peer-reviewte Beiträge in Fachzeitschriften oder Sammelwerken	24
· davon in indizierten Fachzeitschriften	21
B) Herausgeberschaften	1
B) längere Beiträge ohne Peer-Review in Fachzeitschriften oder Sammelwerken	2
C) Sonstige wissenschaftliche Publikationen	4
Veröffentlichungen von Nachwuchswissenschaftler(inne)n/Habilitationen (diese Publikationen wurden z.T. bereits in oben angeführten Kennzahlen miterfasst)	
· Diplomarbeiten	1
· Dissertationen	2
· Habilitationen	0

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

17. Wissenschaftliche Publikationen	
	gesamt
Kurze Lexikonbeiträge, summarisch	0
Lexikonartikel	2

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

17. Liste
A) Peer-reviewte Beiträge in Fachzeitschriften oder Sammelwerken Colombaroli, D., Tinner, W. van Leeuwen, J., Noti, R., Vescovi, E., Vanni�re, B., Magny, M., Schmidt, R., and H. Bugmann (2009) Response of broadleaved evergreen Mediterranean forest vegetation to fire disturbance during the Holocene: insights from the peri-Adriatic region. <i>Journal of Biogeography</i>, Bd. 36 (2), S. 314-326 <doi:10.1111/j.1365-2699.2008.01987.x>. [Schmidt, Roland: KoautorIn]; peer-rev.indiziert lang De Castro F, Gaedke U, Boenigk J (2009) Reverse evolution: Driving forces behind the loss of acquired photosynthetic traits. <i>PLOS One</i>, Bd. 4, S. e8465. [Boenigk, Jens: KoautorIn]; peer-rev. lang Dokulil, M.T., Herzig, A. (2009) An analysis of long-term winter data on phytoplankton and zooplankton in Neusiedler See, a shallow temperate lake, Austria. <i>Aquatic Ecology</i>, Bd. 43, S. 715-725. [Dokulil, Martin: HauptautorIn]; peer-rev.indiziert lang Dunthorn M, Eppinger M, Schwarz MVJ, Schweikert M, Boenigk J, Katz LA, Stoeck T (2009) Phylogenetic placement of the Cyrtolophosididae Stokes, 1 1888 (Ciliophora: Colpodea) and neotypification of <i>Aristerostoma marinum</i> Kahl, 1931. <i>Int J Sys Evol Microbiol</i>, Bd. 59, S. 167-180. [Boenigk, Jens: KoautorIn]; peer-rev.indiziert lang Hahn, M. W. (2009) Description of seven Candidatus species affiliated with the phylum Actinobacteria, representing planktonic freshwater bacteria. <i>International Journal of Systematic and Evolutionary Microbiology</i>, Bd. 59 (1), S. 112-117 <http://ijs.sgmjournals.org/cgi/content/abstract/59/1/112>. [Hahn, Martin: AlleinautorIn]; peer-rev.indiziert Hahn, M.W., Lang, E., Brandt, U., Wu, Q.L., and Scheuerl, T. (2009) Emended description of the genus <i>Polynucleobacter</i> and the species <i>P. necessarius</i> and proposal of two subspecies, <i>P. necessarius</i> subspecies <i>necessarius</i> subsp. nov. and <i>P. necessarius</i> subsp. <i>asymbioticus</i> subsp. <i>nov.</i> <i>International Journal of Systematic and Evolutionary Microbiology</i> (59), S. 2002-2009. [Brandt, Ulrike: KoautorIn; Scheuerl, Thomas: KoautorIn; Hahn, Martin: HauptautorIn]; peer-rev.indiziert Huber, Kerstin; Kamenik, Christian; Weckstr�m, Kaarina; Schmidt, Roland (2009) Taxonomy, stratigraphy, and palaeoecology of chrysophyte cysts from Late Glacial sediment core section of L�ngsee, Austria. <i>Nova Hedwigia</i>, Bd. 89 (1-2), S. 245-261. [Schmidt, Roland: KoautorIn]; peer-rev. indiziert lang Ishida, Keishi; Welker, Martin; Christiansen, Guntram; Cadel-Six, Sabrina; Bouchier, CHristiane et al. [...] (2009) Plasticity and evolution of aeruginosin biosynthesis in cyanobacteria. <i>Applied and Environmental Microbiology</i>, Bd. 75, S. 2017-2026. [Christiansen, Guntram: HauptautorIn]; peer-rev.indiziert lang Jezbera, J., Sharma, A. K., Brandt, U., Doolittle, W. F., and M. W. Hahn (2009) 'Candidatus <i>Planktophilia limnetica</i>', an actinobacterium representing one of the most numerically important taxa in freshwater bacterioplankton. <i>International Journal of Sytematic and Evolutionary Microbiology</i>, Bd. 59 (11), S. 2864-2869. [Brandt, Ulrike: KoautorIn; Jezbera, Jan: HauptautorIn; Hahn, Martin: KoautorIn]; peer-rev.indiziert lang Kosol, Simone; Schmidt, Johanna; Kurmayer, Rainer (2009) Variation in peptide net production and growth among strains of the toxic cyanobacterium <i>Planktothrix</i> spp. <i>European Journal of Phycology</i>, Bd. 44, S. 49-62. [Schmidt, Johanna: KoautorIn; Kurmayer, Rainer: HauptautorIn]; peer-rev.indiziert lang Kurmayer, Rainer; Christiansen, Guntram (2009) The genetic basis of toxin production in Cyanobacteria. <i>Freshwater Reviews</i>, Bd. 2, S. 31-50. [Christiansen, Guntram: KoautorIn; Kurmayer, Rainer: HauptautorIn]; peer-rev.indiziert lang Lamatsch, D.K.; St�ck, M. (2009) Sperm-Dependent Parthenogenesis and Hybridogenesis in Teleost Fishes. In: I.Schoen, K. Martens, P. VanDijk (Hrsg.), <i>Lost Sex!</i>. Berlin/Heidelberg: Springer, S. 399-432 <doi:10.1007/978-90-481-2770-2_19>. [Lamatsch, Dunja: HauptautorIn]; peer-rev. lang Lamatsch, Dunja Katharina; Fischer, Petra; Geiger, Matthias; Lampert, Kathrin Pauline; Schlupp, Ingo et al. [...] (2009) Diploids Amazon mollies (<i>P. formosa</i>) show a higher fitness than triploids in clonal competition experiments. <i>Evolutionary Ecology</i>. [Lamatsch, Dunja: HauptautorIn]; peer-rev. indiziert lang Moser, Michael; Callieri, Cristiana; Weisse, Thomas (2009) Photosynthetic and growth response of freshwater picocyanobacteria are strain-specific and sensitive to photoacclimation. <i>Journal of Plankton Research</i>, Bd. 31. [Weisse, Thomas: KoautorIn; Moser, Michael: HauptautorIn]; peer-rev. indiziert lang Namiotko, T., Danielopol, D.L., Pichler, M. & Von Grafenstein, U. (2009) Occurrence of an Arctic ostracod species <i>Fabaeformiscandona harmsworthi</i> (Scott, 1899) (Ostracoda, Candonidae) in Late Glacial sediments of lake Mondsee (Austria). <i>Crustaceana</i>, Bd. 82, S. 1209-1212. [Pichler, Maria: KoautorIn; Danielopol, Dan Luca: KoautorIn]; peer-rev.indiziert Ostermaier, Veronika; Kurmayer, Rainer (2009) Distribution and abundance of nontoxic mutants of cyanobacteria in lakes of the Alps. <i>Microbial</i>

