

**Evaluation report on activity and goals of the
Institute for Limnology, Austrian Academy of Sciences**

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Executive summary

An international evaluation team undertook a review of the Institute for Limnology (ILIM), Austrian Academy of Sciences (AAS), facilitated by a two-day site visit, from 29 November to 1 December 2010.

The site visit provided the evaluation team with an opportunity to meet the staff (scientists, students, research assistants and administration) of ILIM and to be directly exposed to the institute activities and achievements via scientific presentations, open discussions and individual interviews. The team visited the institute temporary laboratories and offices and the unfinished ILIM reconstruction project.

The evaluation team observed a high level of research output, coordination and cooperation amongst the scientists in ILIM. The achievements of ILIM scientific community definitely define the institute as a center of excellence in the field of aquatic sciences.

ILIM focuses its research on important scientific issues in the field of aquatic ecology, particularly on changing environmental conditions in pre-alpine and alpine water bodies. This endeavor is the primary direction that unifies the ILIM scientific team.

To compensate for the gradual reduction in AAS annual support, additional leverage has been brought into ILIM research program through external project funding, initiated by the ILIM scientific team and through the enduring activities of the International Post-Graduate Training Programs in Limnology (IPGL). The recruitment of Ph.D. students and PostDocs into the primary research programs of ILIM scientists is another resourceful solution to the current financial constraint.

The evaluation team identified two primary issues that if not immediately addressed, could hinder the productive output of ILIM and jeopardize its leading position in the international aquatic scientific community. First is the housing of ILIM scientists at dispersed locations while reconstruction of the original institute proceeds only very slowly. This situation is costly in terms of rental costs, has significant potential for health and safety issues in laboratories in particular, and is affecting the international collaborations of ILIM scientists and the IPGL program. The second issue relates to lack of funding to recruit replacements for scientists who retire or are transferred elsewhere. The international evaluation team urges the Austrian Academy of Sciences to quickly address these two issues and provide long-term certainty for the activities of ILIM.

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1. Introduction

An international evaluation team comprised of the authors of this report visited the Institute for Limnology (ILIM) from 30 November to 1 December 2010 as the final part of an evaluation process of ILIM called for by the Austrian Academy of Sciences (AAS). Prior to the site visit the members of the evaluation team received various documents and reports describing ILIM activities, including the 2020 vision for ILIM activity, the final report prepared by an Anonymous Review Panel and the corresponding response of ILIM to the Anonymous Review Panel's comments.

The site visit provided the evaluation team with an important opportunity to meet the staff (scientists, students, research assistants and administrators) of ILIM and to be directly exposed to the institute activities and its achievements via scientific presentations, open discussions and individual interviews. The team visited the temporary laboratories and offices as well as the ILIM reconstruction building site.

The site visit of the evaluation team was facilitated by Mr Bernhard Plunger from the Austrian Academy of Sciences (AAS). The evaluation team wishes to thank staff and students from ILIM for their hospitality during the meeting and for the open and frank discussions that they entered into with the evaluation team. The team especially wishes to thank Professor Thomas Weisse for facilitating this atmosphere and providing every opportunity for the review panel to be fully informed of ILIM's activities. Mr Plunger is thanked for ensuring that the review went smoothly and all planned activities were achieved by the team.

2. Evaluation

2.1 Overview

The evaluation team was impressed by the achievements of the ILIM scientific community under less than optimal working conditions. The institute conforms to the AAS goals of acting as a center of excellence in the field of limnology. ILIM focuses its research on important scientific issues in the field of aquatic ecology, particularly on changing environmental conditions in pre-alpine and alpine water bodies and evolutionary adaptation of the organisms that live within these water bodies. The area of research encompassed by ILIM is deemed to be extremely important in providing an ecologically based program within the Austrian Academy of Sciences. ILIM has highly productive research relating to evolutionary adaptation of micro-organisms over a wide range of aquatic habitats across the globe. The latter research is less well encompassed within the

scientific goals articulated in the 2020 vision, but is still very valuable in the overall activities of the Institute.

