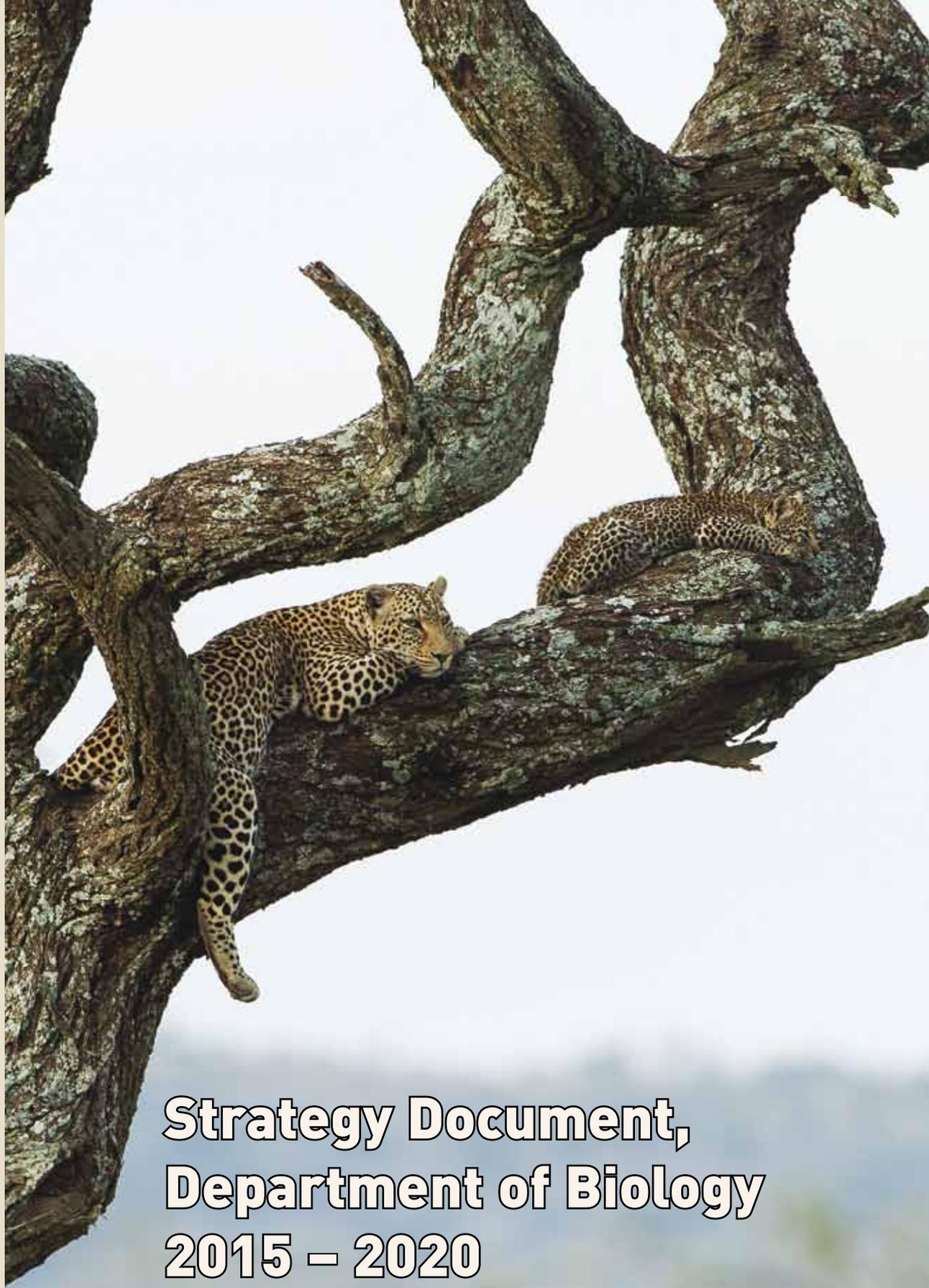


Understand life - Preserve the environment



**Strategy Document,  
Department of Biology  
2015 - 2020**



# Understand life - Preserve the environment

Strategy Document for the Department of Biology (IBI), Faculty of Natural Sciences and Technology (NT), Norwegian University of Science and Technology – NTNU

Strategy 2015 – 2020

The Department of Biology's strategy for 2015-2020 is based on the NTNU and NT Faculty strategies for 2011- 2020. The Department's vision and strategy will contribute to realizing NTNU's vision *Knowledge for a better world* and NT's vision *Natural Science and Technology for a better world*.

## Our social mission

The Department of Biology will contribute to a sustainable society through our expertise in biological core disciplines and their application to global challenges in biodiversity, climate, environment, health and nutrition. Our main tasks are research, education, innovation and dissemination. The Department will ensure high-quality execution of our social mission.