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

17. Liste

A) Peer-reviewte Beiträge in Fachzeitschriften oder Sammelwerken

Ecology, Bd. 58, S. 323-333. [Ostermaier, Veronika: HauptautorIn; Kurmayer, Rainer: HauptautorIn]; peer-rev.indiziert lang

Pamminger-Lahnsteiner, Barbara; Weiss, Steven; Winkler, Kathrin; Wanzenböck, Josef (2009) Composition of native and introduced mtDNA lineages in *Coregonus* sp. in two Austrian lakes: evidence for spatio-temporal segregation of larvae?. *Hydrobiologia*, Bd. 632, S. 167-175. [Pamminger-Lahnsteiner, Barbara: HauptautorIn; Wanzenböck, Josef: KoautorIn]; peer-rev.indiziert

Pfandl K, Chatzinotas A, Dyal P, Boenigk J (2009) SSU rRNA gene variation resolves population heterogeneity and ecophysiological differentiation within a morphospecies (*Stramenopiles*, *Chrysophyceae*). *Limnology and Oceanography* (54), S. 171-181. [Boenigk, Jens: KoautorIn]; peer-rev.indiziert lang

Sharma, A.K., Sommerfeld, K., Bullerjahn, G.S., Matteson, A.R., Wilhelm, S.W., Jezbera, J., Brandt, U., Doolittle, W.F., and Hahn, M.W. (2009) Actinorhodopsin genes discovered in diverse freshwater habitats and among cultivated freshwater Actinobacteria. *The ISME Journal*, Bd. 3, S. 726-737. [Brandt, Ulrike: KoautorIn; Hahn, Martin: KoautorIn; Jezbera, Jan: KoautorIn]; peer-rev. lang

