

Ecology

**Faculty of Earth and Life Sciences,
Vrije Universiteit Amsterdam**

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Project number: Q0522

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This report was finalized on 2 March 2016

Report on the master's programme Ecology of Vrije Universiteit Amsterdam

This report takes the NVAO's Assessment Framework for Limited Programme Assessments as a starting point (19 December 2014).

Administrative data regarding the programme

Master's programme Ecology

Name of the programme:	Ecology
CROHO number:	60607
Level of the programme:	master's
Orientation of the programme:	academic
Number of credits:	120 EC
Specializations or tracks:	Ecology and Evolution Environmental Chemistry and Toxicology
Location(s):	Amsterdam
Mode(s) of study:	full time
Language of instruction:	English
Expiration of accreditation:	06-07-2017

The visit of the assessment panel Biology to the Faculty of Earth and Life Sciences of Vrije Universiteit Amsterdam took place on 17-18 December 2015.

Administrative data regarding the institution

Name of the institution:	Vrije Universiteit Amsterdam
Status of the institution:	publicly funded institution
Result institutional quality assurance assessment:	conditionally positive

Composition of the assessment panel

The NVAO has approved the composition of the panel on 21 September 2015. The panel that assessed the master's programme Ecology consisted of:

- Prof. dr. Jan Kijne (chair), Professor emeritus of BioScience, Leiden University;
- Prof. dr. Ton Bisseling (vice-chair), Professor of Molecular Biology, Wageningen University;
- Prof. dr. Jos Verhoeven, Professor emeritus of Landscape Ecology, Utrecht University;
- Dr. Andries ter Maat, Research Scientist, Max Planck Institute for Ornithology;
- Jeffrey Verhoeff BSc. (student member), master's student Biology and Animal Sciences, Wageningen University.

The panel was supported by drs. José van Zwieten, who acted as secretary.

Appendix 1 contains the curricula vitae of the panel members.

Working method of the assessment panel

The assessment of the master's programme Ecology of Vrije Universiteit Amsterdam is part of a cluster assessment. From June 2015 until January 2016, the panel assessed a total of twenty-three programmes at seven universities.

The panel consisted of thirteen members:

- Prof. dr. Jan Kijne (chair), Professor emeritus of BioScience, Leiden University;
- Prof. dr. Ton Bisseling (vice-chair), Professor of Molecular Biology, Wageningen University;
- Prof. dr. Maarten Frens, Professor of Systems Physiology, Erasmus University Rotterdam;
- Prof. dr. Marieke van Ham, Professor of Biological Immunology, University of Amsterdam;
- Prof. dr. Paul Hooykaas, Professor of Molecular Genetics, Leiden University;
- Dr. Andries ter Maat, Research Scientist, Max Planck Institute for Ornithology;
- Dr. Maarten van der Smagt, Associate Professor of Experimental Psychology, Utrecht University;
- Prof. dr. Joost Teixeira de Mattos, Professor of Quantitative Microbial Physiology, University of Amsterdam;
- Prof. dr. Herman Verhoef, Professor emeritus of Soil Ecology, Vrije Universiteit Amsterdam;
- Prof. dr. Jos Verhoeven, Professor emeritus of Landscape Ecology, Utrecht University;
- Prof. dr. Rens Voeselek, Professor of Plant Ecophysiology, Utrecht University;
- Pieter Munster MSc. (student member), policy officer at Leiden University and graduate of the master's programme Cancer, Genomics & Developmental Biology, Utrecht University;
- Jeffrey Verhoeff BSc. (student member), master's student Biology and Animal Sciences, Wageningen University.

For every site visit, a (sub)panel was composed, based on the expertise and availability of panel members, thereby preventing possible conflicts of interests. Panels regularly consisted of five or six members. In order to enhance consistency of assessment within the cluster, professor Kijne acted as chair during all seven site visits. Coordinator of the cluster assessment Biology is dr. Kees-Jan van Klaveren, employee of QANU. He acted as secretary of the panel at Wageningen University and Utrecht University. He was also present during the final meetings of the five other site visits and read and commented upon each draft report in order to safeguard consistency of assessment. Drs. José van Zwieten, freelance employee of QANU, acted as secretary of the panel at Leiden University, Radboud University Nijmegen, the University of Groningen, the University of Amsterdam and Vrije Universiteit Amsterdam. In Groningen dr. Fiona Schouten, employee of QANU, acted as second secretary to the panel.

Preparation

The panel held a preliminary meeting on May 22, 2015. During this meeting the panel was instructed about the accreditation framework and the programme of the upcoming assessments. Furthermore, the panel discussed its working methods in preparation to and

during the site visits. A vice-chair was appointed and the Domain Specific Frameworks for Biology and Psychobiology were discussed.

To prepare the contents of the site visits, the coordinator first checked the quality and completeness of the critical reflections prepared by the programmes. After establishing that the reports met the demands, they were forwarded to the participating panel members. The panel members read the reports and formulated questions and findings on their contents.

Next to the critical reflections, the panel read a selection of fifteen theses per programme. The theses were chosen by the chair of the panel from a list of graduates of the last two completed academic years within a range of grades.

Site visit

A preliminary programme of the site visit was made by the coordinator and adapted after consultation of the contact person at Vrije Universiteit Amsterdam. The time table for the visit in Amsterdam is included as Appendix 5.

Prior to the site visit, the panel asked the programmes to select representative interview partners. During the site visit, meetings were held with panels representing students and teaching staff, institute management, programme management, alumni, the Programme Committee and the Board of Examiners.

During the site visit, the panel examined material it had requested; an overview of this material is given in Appendix 6. The panel provided students and lecturers with the opportunity – outside the set interviews – to speak informally to the panel during a consultation hour. No requests were received for this option.

The panel used the final part of the visit for an internal meeting to discuss its findings. The visit was concluded with a public oral presentation of the preliminary impressions and general observations by the chair of the panel.

Report

Based on the panel's findings, the secretary prepared a draft report. This report was then presented to the panel members involved in the site visit. After implementing their comments and receiving approval, the draft report was sent to Vrije Universiteit Amsterdam with the request to report any factual inaccuracies. The comments received were discussed with the panel's chair. Subsequently, the final report was approved and sent to Vrije Universiteit Amsterdam.

Decision rules

In accordance with the NVAO's Assessment framework for limited programme assessments, the panel used the following definitions for the assessment of both the standards and the programme as a whole.