## Vision: Understand life – protect the environment

*Our vision is to understand life and protect the environment.* Science is still far from knowing and understanding the diversity of life on earth. The Department aims to contribute with high-quality international science to significantly improve our *understanding of life* at all levels, from molecules to ecosystems. An improved understanding of life in all its forms is urgently needed for research and actions to *protect the environment*. To realize this vision, the Department will combine quality and breadth of research and education in the biological core disciplines. We will apply this knowledge to address global challenges and to contribute to a sustainable society. In order to achieve the goals, our research will emphasize curiosity, quality and relevance.

## Research

Environmental problems such as climate change, pollution, biodiversity loss, habitat destruction and exploitation of water resources are increasing both locally and globally. The Department wants to meet these challenges through research at a high international level. Biological research should contribute to sustainable development and utilization of biological resources.

High quality in core disciplines will provide the foundation for our research, which will in turn be the basis for interdisciplinary initiatives, particularly within environmental sciences. By basic disciplines we mean the subjects that are necessary to get a comprehensive understanding of biology (systematics<sup>1</sup>, behaviour, evolutionary biology, ecology, physiology, and cell and molecular biology). National and international collaboration with other recognized research groups is a prerequisite for fulfilling this ambition.

<sup>1</sup> The Department of Biology offers education in systematics in cooperation with the NTNU Natural Science Museum, which has primary research responsibilities in these areas.

The Department currently has several research groups that are internationally outstanding, notably the Centre for Biodiversity Dynamics with its leading research in quantitative conservation biology, a Research Council of Norway Centre of Excellence.

## Main objective:

*IBI contributes to a sustainable management, development and utilization of biological resources, including contributions to solving global challenges in biodiversity, climate, environment, health and nutrition by building competence and knowledge through its performance of leading edge basic research.*

## Goals

- Basic research at the Department of Biology has consistently high international quality and relevance in the biological core disciplines and utilizes interdisciplinary opportunities
- The Department of Biology has several research areas that are internationally recognized as outstanding, with the Centre for Biodiversity and dynamics and research in environmental biology / toxicology emerges as our leading groups
- The Department of Biology is an attractive partner for outstanding research environment nationally and internationally
- The Department of Biology participates in EU research programs and will in the period increase the activity
- The Department of Biology will be a key player in the development of Trondheim as an environmental capital, including active participation in Centre for Biodiversity and Ecosystem Services in Trondheim (CeBEST)
- The Department of Biology educates researchers (PhDs) that are attractive in the labour market nationally and internationally

## Methods

### *Scientific focus*

Based on robust expert groups and high quality research in the basic disciplines the Department of Biology will focus on continuing work and build international research excellence:

1. through the Centre for Biodiversity and dynamics (CBD)
2. in the consequences of environmental degradation / pollution with the aim of a future Centre of Excellence with emphasis in Environmental Toxicology

The above priorities will help promote NTNU's thematic initiatives, especially in sustainable community development. IBI will also contribute to NTNU's commitment to Ocean Space Science and Technology, Health, Welfare and Technology, Energy and Biotechnology (enabling technologies) through high quality research within the biological core disciplines and interdisciplinary cooperation. Furthermore, the Department of Biology will contribute to the establishment of CeBEST, in collaboration with several internal and external entities, so that the results from our basic research can be used more broadly for sustainable management of natural resources.

## Cooperation, external financing and internationalization

To ensure high quality and leading edge research, the Department of Biology has to maintain and develop robust research groups, secure the necessary financing and state of the art facilities, and further develop cooperation with relevant and internationally leading research groups.

- IBI will increase external research funding from national and international sources with a special focus on interdisciplinary research projects and EU funding
- IBI will develop and establish long-term cooperative relationships with outstanding research groups nationally and internationally with the aim of joint projects, publications and collaboration in (Ph.D.-) education
- Cooperation should be fostered both internally at the department and with other academic departments at NTNU to solve challenges across disciplines
- Planning and execution of research should be optimized through good administrative and technical support where the project manager has the responsibility to initiate cooperation in the application phase

### Publication

- The publication rate, particularly in level-2 journals, shall be increased

### Researcher education and recruitment

- The Department of Biology will ensure high-quality PhD education from admission through training (courses), implementation and supervision, to completion and defence of the dissertation
- IBIs PhD candidates and postdocs will be part of an international research environment and research abroad will be facilitated

## Education and learning environment

People with advanced knowledge and expertise are needed to solve complex environmental problems and to ensure sustainable management, development and utilization of biological resources. Education programmes characterized by relevance, academic and teaching quality at a high international level, an inclusive learning environment and motivated and talented

students are the means to reach our vision, *understanding life and protect the environment*.

The competition for talented students and teaching staff is international and increasing. Alliances with strong academic environments national and international and a good dialogue with private- and public-sectors are important for relevance and a robust teaching and research environment. Students must take responsibility for their own learning and be involved in the development of education programmes, teaching, and the learning environment.

The Department of Biology will take advantage of NTNU's unique attributes and the strength and profile of the department to maintain and develop high quality education and an inclusive and stimulating learning environment.