Stelzer, Claus-Peter (2009) Automated system for sampling, counting, and biological analysis of rotifer populations. *Limnology and Oceanography Methods* (7), S. 856-864. [Stelzer, Claus-Peter: AlleinautorIn]; peer-rev.indiziert

Tarao, M., Jezbera, J., and Hahn, M.W. (2009) Involvement of cell surface structures in size-independent grazing resistance of freshwater Actinobacteria. *Applied and Environmental Microbiology* (75), S. 4720-4726. [Hahn, Martin: KoautorIn]; peer-rev.indiziert

Turner, B.L., Weckström, K. (2009) Phytate as a novel phosphorus-specific paleo-indicator in aquatic sediments. *Journal of Paleolimnology*, Bd. 42, S. 391-400. [Schmidt, Roland: RedakteurIn; Weckström, Kaarina: KoautorIn]; peer-rev.indiziert lang

Wu QL, Chatzinotas A, Boenigk J (2009) Genetic diversity of microeukaryotes in Tibetan lakes differing by their salinity and altitude. *Microbial Ecology*. [Boenigk, Jens: KoautorIn]; peer-rev.indiziert lang

Xing, P., Hahn, M.W., and Wu, Q.L. (2009) Low Taxon Richness of Bacterioplankton in High-Altitude Lakes of the Eastern Tibetan Plateau, with a Predominance of Bacteroidetes and *Synechococcus* spp. *Applied and Environmental Microbiology*, Bd. 75 (22), S. 7017–7025. [Hahn, Martin: KoautorIn]; peer-rev.indiziert

B) Herausgeberschaften

(2009) *European Journal of Protistology*.: Elsevier. [Weisse, Thomas: HerausgeberIn]; indiziert

B) längere Beiträge ohne Peer-Review in Fachzeitschriften oder Sammelwerken

Leichtfried, M. (09.06.2009) Are bed-sediments in streams important? Comparison in different catchments and in different climatic zones. [Leichtfried, Maria: AlleinautorIn]; lang

Weisse, Thomas; Boenigk, Jens; Müller, Helga (2009) Ecological methods for the study of heterotrophic nano- and microplankton of fresh and marine waters. In: Röttger, Rudolf; Knight, Robert; Foissner, Wilhelm (Hrsg.), *Protozoological Monographs Vol 4: A course in Protozoology*; Aachen: Shaker Verlag, S. 232-242. [Boenigk, Jens: KoautorIn; Weisse, Thomas: HauptautorIn]; lang

C) Sonstige wissenschaftliche Publikationen

Hahn, M.W. (2009) Real-time evolution observatories in the wild . *Environmental Microbiology Reports*, Bd. 1 (1), S. 8-9. [Hahn, Martin: AlleinautorIn]; indiziert

Huber, Kerstin (2009) Late glacial climatic and palaeoecological investigations of Längsee (Austria) using diatoms and chrysophyte cysts. Doktorarbeit, Universität Wien, Universität Wien, Wien. [Huber, Kerstin: AlleinautorIn];

Okello, William (2009) Molecular and chemical characterisation of microcystin-producing cyanobacteria in Ugandan freshwater habitats. Doktorarbeit, Institute for Limnology, University of Vienna, Mondsee. [Okello, William: AlleinautorIn; Kurmayer, Rainer: RedakteurIn];

Weisse, Thomas (2009) The European Journal of Protistology – Changes, chances and challenges. *European Journal of Protistology*, Bd. 45 (3), S. 163–164. [Weisse, Thomas: AlleinautorIn]; indiziert

Diplomarbeiten

Schöttl, Patrick (2009) Embryonic development and mortality in crossing experiments of a Baltic and Alpine whitefish lineage (*Coregonus lavaretus* species complex). Diplomarbeit, Organismische Biologie, Paris Lodron University Salzburg, Salzburg. [Schöttl, Patrick: AlleinautorIn];

Dissertationen (z.T. bereits oben gelistet)

Huber, Kerstin (2009) Late glacial climatic and palaeoecological investigations of Längsee (Austria) using diatoms and chrysophyte cysts. Doktorarbeit, Universität Wien, Universität Wien, Wien. [Huber, Kerstin: AlleinautorIn];

Okello, William (2009) Molecular and chemical characterisation of microcystin-producing cyanobacteria in Ugandan freshwater habitats.