Generic quality

The quality that can reasonably be expected in an international perspective from a higher education bachelor's or master's programme.

Unsatisfactory

The programme does not meet the current generic quality standards and shows serious shortcomings in several areas.

Satisfactory

The programme meets the current generic quality standards and shows an acceptable level across its entire spectrum.

Good

The programme systematically surpasses the current generic quality standard.

Excellent

The programme systematically well surpasses the current generic quality standard and is regarded as an international example.

Summary judgement

The master's programme Ecology aims at providing students with the knowledge, skills and insights required to operate as an independent professional in the field of Ecology. Students become qualified for a PhD position or another research-related function in a fundamental or applied ecological field. Students should develop a critical and ingrained scientific attitude and an awareness of the ethical and societal aspects of ecology and environmental biology. The programme offers an Ecology & Evolution (E&E) track and an Environmental Chemistry and Toxicology (ECT) track. Due to lack of students choosing this second specialization, this latter track will be terminated after graduation of the 2015-2016 cohort. According to the panel, the intended learning outcomes of the master's programme Ecology are in line with (inter)national requirements and show a strong research focus. However, the different sets of learning outcomes do not yet reflect the development towards New Biology. The panel encourages the programme to develop learning outcomes that more accurately reflect the programme's vision on its unique research profile, with regard to both fundamental and applied science.

The master's programme in Ecology is a two-year-programme that consists of 120 EC. Students compose their individual study path. Each track consists of obligatory courses, elective courses, two research projects and a literature thesis. Both tracks share two core courses: Scientific writing in English and Experimental design and Analysis (addressing advanced statistics).

The panel has established that the curricula of the two research tracks offer students adequate opportunities for academic specialisation. Courses provide students with state-of-the-art knowledge and research skills in the field of ecology. Students also develop their academic skills in scientific writing and advanced statistics, which prepares them well for their research projects. The panel is convinced that students could benefit from a course where advanced research topics in the broader field of biology are addressed. Acting as temporary members of the research group, students are well guided while developing themselves as independent researcher. The courses and research projects take place in very good research environments. The panel concludes that the programme does not offer clearly defined opportunities to students for orientation on applied sciences and ecology-related careers outside academia, and urges the programme to develop a solid vision in this matter, in concert with the colleagues of the UvA.

The programme uses a variety of teaching methods: lectures, symposia, field work, group assignments and individual research projects. According to the panel, these are adequate didactic practices for a master's programme in ecology. The panel considers the symposium-simulation in the course 'Ecotoxicology and Water' of the ECT-track a *best practice* of academic skills training.

The panel established that the programme is feasible but demands good planning skills from students. They are well-supported in this by the programme coordinator, but until now this has not resulted in favourable success rates. The programme is delivered by qualified and highly motivated staff members. According to the panel the student-staff ratio is good. Students have access to adequate study and research facilities.

The panel concludes that the master's programme has an adequate assessment system in place. It considers that the programme uses various types of assessments that match the respective learning objectives of the different programme components.

The panel concludes that the Examination Board has established adequate procedures that safeguard the quality of testing and assessment. Furthermore, the assessments of literature theses and research projects are well organized. The panel also concludes that proper measures have been taken to raise awareness about the quality of assessment among examiners and to support them with the implementation of the assessment system.

After studying a sample of final reports, the panel establishes that students realise the intended learning outcomes of the master's programmes in Ecology. The final reports show an adequate and high academic level, representative of a (very) good research environment and not rarely resulting in publication in academic peer-reviewed journals. Based on the performance of alumni the panel concludes that the programme prepares students well for an academic position on the labour market.

The panel assesses the standards from the *Assessment framework for limited programme assessments* in the following way:

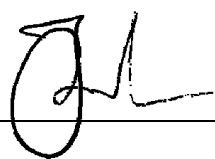
Standard 1: Intended learning outcomes	satisfactory
Standard 2: Teaching-learning environment	good
Standard 3: Assessment	good
Standard 4: Achieved learning outcomes	good
General conclusion	good

The chair and the secretary of the panel hereby declare that all panel members have studied this report and that they agree with the judgements laid down in the report. They confirm that the assessment has been conducted in accordance with the demands relating to independence.

Date: 2 March 2016



Prof. dr. Jan Kijne



Drs. José van Zwieten

Description of the standards from the Assessment framework for limited programme assessments

The master's programme Ecology of the Vrije Universiteit Amsterdam (VU) is organized by the graduate school 'Earth, Ecological and Environmental Sciences' of the Faculty of Earth and Life Sciences. The Director of Education is head of the graduate schools. Daily management of the programme is delegated to the director of studies, who is supported by the master coordinator. The programme has a Programme Committee that monitors the quality of education. The Faculty Board has appointed an overarching Faculty Examination Board covering all programmes and dealing with more general issues and policy of the programmes. Every programme, including the master's programme Ecology, has its own sub-committee, the Programme Examination Board.

Standard 1: Intended learning outcomes

The intended learning outcomes of the programme have been concretised with regard to content, level and orientation; they meet international requirements.

Explanation:

As for level and orientation (bachelor's or master's; professional or academic), the intended learning outcomes fit into the Dutch qualifications framework. In addition, they tie in with the international perspective of the requirements currently set by the professional field and the discipline with regard to the contents of the programme. Insofar as is applicable, the intended learning outcomes are in accordance with relevant legislation and regulations.

Findings

The Consultative Body of Higher Educational Teaching in Biology ('Overlegorgaan Hoger Onderwijs Biologie', OHOB), in which all academic degree programmes in the Netherlands are represented, has drawn up the Domain-Specific Frameworks of Reference (hereafter the Frameworks) for academic bachelor's and master's programmes in Biology. This document demarcates the domain of Biology, and touches upon the transition towards New Biology. The past focus on mono-subdisciplines has shifted towards integration of scientific disciplines and requires competence in dealing with the dynamics and complexity of life as a network, from molecules to ecosystems. The Frameworks provide a set of general requirements for academic bachelor's and master's programmes in biology.

The panel has studied the Frameworks, and notes that their general requirements correspond with the internationally accepted Dublin descriptors. In terms of contents, the requirements also encompass what might be expected of an academic bachelor's or master's programme in biology. The panel appreciates the fact that New Biology is mentioned in the Frameworks. However, it notes that New Biology and the corresponding scientific attitude have not yet been translated into concrete requirements for academic degree programmes. The panel expects that in the next revision of the document, the integrative and interdisciplinary nature of biology will be recognised in the general requirements.