ILIM should be congratulated for holding a position as a world-leading institute in the fields of aquatic ecophysiology, food web dynamics and response of aquatic ecosystems to constant or abrupt environmental changes, despite the current problems imposed by lack of funding necessary to complete its building program and obtain replacements for personnel lost through retirement or transfers.

2.2 Quality of scientific work and achievements

The recent scientific collaboration within ILIM and a teamwork approach toward common scientific goals were clearly reflected in the scientific presentations and the discussions during the evaluation visit. The evaluation team was highly impressed by the level of scientific achievements of ILIM team, by the wide coordination and collaboration amongst ILIM scientists and by their desire to work as a collective unit towards the research goals outlined in the 2020 vision document.

The institutional overview was presented by Prof. Weisse covering the main objectives of the institute, the funding sources and the internal functioning. Prof. Weisse also presented the main collaborative projects: RADICAL and DETECTIVE and gave a clear and concise presentation of the 2020 vision supplementary to the written document. This was then followed by a number of concise presentations by ILIM leading scientists and by open discussions which allowed the evaluation team to appreciate in all its extent the excellence of the science from ILIM and the interactions between the team members and with the international community. The International Post-Graduate Training Programs in Limnology (IPGL) was presented and outlined how scientific leadership is translated not only into professional student training but also into freshwater action plans in developing countries. The evaluation panel considered that this program was a valuable supplement to the core research activities of ILIM.

The evaluation panel felt, however, that the profile of the 2020 vision document could be enhanced and improved to better reflect the ground-breaking nature of the proposed research, whilst bridging the diversity of approaches (e.g. global genetic diversity in aquatic prokaryotes; paleolimnology) in the research of some of ILIM scientists.

Despite poor infrastructure and the temporarily crowded and dispersed working environment, ILIM's research activities and scientific accomplishments continued at an appreciable pace, due to successful fund-raising efforts from external sources, and flexibility of the research team. The ILIM scientists have continued over the past 1-2 years to maintain a similar publication rate to that of the past 4-5 years, despite their harsh working conditions and a significant decrease in the scientific workforce. At the same time there has been a noticeable increase in the

quality of papers based on the impact factor of journals in which ILIM papers are published.

2.3 Scientific personnel and appointments

Due to lack of funding, ILIM has not replaced, over two years, a position opened by the retirement of a phytoplankton ecologist, and has also not replaced a position created by recent loss of a stream ecologist within the past two years. The inability to replace these positions in the relatively small scientific staff constituting ILIM, imposes a significant constraint on the depth and coverage of limnology in ILIM and is not in the best interests of maintaining its excellence in its overall area of research. This constraint was partly bridged by short term (5 year contract) hiring of young scientists at the level of Post-Docs or research associates. The evaluation team was highly impressed by the quality of science presented by these newly recruited members, and expects that some of them, if not all, will establish their scientific career within ILIM. Nevertheless, the evaluation panel has identified the recruitment of leading scientists in the field of aquatic molecular ecology and bioinformatics as a primary necessity in order to support the vision outlined in its 2020 document. These appointments should, where possible, be aligned with the development of advanced technologies for *in situ* monitoring and for basic research of aquatic organisms, their cellular processes and genetic regulation.

2.4 Building infrastructure

The long delay in the completion of the institute reconstruction and renovation, hampers the activity of ILIM and jeopardizes its leading position in the international aquatic scientific community. It appears that AAS has a major responsibility to immediately raise the additional funds needed to complete the reconstruction of ILIM and to resume normal working conditions at the institute. The evaluation team congratulates ILIM, however, for maintaining its level of productivity under these compromised conditions, but notes several serious issues that are likely to become more acute if ILIM staff and students cannot be accommodated soon in a fully renovated building on the original site. These issues include:

- Compromised health and safety practices. The evaluation team witnessed first-hand the extreme crowding, mixed lab/office space and extreme warm temperatures that scientists and other employees were exposed to. These conditions have potential for both acute and chronic effects on staff health.
- The lack of a seminar room means that common practice of hosting foreign and local students for seminars and workshops is not taking place, potentially compromising the activity of the International Post-Graduate Training Programs in Limnology (IPGL) and the normal recruitment processes for postgraduate students.
- There is no capacity to host visiting scientists – an important part of facilitating the regional and international connectedness of ILIM.