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

17. Liste

Dissertationen (z.T. bereits oben gelistet)

Doktorarbeit, Institute for Limnology, University of Vienna, Mondsee. [Okello, William: AlleinautorIn; Kurmayer, Rainer: RedakteurIn];

Lexikonartikel

Dokulil, M.T and Kaiblinger C. (2009) Phytoplankton Productivity. In: Gene E. Likens, (Editor) Encyclopedia of Inland Waters.; Oxford: Elsevier. [Kaiblinger, Christina: KoautorIn; Dokulil, Martin: HauptautorIn];

Dokulil, M.T. (2009) Comparative Primary Production. In: Gene E. Likens, (Editor) Encyclopedia of Inland Waters.; Oxford: Elsevier, S. 130-137. [Dokulil, Martin: AlleinautorIn];

18. Wissenschaftliche Vorträge und Präsentationen

	gesamt
Eingeladene wissenschaftliche Vorträge	16
· davon auf internationalen Veranstaltungen	10
· davon Internationalität nicht zuordenbar, da nicht mit Veranstaltung verknüpft	3
· davon Keynotes und Named Lectures	6
Sonstige wissenschaftliche Vorträge	11
· davon auf internationalen Veranstaltungen	9
· davon Internationalität nicht zuordenbar, da nicht mit Veranstaltung verknüpft	1
Wissenschaftliche Posterpräsentationen	11
· davon auf internationalen Veranstaltungen	11
· davon Internationalität nicht zuordenbar, da nicht mit Veranstaltung verknüpft	0

18. Liste

Eingeladene wissenschaftliche Vorträge

Boenigk, J (12.08.2009) Merging the zoological and botanical conception of the Chromista. Vortrag: Meeting of the Federation of European Biological Systematic Societies/NETHERLANDS.; Typ: Sonstiger eingeladener Veranstaltungsbeitrag (internationale Veranstaltung)

Boenigk, Jens (04.12.2009) Konzeptueller Fortschritt in der Systematik der Protisten. Vortrag: Network of Biological Systematics Austria/AUSTRIA.; Typ: Sonstiger eingeladener Veranstaltungsbeitrag

Boenigk, Jens (09.09.2009) Microalgal diversity estimates in the crossfire of evolutionary differentiation and historic misconceptions. Vortrag: Jahrestagung der Deutschen Botanischen Gesellschaft/GERMANY.; Typ: Sonstiger eingeladener Veranstaltungsbeitrag (internationale Veranstaltung)

Boenigk, Jens (23.11.2009) Conceptual progress in protistology: New perspectives for ecology, taxonomy and diversity of microeukaryotes. Vortrag: Seminar des SFB Bodenseelitoral, Universität Konstanz/GERMANY.; Typ: Sonstiger eingeladener Veranstaltungsbeitrag

Boenigk, Jens (26.10.2009) Protist diversity estimates in the crossfire of evolutionary differentiation and historic misconceptions. Vortrag: Seminar, Universität Göttingen/GERMANY.; Typ: Sonstiger eingeladener Veranstaltungsbeitrag (Internationalität nicht zuordenbar, da nicht mit Veranstaltung verknüpft)

Hahn, Martin W. (08.12.2009) Phylogeography and endemism of bacteria? Lessons from autecological studies. Vortrag: EuroMicrobe: Exploring the rationale for conservation of environmental microbial communities and associated habitats (Dr. Paul Bodelier, Netherlands Institute of Ecology)/ NETHERLANDS.; Typ: Sonstiger eingeladener Veranstaltungsbeitrag (Internationalität nicht zuordenbar, da nicht mit Veranstaltung verknüpft)

Kurmayer, Rainer (03.09.2009) Environmental monitoring of phytoplankton possibly influencing fish culturing in fish cages located at the BOMOSA sites. Vortrag: BOMOSA Final meeting 31.8.-4.9.2009/KENYA.; Typ: Sonstiger eingeladener Veranstaltungsbeitrag (internationale Veranstaltung)

Okello, William; Kurmayer, Rainer (02.11.2009) Seasonal development of cyanobacteria and microcystin production in Ugandan freshwater lakes. Vortrag: 13th World Lake Conference in Wuhan, Wuhan/CHINA.; Typ: Sonstiger eingeladener Veranstaltungsbeitrag (internationale Veranstaltung)

Stelzer, Claus-Peter (19.03.2009) Evolution von obligater Parthenogenese bei Rotatorien. Vortrag: Institutskolloquium Biologie und Umweltwissenschaften der Universität Oldenburg, Oldenburg/GERMANY.; Typ: Sonstiger eingeladener Veranstaltungsbeitrag

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

18. Liste

Eingeladene wissenschaftliche Vorträge

Stoeck, M.; Lamatsch, D.K.; Moritz, C.; Perrin, N.; Schart, M. et al. [...] (29.08.2009) Genome composition of polyploids and hybrid origin of triploids in a contact zone of diploid and tetraploid vertebrates: Palearctic green toads (*Bufo viridis* subgroup). Vortrag: 12th Congress of the European Society of Evolutionary Biology, Turin/ITALY <<http://www.eseb2009.it/uk/>>; Typ: Sonstiger eingeladener Veranstaltungsbeitrag (internationale Veranstaltung)