According to the critical reflection, the master's programme Ecology aims at providing students with the knowledge, skills and insights required to operate as an independent professional in the field of Ecology. Students become qualified for a PhD position or another research related function in a fundamental or applied ecological field. Students should develop a critical and ingrained scientific attitude and an awareness of the ethical and societal aspects of ecology and environmental biology.

The programme offers an Ecology & Evolution (E&E) track and an Environmental Chemistry and Toxicology (ECT) track. Due to lack of students choosing this second specialization, the latter track will be terminated after graduation of the 2015-2016 cohort. Although the panel understands this decision, it regrets that this track was not able to attract more students. According to the panel, the quality of the curriculum of this track is very high, and the profile offers students the chance to obtain interdisciplinary knowledge and experience in an ecological subdomain with promising perspectives in applied research and with a clear societal context.

The programme has identified twenty intended learning outcomes (See appendix 3) that are related to the international Dublin Descriptors. According to the panel, the intended learning outcomes describe in detail the set of knowledge and skills students need to obtain. The panel concludes that they are in agreement with the Frameworks as well as the international Dublin descriptors. The focus of the programme on ecology gives it a clear profile within the domain of biology programmes. However, the panel would welcome a VU-specific approach of this profile in the intended learning outcomes. Also, the intended learning outcomes do not refer to New Biology. The panel suggests that incorporation of such an important development within the academic field would strengthen the research profile of the programme. The panel concludes that the outcomes are appropriate to a master's programme: after graduation from one of these programmes, students have become academics who are able to set up and conduct research. They display an academic attitude in dealing with societal demands placed on their work and position.

Considerations

According to the panel, the intended learning outcomes of the master's programme Ecology are in line with (inter)national requirements and show a strong research focus. However, the different sets of learning outcomes do not yet reflect the development towards New Biology. The panel encourages the programme to develop learning outcomes that more accurately reflect the programme's vision on its unique research profile.

Conclusion

Master's programme Ecology: the panel assesses Standard 1 as 'satisfactory'.

Standard 2: Teaching-learning environment

The curriculum, staff and programme-specific services and facilities enable the incoming students to achieve the intended learning outcomes.

Explanation:

The contents and structure of the curriculum enable the students admitted to achieve the intended learning outcomes. The quality of the staff and of the programme-specific services and facilities is essential to that end. Curriculum, staff, services and facilities constitute a coherent teaching-learning environment for the students.

Findings

The panel has studied the curriculum of the master's programme Ecology. The panel has read course materials, reports of relevant committees and study information on the digital learning environment Blackboard. This standard starts with the findings concerning the content and structure of the curriculum. Next, some findings on the feasibility, staff, quality assurance and facilities of the programmes are described.

Curriculum

The master's programme in Ecology is a two-year-programme that consists of 120 EC. Students compose their individual programme. Each track (E&E and ECT) consists of obligatory courses (18-30 EC), elective courses, two research projects (minimum of 30 EC per project) and a literature thesis (12 EC). Both tracks share two core courses: Scientific writing in English and Experimental design and Analysis (addressing advanced statistics).

The *E&E track* refers to fundamental and applied knowledge and research in biodiversity and ecosystem dynamics. It addresses the ecological and evolutionary relationships between living organisms, the extinction and evolution of species and the functioning of ecosystems at all levels of organization. The curriculum is delivered in close collaboration with the master's programme Biological Sciences of the University of Amsterdam (UvA): staff members of both universities contribute to the courses and the supervision of research projects. According to the panel, this collaboration adds up to a very good research environment in which students can learn from and work on high-level research projects in the field of ecology.

The track has a core of four compulsory courses, one of them being a choice of two courses. The panel studied course materials and established that these are of good quality and clearly demonstrate the master's level of this track. The course 'Masterclasses in Ecology & Evolution' provides students with insights in current research developments in this field of study, by offering them lectures of different active researchers. Students prepare each masterclass by reading articles. They discuss their questions for the lecturer with the teacher of this course and their fellow students. After attending the masterclass they have a discussion session with the lecturer. The panel considers this a stimulating approach for students functioning in a research environment.

The *ECT track* (that will be terminated, as explained in Standard 1) combines environmental chemistry with environmental toxicology. It addresses the sources and fate of chemicals as well as their environmental partitioning and transport, degradation and deposition. The toxicology dimension deals with the effects of chemicals on wildlife and human health. The panel considers this track an outstanding example of integrating advanced research developments on the frontiers of two disciplines and applying this scientific knowledge to current societal issues.

The track starts with core courses that equalize the knowledge and skills of students entering the programme from different bachelor programmes (Biology or Chemistry); all students participate in these courses that introduce this interdisciplinary research domain. The panel established that in these courses, students with a biology background are well equipped with additional chemistry knowledge and skills. All students also participate in the 'Ecotoxicology and Water Quality' course. This course setup has the format of a scientific symposium. The course starts with practicals where students learn the most important toxicological testing methods. They present their results on posters in a symposium setting. The second half of the course, students host lectures by experts in the water quality research field. The panel is very positive about this course: the format is very stimulating, it combines and integrates the teaching of practical skills with an introduction to academic and societal applications of these skills. The format and content of this course could be used as an example for other curricula, even after the ECT track will be terminated.

The first research project performed by students of any of the tracks usually takes place within a research group in or related to the programme's own Faculty of Earth and Life Sciences or at the Faculty of Science at the UvA. Students select their own topic and group based on their own interest and specialization. The student is embedded in the research group and becomes a 'real' member. In the eyes of the panel, this structure allows students to acquire the necessary research experience in a setting that is both safe and challenging.

The second research project can be performed at an external institute. Almost half of the students go abroad for their second project. The panel considers this final project an important opportunity for students to demonstrate that they have acquired the intended learning outcomes of the programme.