### Main objective

*IBI will educate candidates to meet the needs of the national and international communities and that contributes to sustainable development through biological expertise and ethical awareness in relation to the demands of society and a future workplace*

### Goals

- Our education is consistently based on high quality research and ensures that our students receive relevant knowledge, skills, attitudes and ethical awareness in line with the needs of society
- The Department of Biology is nationally and internationally acknowledged for high academic and teaching quality
- The Department of Biology is the preferred place for study of biology nationally and our international master programs are attractive to good students nationally and internationally
- The academic level of students accepted to our programmes and rates of completion are high and undesired drop-out rate of students is low.
- The Department has first-class educational management and a culture of quality improvement

### Methods

#### *Education quality and profile*

- Bachelor degree programs will ensure that students have a comprehensive understanding of biology and how anthropogenic environmental changes affect organisms, populations and communities



Photo: Per Harald Olsen/NTNU

- The course portfolio shall reflect the Department of Biology's strategic focus within environmental science
- "Learning by doing" is a central learning strategy in the Department of Biology and learning will be substantially achieved through practical work, such as laboratory and field teaching, and practice in the use of relevant analytical tools
- For Master's students the Department of Biology emphasizes planning and conducting research, critical reading and scientific writing
- Quality assurance should be appropriate and sufficient to ensure that our course and programs maintain high quality at all times

### *Learning environment*

- Learning outcomes should drive the choice of teaching methods and staff teaching skills will be strengthened
- The Department of Biology will facilitate a good and stimulating learning environment, including good physical laboratory and infrastructure, with a focus on learning activities and relevant evaluation methods
- Monitoring of students will be particularly emphasized in the first academic year to minimize undesired drop out

### *Internationalisation*

- The Department will develop and establish long-term cooperative relationships with internationally outstanding research and education environments
- Student exchange to and from the university, for example through bilateral agreements, shall be facilitated
- Opportunities in the ERASMUS+ program shall be exploited

### *Recruitment*

- The Department of Biology will ensure good and organized information to potential students, visibility in the media, special recruitment measures and emphasize positive reputation building generally to recruit good students
- The Department of Biology will meet the need for more teachers in natural sciences by contributing to education and in-service training of science teachers

## Innovation

### Main objective

*Biological research will renew and improve society*

### Goals

- Through research our employees and students identifies new business ideas, inventions / products
- The Department of Biology is an attractive partner for commercial and public sectors within scientific innovation

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### Methods

- Employee contributions to business start-ups and operation will be facilitated, within limits given by regulations on competitive activities and impartiality
- Patents and licensing, will be rewarded on a par with scientific publications
- Innovation and creativity will take place in close cooperation with NTNU Technology Transfer AS (TTO)

## Outreach

### Main objective

*The Department of Biology will be a critical and constructive contributor to society, with reflective and holistic approaches to community tasks and challenges*

### Goals

- The Department of Biology is active in public debate and provide professional contributions to support political decision making
- The Department contributes to increased understanding of the importance of science-based knowledge
- The Department contributes to build understanding and interest in biology through outstanding research and education

### Methods

The Department of Biology will encourage employees and students to communicate our work and results to the general public

- The Department of Biology will use different types of communication channels in order to best reach a wide audience
- We will participate in and develop initiatives for children and young people
- The internet will be the primary communication source for those seeking information about us

## Leadership, organization, and resources

### Main objective

*The Department of Biology achieves good results through a work culture that is characterized by cohesion and efforts toward common goals and how both human and material resources are used in an optimal way*

### Goals

- The Department is an attractive workplace for staff and students
- The Department has a culture that supports and stimulates outstanding research and education
- The Department is directed in a way that facilitates a good working environment, good use of human and material resources and clear results
- The Department has a clear strategy that enables the individual to see clear goals and objectives with the various tasks they perform
- The Department is a healthy workplace that works systematically for health, safety and the environment

## Methods

### *A robust academic environment*

A robust academic environment is essential to ensure high quality in both research and teaching. Besides group size, collaboration internally and externally, adequate infrastructure and support are all important factors to achieve sufficient vigor. In the period up to 2020 IBI will follow up the recommendations from the Evaluation of Biology, Medicine and Health research in Norway (performed by The Research Council of Norway).

### *Recruiting and development of expertise*

- The Department will have long-term strategic plans for staffing
- The Department will work for a gender balance in technical, administrative and academic positions
- Employees will have training and experience to perform their duties and the Department will arrange for individuals to realize their strengths through their career path
- The Department will focus on leadership development and recruitment by giving employees opportunities to undertake various management tasks and receive training
- All employees should be integrated into the primary activities at the Department

### *Leadership, work environment, and HSE*

- The Department will ensure good participation through open and inclusive processes, good information and communication through representative forums and an effective organization
- All employees at the Department will have annual personal development discussions
- The management and staff will contribute to strengthening the sense of community, respect and well-being
- The Department will have a safe working environment where all staff and students are given training in HSE

### *Economy and material resources*

- The Department will focus on increasing economic leeway, especially through increasing grant- and contract-funded research in line with our research strategy
- The Department will have long-term budgets and plans for investments that support our strategic initiatives.



Photo: Per Harald Olsen/NTNU

*Flabellina borealis*



Photo: Per Harald Olsen/NTNU



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