Eingeladene wissenschaftliche Vorträge: Keynotes and Named Lectures

Kurmayer, Rainer; Blom, Judith; Christiansen, Guntram (14.08.2009) Evolutionary loss of microcystin biosynthesis genes and the genetic population structure of toxic cyanobacteria. Vortrag: 13th International Symposium on Phototrophic Prokaryotes, Montreal/CANADA.; Typ: Named Lecture (internationale Veranstaltung)

Kurmayer, Rainer; Christiansen, Guntram (18.12.2009) Small biactive and ribosomally synthesized peptides in cyanobacteria. Vortrag: Workshop on Small biactive and ribosomally synthesized peptides in cyanobacteria., ÖAW, Dr. Ignaz Seipl Platz 2, 1010 Wien/AUSTRIA.; Typ: Keynote (Internationalität nicht zuordenbar, da nicht mit Veranstaltung verknüpft)

Ostermaier, Veronika; Kurmayer, Rainer (18.08.2009) Genotype determined microcystin net production of *Planktothrix rubescens* in alpine lakes. Vortrag: SEFS 6-Symposium on European Freshwater Sciences, Sinaia/ROMANIA.; Typ: Named Lecture (internationale Veranstaltung)

Walpole Hiranthi, Maria Leichtfried, Mala Amarasinhe and Leopold Füreder (21.08.2009) Leaf Litter Breakdown and Potential Role of Macroinvertebrates in three Leaf Species in a Sri Lankan Stream. Vortrag: SEFS 6 - The 6th Symposium for European Freshwater Sciences, Sinaia/ROMANIA.; Typ: Named Lecture (internationale Veranstaltung)

Walpole, Hiranthi, Maria Leichtfried, Mala Amarasinhe and Leopold Füreder (28.10.2009) Leaf Litter Breakdown and Potential Role of Macroinvertebrates in three Leaf Species in a Sri Lankan Stream. Vortrag: SIL Austria Meeting, Salzburg/AUSTRIA.; Typ: Named Lecture (internationale Veranstaltung)

Weisse, Thomas (13.10.2009) Water supply today and in the future. Vortrag: Joint International Conference on 'Technologically modified environment –environmentally modified technology', Karlsruhe/GERMANY.; Typ: Keynote (internationale Veranstaltung)

Sonstige wissenschaftliche Vorträge

Camacho A., A. Picazo, L. Dura and M. W. Hahn (03.09.2009) BIOTIC AND ABIOTIC FACTORS CONTROLLING THE ABUNDANCE AND DISTRIBUTION OF FILAMENTOUS SOL CLUSTER BACTERIA (SAPROSPIRACEAE, BACTEROIDETES) IN LAKES, AND THEIR ECOLOGICAL RELEVANCE. Vortrag: SAME 11th Symposium on Aquatic Microbial Ecology, Piran/SLOVENIA.; Typ: Sonstiger Veranstaltungsbeitrag (internationale Veranstaltung)

Šimek K., V. Kasalický, K. Hornák, M. W. Hahn and M.G. Weinbauer (03.09.2009) NICHE SEPARATION IN COEXISTING LIMNOHABITANS STRAINS (THE R-BT065 CLUSTER OF BETAPROTEOBACTERIA) INFERRED FROM THEIR BIOTIC INTERACTIONS WITH A COMPETITOR AND MAJOR BACTERIAL MORTALITY FACTORS. Vortrag: SAME 11th Symposium on Aquatic Microbial Ecology, Piran/SLOVENIA <<http://www.mbss.org/same11/index.php>>; Typ: Sonstiger Veranstaltungsbeitrag (internationale Veranstaltung)

Kasalický V., M.W. Hahn, J. Jezbera, J. Jezberová and K. Šimek (02.09.2009) GENETIC AND ECOPHYSIOLOGICAL DIVERSITY OF NEW ISOLATED STRAINS FROM THE R-BT SUBCLUSTER OF BETAPROTEOBACTERIA. Vortrag: SAME 11th Symposium on Aquatic Microbial Ecology, Piran/SLOVENIA <<http://www.mbss.org/same11/index.php>>; Typ: Sonstiger Veranstaltungsbeitrag (internationale Veranstaltung)

Moser, Michael; Scheffel, Ulrike; Stadler, Peter; Weisse, Thomas (27.02.2009) Flagellates at Extremely Low pH – Specialist vs. Generalist LifeStrategies. Vortrag: 28. Wissenschaftliche Jahrestagung der Deutschen Gesellschaft für Protozoologie, Naumburg (Saale)/GERMANY.; Typ: Sonstiger Veranstaltungsbeitrag (internationale Veranstaltung)