With regard to this second research project, the panel wishes to address a concern. The panel has established that the programme prepares students well for a career in research environments. Students with ambitions outside the academic world however are not equipped with relevant specific experience and networks in that direction. The programme does not offer study paths directed towards science-based business, policy or communication. The second research project could be a valuable opportunity for students to obtain experience outside academic research. From its conversations with students and staff members, the panel concluded that – although not entirely impossible – this is not solidly facilitated by the programme. The programme wants to maintain high academic standards for all research projects and therefore does not easily approve projects outside the university. The panel agrees that safeguarding the level and academic character of projects is important. However, it urges the programme to find ways and contacts that give students opportunities to gain experience in a professional non-academic environment. According to the panel, the intended learning outcome of the programme that 'graduates can make a well-considered choice for a specialized PhD trajectory or other position at the labour market' can be better translated in the curriculum. Having said this, the panel is aware that within the Faculty of Earth and Life Sciences students can opt for society-oriented master's programmes such as *Management, Policy Analysis and Entrepreneurship in the Health and Life Sciences*, *Environment and Resource Management*, or the university teacher training programme in Biology. Also, given the close collaborations with the UvA, the panel expects that the issue can be solved by allowing students to take one of the society-oriented tracks offered within the UvA-master's programme Biological Sciences.

As mentioned above, the panel concludes that the curriculum prepares students well for a career in research environments. The programme is well structured in line with what could be

expected of a master's programme. It has a good balance of course work, electives and research projects. The panel suggests that a course addressing the state-of-the-art in modern biological research would be a good addition in the master's programme in order to provide students with a broader perspective on research in biology before or during specializing in their track. The cooperation with the UvA offers sufficient opportunities for such an initiative.

Feasibility and study guidance

Efficiency statistics in the critical reflection demonstrate that few (only 64%) students succeed in getting their diploma within three years. It must be noted that, given the programme's relatively small cohort sizes, statistics are not a very reliable tool to measure study success. Discussions during the site visit did not give the panel a complete grasp of the causes of these study delays. It did not observe any issues that prevent students from sticking to their study planning. The programme coordinator has close contacts with students and helps them with the organization of their study path. Students are very satisfied with this study guidance. The panel also established that students are supported well in the planning and approach of research projects, by a manual and by assessment procedures, including Go-No go decisions. The panel concludes that the programme is feasible.

Staff

The programme is delivered by active researchers from the research institutes Systems Ecology, Animal Ecology and Chemistry and Biology. The E&E track is partly delivered by UvA staff members, who are also active researchers. Almost all staff members hold a PhD and a teaching qualification (BKO). The quality of ecological research at the VU has been assessed as very good or even excellent during the 2012 QANU Research Review Biology, as is the related research from the life science institutes at the UvA. Biology education and especially master's education is directly derived from research, and the panel established that education at the VU is delivered by excellent and active researchers. The panel concludes that the quality of the teaching staff is good.

The staff-student ratio is 1:6. According to the panel this is clearly sufficient to realize small scale education. Students confirm this, they mention that they appreciate the commitment and the availability of staff members.

Programme specific quality assurance and facilities

During the site visit, the panel had a conversation with the Programme Committee Ecology (PC). The PC consists of a representation of staff members and students. The interview made clear that the PC is sufficiently involved in the master's programme and is monitoring the quality of education by course evaluations. The panel stimulates the PC to pro-actively advise the Director of Studies or Dean about possible improvements of design and content of the programme, in close collaboration with the corresponding PC of the UvA.

During the visit, the panel had a tour through some of the educational facilities. The panel established that there are adequate laboratory facilities and study- and lecture rooms. The panel was pleased to notice that students have access to the facilities of the excellent research institutes. The panel concludes that there are good facilities for both the courses and the research internships.

Considerations

The panel has established that the curricula of the two research tracks offer students adequate opportunities for academic specialisation. Courses provide students with state-of-the-art knowledge and research skills in the field of ecology. Students also develop their academic skills in scientific writing and advanced statistics, which prepares them well for their research projects. The panel is convinced that the students could benefit from a course where advanced research topics in the broader field of biology are addressed. Acting as temporary members of the research group, students are well guided while developing themselves as independent researcher. The courses and research projects take place in very good research environments. The panel appreciates the academic research-oriented standards of the programme, but observes that especially the E&E track lacks properly defined educational opportunities to students for training in ecology-related applied sciences in preparation for a career outside university. It urges the programme to solve this problem in concert with the colleagues from UvA.

The programme uses a variety of teaching methods: lectures, symposia, field work, group assignments and individual research projects. According to the panel, these are adequate didactic practices for a master's programme in ecology. The panel considers the symposium-simulation in the course 'Ecotoxicology and Water of the ECT-track a *best practice* of academic skills training.

The panel established that the programme is feasible but demands good planning skills from students. They are well-supported in this by the programme coordinator, but until now this has not resulted in favourable success rates. The programme is delivered by qualified and highly motivated staff members. According to the panel the student-staff ratio is good. Students have access to adequate study and research facilities.

Conclusion

Master's programme Ecology: the panel assesses Standard 2 as 'good'.

Standard 3: Assessment

The programme has an adequate assessment system in place.

Explanation:

The tests and assessments are valid, reliable and transparent to the students. The programme's examining board safeguards the quality of the interim and final tests administered.

Findings

The critical reflection describes the assessment policy and vision of the Ecology programme. At faculty level, there are frameworks for assessment policy and a manual 'Testing and Evaluating' for teachers. The programme has made its assessment policy more concrete in an Assessment Plan and the Education and Examination Regulations.

According to the critical reflection, peer-review always takes place when assessments are drafted. All courses have assessment matrices, describing how learning objectives are covered in the course and in the examination. The assessments that have been studied by the panel are of good quality. The programme uses various forms of assessment and the panel has established that students receive sufficient feedback on their work. Most courses are tested with assignments, papers and/or presentations. The panel has observed that the assessment methods are in line with the learning objectives.

The faculty has appointed an expert to assist in designing assessment matrices and to evaluate the assessment quality of courses. Designing assessments is also part of the BKO training programme. The panel is impressed with the assessment policy. During the interviews with teachers the panel has learned that the policy has also landed well in their daily teaching practice.

The panel is also positive about the assessment of research projects and literature theses. Besides the use of assessment forms, two different staff members independently assess projects, which enhances transparency and reliability. At the start of the project, students submit their research proposal for approval by the master coordinator. The structure and assessment of research projects is described in manuals. The panel observed that students receive extensive feedback on their research projects. The project records are well in order. The panel concludes that with these measures, the programme ensures that students finish their programme with a challenging research project that serves as a good opportunity for students to show their aptitude for academic research. However, the panel finds it remarkable that the ratings of the first and second assessor may differ two grade points. The panel favours a critical limit of one and a half points difference in ratings of the first and second assessor. How small the difference with the present situation may seem, students deserve a solid judgement of their performance. A notable difference of opinion should be cleared up, be a reason for discussion between the two assessors and, if necessary, for engagement of an independent third examiner.