- There is a costly rental (approx. €100,000 p.a.) paid on the temporary buildings currently being used by ILIM while the reconstruction process takes place with no haste.
- The dispersed location of ILIM, with staff and students accommodated in geographically dispersed locations around Mondsee, has made it more difficult to maintain a closely connected collaborative working environment that optimizes the productivity of ILIM scientists and allows ready access to the primary field site of Lake Mondsee.
- Certain pieces of equipment and many library items are in storage or their operation is compromised (e.g., computer servers which would normally be housed in air conditioned rooms) by the current temporary arrangement.
- The laboratory space rented is far away from the minimum requirements of a laboratory, in some cases with no running water or sinks, which makes the space hardly functional as a laboratory.

2.5 Relationship with the society and publicity

It became apparent to the evaluation team that there is a limited recognition of the research activities and scientific expertise of ILIM scientists by the general Austrian public, by local and governmental authorities and officers. It is expected that the deep understanding of basic aquatic processes gained by ILIM personnel will reach the public attention and attract cooperation with environmental authorities and commercial endeavors. In fact, most of the basic knowledge acquired by the ILIM personnel could be very relevant for some of the legal and management aspects in accordance with the European Water Framework Directive or the European Bathing Waters Directive.

The important efforts that some members and the institution itself have put for some decades on international cooperation, particularly postgraduate education in aquatic sciences, is remarkable and has to be considered as an important and very successful scientific and educational activity of ILIM. The present conditions of the infrastructure at ILIM obviously reduce the management and tuition capacity of ILIM personnel and hamper their ability to maintain the high standards of the IPGL program.

2.6 Advisory Board

ILIM benefits through its interactions with an international scientific advisory board (SAB) that actively responds to the institute's achievements and is involved in defining new directions and long term goals. The activity of the SAB is deeply appreciated by ILIM personnel who have responded positively to recommendations, suggestions and criticism from the SAB. The evaluation team finds this interaction of importance but suggests that it is maintained at a frequency which balances scientific work and planning requirements.

3. Recommendations

- 3.1. The productive activities of ILIM in the field of limnology and aquatic ecology should be fully supported and further strengthened based on scientifically sound objectives presented in the ILIM 2020 vision, implementation of advanced technologies and high quality academic achievements.
- 3.2. The evaluation team urges AAS to raise necessary funds and set a timeline for completion of the ILIM building reconstruction. This new building will provide an environment that will optimize the excellent scientific activity within ILIM and fully support the AAS agenda of supporting outstanding research.
- 3.3. Recruitment of already established leading scientists or young promising ones to further assure high quality research and accomplishment of ILIM's goals is highly recommended as clearly stated in the 2020 vision document. The evaluation team recommends that AAS provides at least sufficient funding to allow ILIM to replace the position created by the previous retirement of a scientist. The AAS should also consider providing longer term budget forecasts that would allow ILIM to identify and plan for future scientific appointments and equipment and allow it to maintain a minimum critical number of scientists that would reasonably support the activity required to fulfill the long term goals
- 3.4. It is recommended to improve the publicity of ILIM activity at different professional levels and to various public sections (schools, students, politicians, decision makers, environment organizations, funding agencies and general public).
- 3.5. The evaluation team finds the close working relationship between ILIM and the International Advisory Board of prime importance. The ILIM annual report could be prepared just prior to the Advisory Board Annual meeting to improve the impact and efficiency of this cooperation.