Moser, Michael; Scheffel, Ulrike; Stadler, Peter; Weisse, Thomas (27.10.2009) Konkurrenzexperimente zwischen acidophilen und neutrophilen Flagellaten – Wer ist der Sieger?. Vortrag: SIL Austria 2009, Salzburg/AUSTRIA.; Typ: Sonstiger Veranstaltungsbeitrag (internationale Veranstaltung)

Stelzer, Claus-Peter (17.08.2009) Estimates of genome size in rotifers using the flow cytometry method. Vortrag: International Rotifer Symposium XII, Berlin/GERMANY <<http://www.rotifera-xii.igb-berlin.de>>; Typ: Sonstiger Veranstaltungsbeitrag

Wanzenböck Josef, Pamminger-Lahnsteiner Barbara, Winkler Kathrin, Weiss Steven, (26.10.2009) Assisted colonisation vs. local adaptation: Break down or maintenance of species differentiation and integrity ? - the case of Alpine whitefish populations in Austria. Vortrag: SIL Austria 2009/ AUSTRIA.; Typ: Sonstiger Veranstaltungsbeitrag (Internationalität nicht zuordenbar, da nicht mit Veranstaltung verknüpft)

Weisse, Thomas; Kamjunke, Norbert; Moser, Michael; Scheffel, Ulrike; Stadler, Peter et al. [...] (27.02.2009) Significant Habitat Effects Influence Protist Fitness in Acid Mining Lakes. Vortrag: 28. Wissenschaftliche Jahrestagung der Deutschen Gesellschaft für Protozoologie/GERMANY.; Typ: Sonstiger Veranstaltungsbeitrag (internationale Veranstaltung)

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

18. Liste

Sonstige wissenschaftliche Vorträge

Weisse, Thomas; Kamjunke, Norbert; Moser, Michael; Scheffel, Ulrike; Stadler, Peter et al. [...] (29.01.2009) Habitat effects on protists adapted to extremely low pH. Vortrag: ASLO Aquatic Sciences Meeting, Nice/France.; Typ: Sonstiger Veranstaltungsbeitrag (internationale Veranstaltung)

Weisse, Thomas; Moser, Michael; Scheffel, Ulrike; Stadler, Peter; Weithoff, Guntram (27.10.2009) RÜCKKOPPLUNGSEFFEKTE WIDERLEGEN DAS 'EVERYTHING IS EVERYWHERE – THE HABITAT SELECTS' PARADIGMA. Vortrag: SIL Austria 2009, Salzburg/Austria.; Typ: Sonstiger Veranstaltungsbeitrag (internationale Veranstaltung)

Weithoff, Guntram; Moser, Michael; Weisse, Thomas (29.01.2009) Adaptation and habitat selection of rotifers in very acidic water bodies. Vortrag: ASLO Aquatic Sciences Meeting, Nice/France.; Typ: Sonstiger Veranstaltungsbeitrag (internationale Veranstaltung)

Wissenschaftliche Posterpräsentationen

Adolfsson, S.; Lamatsch, D.K.; Paczesniak, D.; Michalakakis, Y.; Jokela, J. (26.10.2009) Mitochondrial clade specific genome size variability both within diploid and triploid, sexual and asexual Eucypris virens ostracods. Posterpräsentation: Societas internationalis limnologiae Salzburg (Limnologie Mondsee, Universität Salzburg), Salzburg/Austria <<http://www.uibk.ac.at/sil-austria/pdf/programmheft.pdf>>; Typ: Sonstiger Veranstaltungsbeitrag (internationale Veranstaltung)

Adolfsson, S.; Michalakakis, Y.; Paczesniak, D.; Bode, S.N.S.; Butlin, R.K. et al. [...] (28.08.2009) Asexual range expansions of common ancestry lineages with variable ploidy. Posterpräsentation: 12th Congress of the European Society of Evolutionary Biology, Turin/Italy <<http://www.eseb2009.it/uk>>; Typ: Sonstiger Veranstaltungsbeitrag (internationale Veranstaltung)

Babanazarova, Olga; Kurmayer, Rainer (05.10.2009) Toxin analysis in phytoplankton of the highly trophic lake Nero. Posterpräsentation: The Algae: problems of taxonomy, ecology and use in the monitoring., Syktyvkar, Russia/Russian Federation.; Typ: Named Lecture (internationale Veranstaltung)

Deinhardt, M.; Lamatsch, D.K.; Jokela, J.; Taskinen, J. (28.11.2009) Gynogenesis as a dispersal strategy – parasite communities vs. genetic structure of clonal stocks of invasive Prussian carp (*Carassius gibelio*) in Finland and Germany. Posterpräsentation: 12th Congress of the European Society for Evolutionary Biology, Turin/Italy <<http://www.eseb2009.it/uk>>; Typ: Sonstiger Veranstaltungsbeitrag (internationale Veranstaltung)