The Ecology Programme Examination Board functions as a sub-committee of the Faculty Examination Board. The Programme Examination Board is responsible for specific requests from students from the Ecology programme, such as the approval of electives. The Ecology Examination Board also takes random samples of research reports. Assessment policy and assessment quality is the responsibility of the Faculty Examination Board. It has installed an Assessment Committee that randomly evaluates the quality of exams and advises on possible improvements. If graduation rates or course evaluations give rise to specific concerns, the Assessment Committee will also check assessments of the courses involved.

The panel concluded that the assessment system and its quality assurance have been given a clear and professional interpretation by both the programme management, the Examination Board and by teachers.

Considerations

The panel concludes that the master's programme has an adequate assessment system in place. It considers that the programme uses various types of assessments that match the respective learning objectives of the different programme components.

The panel concludes that the Examination Board has established adequate procedures that safeguard the quality of testing and assessment. Furthermore, the assessments of literature theses and research projects are well organized. The panel also concludes that proper measures have been taken to raise awareness about the quality of assessment among examiners and to support them with the implementation of the assessment system.

Conclusion

Master's programme Ecology: the panel assesses Standard 3 as 'good'.

Standard 4: Achieved learning outcomes

The programme demonstrates that the intended learning outcomes are achieved.

Explanation:

The level achieved is demonstrated by interim and final tests, final projects and the performance of graduates in actual practice or in post-graduate programmes.

Findings

According to the critical reflection, the achieved learning outcomes of the master's programme Ecology are demonstrated by the second research project. In order to gain an impression of the level achieved, the panel read final reports of fifteen students from the 2013-2014 and 2014-2015 cohorts. The theses take the form of research reports or internship reports. The panel also studied the accompanying assessment forms.

The panel established that the academic level demonstrated in the final reports of Ecology students is generally high and in some cases even excellent. Reports from the ECT track stand out with a consistently high performance. All students clearly demonstrate the ability to perform research at a master's level. The reports demonstrate adequate theoretical knowledge and experimental skills of the students. The grades of the final products awarded by the examiners generally match the grades of the panel. The panel was pleased to observe that, thanks to a thorough check of each research proposal by the master coordinator, all projects have an evidently academic character, enabling students to fully show their qualities in academic research.

The critical reflection elaborates on further evidence of the final level of graduates. Not rarely students contribute to publications in peer-reviewed journals. According to the panel this shows the programme's good performance in terms of achieved learning outcomes. An alumni survey pointed out that 38% of the responding graduates have taken a position as PhD, most of the others work in education, consultancy, non-PhD research, policy and management. The panel considers these numbers as representative for the field.

Considerations

After studying a sample of final reports, the panel establishes that students realise the intended learning outcomes of the master's programmes in Ecology. The final reports show a high academic level, not rarely resulting in publication in academic peer-reviewed journals. Based on the performance of alumni the panel concludes that the programme prepares students well for an academic position on the labour market.

Conclusion

Master's programme Ecology: the panel assesses Standard 4 as good

General conclusion

The panel concludes that the learning outcomes of the programme meet the (inter)national demands. The programme is organised in coherent and research-driven tracks that offer students good opportunities for specialisation. The panel advises that the programme takes measures to provide students with well-defined opportunities for training in ecology-related professional environments outside academia. Staff and facilities provide for a good research environment. The panel was impressed with the assessment system in place. The final reports and performance after graduation show that the programme realises a high academic level. In line with the decision rules for limited programme assessments, the panel assesses the quality of the programme as good.

Conclusion

The panel assesses the *Master's programme Ecology* as 'good'.

Appendices

Appendix 1: Curricula Vitae of the members of the assessment panel

Prof. dr. J.W. (Jan) Kijne is Professor emeritus of BioScience at Leiden University. He studied Biology in Leiden and obtained his PhD in 1979 under supervision of Prof. Ton Quispel. In his dissertation Kijne studied the symbiotic nitrogen-fixing root nodules of the pea, a theme which remained a main focus in his further research. He was Professor of Fytotechnology (in collaboration with TNO, 1994-1997), Plant Physiology (1997-2006) and BioScience (2006-2010) in Leiden, and visiting Professor of Microbiology at the University of Tromsø, Norway (1995-2000). At Leiden University Kijne also acted as programme director Biology (1996-2002), as vice-dean of the Faculty of Science holding the Education Portfolio (2002-2008), and as Academic Director of the Pre-University College (2004-2008). In 2009-2010, Kijne was chair of the panel that assessed nineteen programmes in Biology at five Dutch universities. Students elected him as a Teacher of the Year in Biology and Life Science & Technology.

Prof. dr. A.H.J. (Ton) Bisseling is Full Professor and head of the Laboratory of Molecular Biology at Wageningen University. He studied Biology in Nijmegen and obtained his PhD at the Department of Molecular Biology of Wageningen University. After holding a number of scientific positions there, he was appointed to his current chair of Molecular Biology in 1998. Bisseling is member of numerous Editorial Boards of international journals, including *Plant Biology* and *Science*. Bisseling is member of the Royal Netherlands Academy of Arts and Sciences, and member of its Council for Earth and Life Sciences.

Prof. dr. J.T.A. (Jos) Verhoeven is Professor Emeritus of Landscape Ecology at Utrecht University. He studied Biology at Nijmegen University, where he obtained a PhD for his research on the ecology of Ruppia-dominated communities in Western Europe. Verhoeven continued his scientific career at Utrecht University, where he was appointed as Full Professor Landscape Ecology. Verhoeven is well experienced in academic education, and held several representative and management positions. Among other things, he was chair of the education committee of the master's programme Environmental Biology and member of the Board of the Education Institute Biology. Verhoeven is member of the Editorial Board of *Ecological Engineering* and associate editor of *Wetlands*, was invited (key-note) lecturer at dozens of national and international seminars, symposia and conferences, and he was promotor of 22 PhD candidates.

Dr. A. (Andries) Ter Maat is research scientist and group leader Neurophysiology of the Department of Behaviour Neurobiology at the Max Planck Institute for Ornithology in Seewiesen (Germany). He studied Biology at VU University Amsterdam, where he also obtained a PhD in Neurosciences. After a position as researcher at ZWO (predecessor of the Netherlands Organisation for Scientific Research NWO) and several scientific positions at VU University, he was appointed in his current position at the Max Planck Institute in 2005. Ter Maat is well experienced in academic education, both in the Netherlands and Germany. In Seewiesen he currently teaches in courses at master level and supervises master graduates and PhD Candidates.

J. (Jeffrey) Verhoeff BSc. is master's student Biology and Animal Sciences at Wageningen University. In 2013, he obtained his bachelor's degree in Biology, also at Wageningen University. Verhoeff has been member of the Dutch national council of Biology students (Landelijk Overleg Biologie Studenten, LOBS) since 2013, and acts as its chair since 2015. He is member of the Board of the Dutch Institute for Biology (Nederlands Instituut voor Biologie, NIBI). Since 2012, Verhoeff has worked as student-assistant at Wageningen University, acting as teaching assistant in a number of courses and as co-organizer of Open Days for prospective students.

Appendix 2: Domain-specific framework of reference

Domain-specific framework of the masters' programme in Biology

The domain of biology concerns life and its environment: the complete integrated system of biological entities in which regulation, interaction, communication, heredity and evolution are the central concepts. The coherence and dynamics of all these entities, therefore, should be the central themes in every Biology programme. Recently (or the last two decades), biological sciences have experienced tempestuous (booming) developments that have led to a more profound understanding of the dynamics of life and the structural and functional mechanisms that lie at its basis. In this process, integration with other disciplines such as mathematics, physics, chemistry, informatics, and earth sciences has shown to be crucial. Moreover, biology has become an integral science indispensable in the practice of resolving societal issues such as sustainable food production, conservation of biodiversity and the development of "green energy" resources. Biology in the Netherlands plays a key role in the preservation and further reinforcement of the strong international position of the top sectors.

The rapid development of the biological sciences and the plethora of positions for which biologists are required, force biological educational programmes to prepare students for jobs in fundamental research, applied research and technology, communication and policy; both in biology as well as in adjacent scientific fields. More than ever, biology demands the competence to deal with the dynamics and complexity at various levels of organization, such as molecules, cells, organisms, populations, communities and ecosystems. Furthermore, students need to achieve excellent academic skills in scientific writing, oral presentation, critical reading of scientific literature, self-reflection and teamwork.

The MSc Biology covers a two-year programme, offering a deepening of knowledge in one or more biological sub disciplines in the fields of research, policy, management, communication or teaching. In each of these specialisations at least one research component is incorporated. After completion of the masters' programme, students are well equipped to follow a biologically oriented PhD trajectory or to obtain other positions of academic level related to biology.

Demands of (international) colleagues and the professional environment

Biological master programmes have a long and world-wide tradition as a central discipline. In the course of time, attention has shifted from capitalizing factual knowledge in mono-disciplines to the integration of the levels of organization and disciplines. The masters' programme aims to provide students with knowledge and skills in their specific domain and with general academic competences that will enable them to perform in an excellent manner in a broad range of professional environments. Students should be able to explain and reflect on his or her choice for a specialized PhD trajectory, or for another position at the labour market within the area of policy/administration, management, education or communication.

The institutions offering a biologically oriented MSc in the Netherlands participate in the 'Overlegorgaan Hoger Onderwijs Biologie' (Consultative Body of Higher Educational Teaching in Biology). Students are allowed to take courses within the elective part of their master programme from other Dutch biology masters' programmes. Dutch masters' programmes in biology have a good international reputation. Students with a Dutch masters' diploma can enter into all relevant international biologically oriented PhD positions.

What can be expected from a MSc Biology?

1. Knowledge and research skills

The graduate:

- a) is able to make use of the conceptual framework of the discipline in which he/she has specialized in order to explain the state of the art of developing theories and to identify the most important research issues;
- b) can systematically solve scientific problems within the context of relevant biological fields;
- c) can develop, apply and optimize research techniques in biological research;
- d) can independently formulate, initiate and execute a biological research project and analyse and interpret the results.

2. Academic and learning skills

The graduate:

- a) can report orally and in writing on the field of study for a specialist and a general audience;
- b) is able to critically reflect on the performance of him/herself and others in the professional context and to evaluate the societal and ethical consequences of biological research;
- c) can communicate effectively within the chosen field of specialisation.

Appendix 3: Intended learning outcomes

Learning outcomes of the MSc Ecology programme according to the Dublin descriptors:

The MSc Ecology encompasses two specializations. The use of ‘ecology’ or ‘ecological’ in this description refers to both the specialization ‘Ecology and Evolution’ and ‘Environmental Chemistry and Toxicology’.

Dublin descriptor 1

Knowledge and understanding: The graduate should have specialized theoretical and practical knowledge of ecological science notably within the field of his/her specialization.

The graduate:

- 1 masters the field’s conceptual framework, understands the state of the art in terms of developing theories and has insight into the most important current research issues in ecology,
- 2 appreciates the place of this discipline within Biology and the Natural Sciences,
- 3 appreciates the scientific and social relevance of ecology,
- 4 is able to think in multidisciplinary terms,
- 5 has sufficient knowledge of and is able to apply appropriate mathematical and statistical methods and computer software.

Dublin descriptor 2

Application of knowledge: The graduate should be experienced in carrying out research, in applying techniques specific to the subject area and in applying scientific knowledge to problems raised in society.

The graduate:

- 1 is able to design and perform experiments in the different ecological fields and analyze their results,
- 2 has command of the relevant advanced research techniques and laboratory procedures,
- 3 is able to transmit his/her scientific knowledge to societal and political issues,
- 4 is able to reflect on the ethical aspects of research and its uses.

Dublin descriptor 3

Critical judgment: The graduate should be able to independently and critically judge information.

The graduate:

- 1 is able to independently and critically analyze ecological research,
- 2 is able to independently acquire, analyze and critically evaluate ecological information from the literature at a meta level,
- 3 has the ability to evaluate his/her own performance, both introspectively and in discussion with others.

Dublin descriptor 4

Communication: The graduate should be able to transfer knowledge and skills related to his/her subject area to other persons and to adequately reply to questions and problems posed within society.

The graduate:

- 1 can report orally on research results to a scientific audience in English with support of modern presentation techniques,
- 2 can report in written form on research results on the level of peer-reviewed academic journals (in English),
- 3 can make essential contributions to scientific discussions,
- 4 can operate professionally in a research team.

Dublin descriptor 5

Learning skills: The graduate should develop learning skills that enable him/her further self education and development within the subject area.

The graduate:

- 1 is able to draw up a research proposal developing new research questions and directions, giving details of experimental design, performance and analysis,
- 2 is familiar with general scientific journals such as Nature and Science, and with high impact professional journals in ecology,
- 3 able to evaluate and reflect on scientific contributions of peers,
- 4 can make a well-considered choice for a specialized PhD trajectory, or other positions at the labour market.