Jezbera, Jan, Jitka Jezberová, Ulrike Brandt, and Martin W. Hahn (01.09.2009) UBIQUITY OF POLYNUCLEOBACTER NECESSARIUS SUBSP. ASYMBIOTICUS IN FRESHWATER HABITATS OF A HETEROGENEOUS AREA OF 2500 SQUARE KILOMETERS. Posterpräsentation: SAME 11th Symposium on Aquatic Microbial Ecology, Piran/Slovenia <<http://www.mbss.org/same11/index.php>>; Typ: Sonstiger Veranstaltungsbeitrag (internationale Veranstaltung)

Kasalický, V., Hahn, M.W., Jezbera, J., and K. Šimek (29.01.2009) EFFECT OF ALGAL EXUDATES ON CLOSELY RELATED STRAINS OF PLANKTONIC BETAPROTEOBACTERIA. Posterpräsentation: ASLO Aquatic Science Meeting 2009, Nizza/France <<http://www.aslo.org/nice2009/index.html>>; Typ: Sonstiger Veranstaltungsbeitrag (internationale Veranstaltung)

Laufenstein, Nicole; Weisse, Thomas (27.10.2009) Lebenszyklus einer acidophilen Cephalodella-Art (Rotatoria) in Abhängigkeit von pH-Wert, Temperatur und Futter-Konzentration. Posterpräsentation: SIL Austria 2009, Salzburg/Austria.; Typ: Sonstiger Veranstaltungsbeitrag (internationale Veranstaltung)

Leichtfried Maria, Hiranthi Walpola, MMala Amarasinhe and Leopold Füreder (18.08.2009) Leaf Litter Decomposition in a Low Order Tropical Stream in Sri Lanka. Posterpräsentation: The 6th Symposium for European Freshwater Sciences, Sinaia/Romania.; Typ: Named Lecture (internationale Veranstaltung)

Moser, Michael; Weisse, Thomas (29.01.2009) Flagellates at extremely low pH – specialist vs. generalist life strategies. Posterpräsentation: ASLO Aquatic Sciences Meeting, Nice/France.; Typ: Sonstiger Veranstaltungsbeitrag (internationale Veranstaltung)

Ostermaier, Veronika (27.10.2009) Zeitlicher Verlauf der Mikroevolution der Toxinsynthese bei Cyanobakterien. Posterpräsentation: SIL Tagung in Salzburg, 26-28. Oktober 2009/Austria.; Typ: Named Lecture (internationale Veranstaltung)

Wanzenböck Josef.; Pamminer-Lahnsteiner Barbara.; Winkler Kathrin.; Weiss Steven, (23.11.2009) Assisted colonisation vs. local adaptation: Break down or maintenance of species differentiation and integrity ? - the case of Alpine whitefish populations in Austria. Posterpräsentation: Evolutionary Ecology of Fishes, Berlin/Germany.; Typ: Sonstiger Veranstaltungsbeitrag (internationale Veranstaltung)

19. Schutzrechte

	gesamt
Gesamtanzahl der Patente	0
Gesamtanzahl der neu freigegebenen Softwareprodukte	0

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

19. Liste

20. Organisation wissenschaftlicher Veranstaltungen

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

20. Liste

Kongress/Symposium/Konferenz/Tagung

BOMOSA Abschluss Projektkonferenz (31.08.2009 - 04.09.2009)

Winkler, Gerold (m); (Mit)OrganisatorIn

Workshop/Seminar

Kleine bioaktive und ribosomal synthetisierte Peptide (18.12.2009 - 18.12.2009)

Christiansen, Guntram (m); (Mit)OrganisatorIn

Kurmayer, Rainer (m); (Mit)OrganisatorIn

21. Populärwissenschaftliche Veröffentlichungen

	gesamt
von Mitarbeitern veröffentlichte populärwissenschaftliche Werke	6
davon	
· sonstige populärwissenschaftliche Veröffentlichungen oder sonstige Lehrmaterialien	6

21. Liste

sonstige populärwissenschaftliche Veröffentlichungen oder sonstige Lehrmaterialien

Rainer, Kurmayer; Limnology, Austrian academy of Sciences Institute for (15.06.2009) Auslaufmodell: Toxinbildung in Blaualgen. [Kurmayer, Rainer: HauptautorIn]

Schmidt, R. and Boenigk, J. (2009) Clim-Land. In: Köck, G., Lammerhuber, L. and Piller, W.E. (Hrsg.), Planet Austria; Wien: Verlag der Österreichischen Akademie der Wissenschaften, S. 240-247. [Schmidt, Roland: HauptautorIn; Boenigk, Jens: KoautorIn]