Appendix 4: Overview of the curriculum

1) Compulsory courses (18 ec in total)*

- The first course in the academic year of arrival (Soil-Plant-Animal Interactions (in even years) or Current Trends in Evolution (in odd years), 6 ec)
- Experimental Design and Analysis (VU, 6 ec)
- Masterclasses in Ecology and Evolution (UvA-VU, 3 ec)
- Scientific Writing in English (VU, 3 ec)

2) Elective courses (12 - 18 ec in total)*

Students have to take at least 12 and at most 18 ec of elective ecological courses. If they choose to take 12 ec the total time spent on research projects will be expanded with 6 ec. Most courses in the curriculum are given once every two years.

Elective courses offered in the curriculum are:

- Current Trends in Evolution (UvA, 6 ec)
- Spatial Processes in Ecology and Evolution (UvA, 6 ec)
- Environmental Genomics and Adaptation (VU, 6 ec)
- Soil-Plant-Animal Interactions (VU, 6 ec)
- Microbial Ecology (UvA, 6 ec)
- Evolution of Species Interactions (UvA, 6 ec)
- Ecosystem Services and Scientific Advocacy (VU, 6 ec)

3) Research projects VU students (72 – 78 ec in total)

Students will carry out two research projects/internships. Depending on the number of credits points the student obtains in elective courses both internships together will cover 72-78 ec. The minimum duration of a research project is 30 ec.

The first internship has to be carried out at the VU or UvA. Though not obligatory, students are encouraged to complete the second elsewhere at another university or research institute in the Netherlands or abroad. Both projects have to focus on an ecological and/or evolutionary subject.

4) Literature thesis (12 ec)

Students are required to write a literature thesis of 12 ec. The literature thesis can focus on a fundamental ecological question, but may also take a more applied or societal approach.

*Leading university and study load between brackets

Year Schedule MSc Programme in Ecology 2015-2016

Last updated: April 22 2015

School of Health and Life Sciences FALW - VU University Amsterdam

General Master coordinator Ecology: dr. G. Driessen

Specialization Ecology and Evolution

2015 -2016

period 1		period 2		period 3		period 4		period 5		period 6																																		
week	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
AM_1016 Masterclasses in Ecology and Evolution AMU_0003 Current trends in Evolution AMU_0009 Spatial Processes in Ecology and Evolution AMU_0008 Microbial Ecology AM_470506 Environmental Genomics and Adaptation AM_470505 Experimental Design and Analysis												-> cont. AM_1100 Project E&E I AM_1157 Scientific Writing in English* * Reserved groups Ecology week 6 - 13, other options only if there are places available in open/general groups																																
3												30 - 48																																

2016 - 2017

period 1		period 2		period 3		period 4		period 5		period 6																																		
week	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
AM_1016 Masterclasses in Ecology and Evolution AM_1131 Literature Survey Ecology and Evolution AM_470507 Soil-Plant-Animal AMU_0000 Microbial Ecology AMU_1053 Ecosystem Services and Scientific Advocacy AMU_0006 Evolution of Species AM_470505 Experimental Design and Analysis												-> cont. -> cont. AM_1114 Research Project Ecology and Evolution II																																
3												12																																
30 - 48												30 - 48																																

Compulsory courses. Need to be attended only once, except for Masterclasses in Ecology and Evolution Course takes place at the UvA (University of Amsterdam)

Specialization Environmental Chemistry and Toxicology

Year 1

period 1		period 2		period 3		period 4		period 5		period 6																																		
week	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
AM_1184 Environmental and Human Toxicology X_437004 Environmental Chemistry AM_1054 Ecotoxicology and Water Quality AM_470505 Experimental Design and Analysis												AM_1108 or AM_1113 Research Project ECT Preparation AM_470707 Ethics in Life Sciences AM_1108 Research Project Environmental Chemistry and Toxicology I AM_1132 Literature Survey ECT (either year 1 or 2) AM_1157 Scientific Writing in En																																
6												30-36																																

Year 2

period 1		period 2		period 3		period 4		period 5		period 6																																		
week	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
AM_1113 Research Project Environmental Chemistry and Toxicology II AM_1016 Masterclasses in Ecology and Evolution X_435609 Separation Sciences AM_468024 Value of Ecosystem Services and Biodiversity* AM_1053 Ecosystem Services and Scientific Advocacy AMU_0009 Spatial Processes in Ecology and Evolution AMU_0005 Environmental Measuring Technique AM_470506 Environmental Genomics and X_435604 Mass Spectrometry												AM_1132 Literature Survey ECT (either year 1 or 2) -> cont. -> cont. AMU_0001 Assessment of Natural and Chemical Hazards AMU_0002 Biogeochemical cycles X_435062 (Bio)molecular Spectroscopy																																
6												12																																
30												3																																

Compulsory courses. Need to be attended only once, except for Masterclasses in Ecology and Evolution * Students from this specialization, please enroll in the general/open group that starts in week 36. Course takes place at the UvA (University of Amsterdam)

Appendix 5: Programme of the site visit

Tijd		Gesprekspartners
12:00-14:00	Voorbereidend overleg en inzien documenten (incl lunch)	Panelleden
14:00-14:45	Gesprek met inhoudelijk verantwoordelijken	<ul style="list-style-type: none"> - Prof.dr. M.A.P.A. Aerts (Rien) (<i>Opleidingsdirecteur M Ecology, Docent in B Biologie en M Ecology (E&E)</i>) - Dr. G.J.J. Driessen (Gerard) (<i>Coördinator M Ecology, Docent in B Biologie en M Ecology (E&E)</i>) - Dr. N. Harms (Nellie) (<i>Onderwijsdirecteur FALW</i>) - Dr. M.H. Lamoree (Marja) (<i>Specialisatie-coördinator M Ecology (ECT), Docent in M Ecology (ECT)</i>) - Dr. J.M. Koene (Joris) (<i>Coördinator B Biology, Voorzitter Opleidingscommissie B Biologie, Docent in B Biology en M Ecology (E&E)</i>) - Prof.dr. H. Lill (Holger) (<i>opleidingsdirecteur B Biologie, Docent in B Biologie</i>)
14:45-15:00	Overleg Panel	
15:00-15:45	Studenten bachelor-opleiding Biologie	<ul style="list-style-type: none"> - E.J.S. Bloem (Erik) (<i>derde jaars</i>) - T.P. Dudink (Tjeerd) (<i>derde jaars</i>) - F.W. Meijer (Fedde) (<i>derde jaars</i>) - E.M. de Rooter (Esther) (<i>derde jaars</i>) - S.D.S. Webbers (Steven) (<i>tweede jaars</i>)
15:45-16:30	Studenten master-opleiding Ecology	<ul style="list-style-type: none"> - B.D. Ammeraal, BSc (Barry) (<i>tweede jaars E&E</i>) - M.I. Blaas, BSc. (Michiel) (<i>tweede jaars E&E</i>) - A.F. Heitman, BSc. (Amber) (<i>derde jaars E&E</i>) - L.T.J. Kramer, BSc. (Lars) (<i>tweede jaars E&E</i>) - J. Molleman, BSc. (Jasper) (<i>tweede jaars E&E</i>) - T.A. Schol, BSc. (Tim) (<i>tweede jaars E&E</i>) - P.N.H. Wassenaar, BSc. (Pim) (<i>tweede jaars ECT</i>)
16:30-17:00	Overleg panel	
17:00-17:30	Alumni	<ul style="list-style-type: none"> - B. Bruning, MSc (Bas) (<i>PhD VU Amsterdam, afgestudeerd augustus 2009</i>) - B. Elbers, MSc (Bram) (<i>analist VU, afgestudeerd juli 2014</i>) - O. Franken, MSc (Oscar) (<i>PhD VU Amsterdam, afgestudeerd augustus 2011</i>) - I.E.M. van Hasselt, MSc (Ignaz) (<i>Medenwerker NRC Media, afgestudeerd augustus 2014</i>) - K.E.Y. Kersten, MSc. (Kiki) (<i>Junior Technical Application Specialist bij Cargill (Sales), afgestudeerd augustus 2015</i>) - I. van der Meulen, MSc. (Inger) (<i>docent Biologie in het MO, afgestudeerd december 2012</i>) - A.R. van Oosten, MSc. (Raoul) (<i>PhD Universiteit Antwerpen, afgestudeerd juni 2011</i>) - M. van Pomeran, MSc. (Marinda) (<i>PhD Leiden Universiteit, afgestudeerd juni 2012</i>)
18:30-21:00	Diner panel	

Tijd		Gesprekspartners
08.45-09.00	Aankomst panel	
09.00-09.45	Leestafel, intern beraad, spreekuur	
09.45-10.30	Docenten B Biologie/M Ecology	<ul style="list-style-type: none"> - Dr. M.P. Bergman (Mathijs) (<i>Stagecoördinator B Biologie, Docent B Biologie</i>) - Prof.dr. J.H.C. Cornelissen (Hans) (<i>Docent B Biologie en M Ecology (E&E)</i>) - Prof.dr. J. Ellers (Jacintha) (<i>Docent B Biologie en M Ecology (E&E)</i>) - Prof.dr. E.T. Kiers (Toby) (<i>Docent M Ecology</i>) - Dr. J.M. Kooter (Jan) (<i>Docent B Biologie en M Ecology (E&E)</i>) - Dr. T.F.M. Roelofs (Dick) (<i>Docent B Biologie en M Ecology (E&E en ECT)</i>) - Dr. R.O. Stiedl (Oliver) (<i>Docent B Biology</i>)
10.30-10.45	Overleg panel	
10.45-11.15	Leden van de Opleidingscommissies Biologie en Ecology	<ul style="list-style-type: none"> - J.M. Brouwer (Jitske) (<i>Studentlid Oplcie Ecology, tweedejaars E&E</i>) - D. Commandeur (Daniel) (<i>Studentlid Oplcie Ecology, tweedejaars E&E</i>) - Z. Delamore (Zoe) (<i>Studentlid Oplcie Biologie, tweedejaars B Biologie</i>) - Dr. C.A.M. van Gestel (Kees) (<i>Voorzitter Oplcie Ecology, Docent B Biologie en M Ecology (E&E)</i>) - C.S. van Haren (Claire) (<i>Studentlid Oplcie Biologie, derdejaars B Biologie</i>) - S.N. Huisman (Seringe) (<i>Studentlid Oplcie Biologie, derdejaars B Biologie</i>) - Prof.dr. R.E. Koes (Ronald) (<i>Docentlid Oplcie Ecology, Docent B Biologie</i>) - Drs. P. Vos (Paul) (<i>Docentlid Oplcie Biologie, Docent B Biologie en M Ecology (E&E)</i>) - Dr. J.T. Weedon (James) (<i>Docentlid Oplcie Ecology, Docent M Ecology (E&E, ECT)</i>)
11.15-12.00	Leden Examencommissie	<ul style="list-style-type: none"> - Prof.dr. M.P. Berg (Matty) (<i>Voorzitter examencommissie Bio/Eco</i>) - Prof.dr. J.T. de Cock Buning (Tjard) (<i>Voorzitter Facultaire examencommissie</i>) - Prof.dr. J. Rozema (Jelte) (<i>lid Bio/Eco</i>)
12.00-12.45	Lunch	
12.45-13.45	Rondleiding	
13.45-14.15	Intern beraad panel	
14.15-14.45	Eindgesprek formeel verantwoordelijken	<p>Prof.dr. M.A.P.A. Aerts (Rien) Dr. G.J.J. Driessen (Gerard) Dr. N. Harms (Nellie) Dr. J.M. Koene (Joris) Dr. M.H. Lamoree (Marja) Prof.dr. H. Lill (Holger) Prof.dr. N.M. van Straalen (Nico)</p>
14.45-17.00	Opstellen voorlopige bevindingen	Panelleden
17.00-17.15	Mondelinge rapportage bevindingen	Allen – Zaal: C-147

Appendix 6: Theses and documents studied by the panel

Prior to the site visit, the panel studied the theses of the students with the following student numbers:

1590537	2516030	1722662
2518687	1709615	2542014
1983431	1667041	1858874
1706403	2104997	1820494
1614630	1820524	2531700

During the site visit, the panel studied, among other things, the following documents (partly as hard copies, partly via the institute's electronic learning environment):

- Annual report of the Programme Committee
- Annual report of the Board of Examiners
- Course information & materials of the following courses:
 - Environmental genomics and adaptation
 - Ecosystem services and scientific advocacy
 - Environmental and human toxicology
 - Ecotoxicology and water quality