Schmidt, R., Drescher-Schneider, R., Huber, K., and Weckström, K. (2009) Die Bedeutung des Längsees in Kärnten für die Rekonstruktion der Klima- und Seenentwicklung am Ende der letzten Eiszeit. In: Schmidt, R., Mattulla, C. Psenner R. (Hrsg.), Klimawandel in Österreich Die letzten 20.000 Jahre.. und ein Blick voraus, alpine space, S. 27-40. [Schmidt, Roland: HauptautorIn]

Schmidt, R., Kamenik, C., and Roth, M. (2009) Der Einfluss des Klimas auf die Hochlagennutzung in den südlichen Niederen Tauern (Lungau) während der letzten 4000 Jahre. In: Schmidt, R., Mattulla, C. Psenner R. (Hrsg.), Klimawandel in Österreich Die letzten 20.000 Jahre.. und ein Blick voraus, alpine space, S. 27-40. [Schmidt, Roland: HauptautorIn]

Schmidt, R., Mattulla, C. Psenner R. (Hrsg.) (2009) Klimawandel in Österreich Die letzten 20.000 Jahre.. und ein Blick voraus. In Reihe: alpine space – man & environment; Innsbruck: innsbruck university press iup. [Schmidt, Roland: RedakteurIn]

Wanzenböck, Josef (2009) Die Österreichische Akademie der Wissenschaften und ihre Rolle in der Fischforschung. Österreichs Fischerei, Bd. 62 (11/12), S. 297-302. [Wanzenböck, Josef: AlleinautorIn]

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	10
· Lehrveranstaltung an Universität	9
· Lehrgang universitären Charakters	1

23. Liste
Lehrgang universitären Charakters IPGL Kursblock "Lake Ecology - Microbial Ecology" (IPGL) (25.05.2009 - 29.05.2009), Semester: N/A Boenigk, Jens (m); ReferentIn Hahn, Martin (m); ReferentIn Lehrveranstaltung an Universität Angewandte Limnologie (07.10.2009 - 25.11.2009), Semester: Wintersemester 2009/2010 Weisse, Thomas (m); ReferentIn Evolution und Diversität (02.12.2009 - 27.01.2010), Semester: Wintersemester 2009/2010 Stelzer, Claus-Peter (m); ReferentIn Weisse, Thomas (m); ReferentIn Evolution und Diversität (VU, WS09/10, Universität Salzburg) (01.10.2009 - 31.03.2010), Semester: Wintersemester 2007/2008 Hahn, Martin (m); (Mit)OrganisatorIn GP Methoden der aquatischen Ökologie (10.03.2009 - 30.06.2009), Semester: Sommersemester 2009 Weisse, Thomas (m); ReferentIn IPGL Kursmodul, Lake Ecology & cyanobacterial toxin production (17.06.2009 - 19.06.2009), Semester: Kurmayer, Rainer (m); ReferentIn Molekulare Ökologie von Cyanobakterien-Genetische und phylogenetische Studien zur ökologischen anpassung (06.07.2009 - 10.07.2009), Semester: Sommersemester 2009 Christiansen, Guntram (m); ReferentIn Kurmayer, Rainer (m); (Mit)OrganisatorIn Ökologie und Physiologie von Canobakterien (21.12.2009 - 23.12.2009), Semester: Wintersemester 2009/2010 Kurmayer, Rainer (m); (Mit)OrganisatorIn Vorlesung Fischökologie (01.10.2009 - 31.01.2010), Semester: Wintersemester 2009/2010 Wanzenböck, Josef (m); (Mit)OrganisatorIn Vorlesung Fischökologie (01.01.2009 - 28.02.2009), Semester: Wintersemester 2008/2009

2. Tabellarische Darstellung und wissenschaftliche Kennzahlen

23. Liste

Lehrveranstaltung an Universität

Wanzenböck, Josef (m); (Mit)OrganisatorIn

24. Preise und Auszeichnungen

	gesamt
Anzahl der an Mitarbeiter(innen) vergebenen Preise und Auszeichnungen	3
Sitz der zuerkennenden Institution	
· im Inland	1
· außerhalb EU	2

24. Liste

Huber, Kerstin (w) (NW)

Preis

"Meine Forschung in die Medien, WissenschaftlerInnen schreiben Presseaussendungen", vergeben durch: dialog<>gentechnik und APA-OTS, AUSTRIA

Kurmayer, Rainer (m)

Preis

"The Ibaraki Kasumigaura Prize", vergeben durch: , JAPAN

Okello, William (m) (NW)

Preis

"The Ibaraki Kasumigaura Prize", vergeben durch: , JAPAN