www.nina.no

Norwegian Institute for Nature Research

an international centre for aquatic research

marine, coastal, freshwater

The Norwegian Institute for Nature Research (NINA) has a comprehensive competence related to management and sustainable utilisation of aquatic environments and resources. This multidisciplinary competence embraces sustainable management and exploitation of coastal, estuarine and freshwater ecosystems, aquaculture, optimal land use, and conservation and sustainable utilisation of biodiversity.

NINA
Norwegian Institute for Nature Research


TEAMWORK


ENTHUSIASM


INTEGRITY


QUALITY

Cooperation and expertise for a sustainable future

Cooperation and expertise for a sustainable future

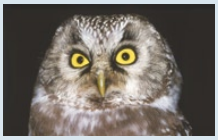
NINA´s company values:

- Teamwork

- Enthusiasm

- Integrity

- Quality



The Norwegian Institute for Nature Research (NINA) is Norway's leading institute for applied ecological research. NINA performs short- and long-term research projects in support of local, national and international utilization and management of natural resources. The institute's highly qualified staff collaborate closely with resource users as well as research and management institutions in Norway and abroad to reach the best environmental solutions. NINA offers broad-based ecological expertise covering the genetic, population, species, ecosystem and landscape levels in terrestrial, freshwater and coastal marine environments. In addition, NINA addresses interdisciplinary issues involving both natural and social scientists.

Resource Mapping, Resource Use and Resource Management

NINA has a wide network and plays an important role in national and international research. Its experienced staff of researchers within the fields of natural and social sciences collaborate with 119 international institutions in 33 countries in Europe, Africa, Asia and the Americas.

NINA FACTS:

Staff:	158 persons
Operating income:	USD 25 million
Research facilities:	7 locations in Norway
Publications 2005:	92 scientific papers
	140 technical reports

NINA'S MAJOR SERVICES:

Research
Dissemination of scientific results
Environmental impact assessments
Environmental monitoring
Status reports
Consultancy and evaluation
Courses and training

NINA's expertise is directed towards basic and applied research, consultancy work, and advice to management and industry.

Selected areas related to natural resources are:

- Harvest and sustainable use of game and fish stocks
- Land use and nature management, including landscape analysis in the coastal zone and on land
- Community development and local participation in resource management
- Socio-economic issues related to subsistence, recreational and commercial use of natural resources
- Conflict resolution related to natural resource use and management
- Commercial development of biological resources
- Red-list evaluation and conservation planning
- Monitoring and time-series analysis
- Environmental databases – development, operation, use and public information
- Impact analysis and monitoring of pollution
- Environmental impact assessments

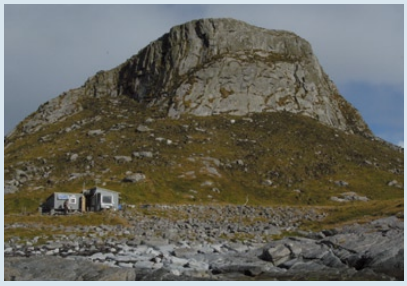
NINA Trondheim
NO-7485 Trondheim
NORWAY
Phone: +47 73 80 14 00
Telefax: +47 73 80 14 01

NINA Oslo
P. O. Box 736 Sentrum
NO-0105 Oslo
NORWAY
Phone:+47 73 80 14 00
Telefax: +47 22 33 11 01

NINA Tromsø
Polarmiljøsenteret
NO-9296 Tromsø
NORWAY
Phone: +47 77 75 04 00
Telefax: +47 77 75 04 01

NINA Lillehammer
Fakkelgården
NO-2624 Lillehammer
NORWAY
Phone: +47 73 80 14 00
Telefax: +47 61 22 22 15

Photos: Per Jordhøy, Eva B. Thorstad, Knut Kringstad, Tycho Anker-Nilssen



The institute have well-equipped laboratories and research facilities at seven locations in Norway. NINA offers broad-based ecological expertise covering the genetic, population, species, ecosystem and landscape level, in terrestrial, freshwater, and coastal marine environments.

Photos: J. Backer, O. T. Sandlund, T. Anker-Nilssen, K. B. Strann, B. Finstad, B. K. Dervo.

Collaborative networks

NINA has an extensive professional network in Norway and abroad:

- **ENVIRA** (The Environmental Research Alliance of Norway; www.miljoalliansen.no) consists of six institutes in addition to NINA: **NIBR** – The Norwegian Institute for Urban & Regional Research; **NIKU** – The Norwegian Institute for Cultural Heritage Research; **NILU** – The Norwegian Institute for Air Research; **NIVA** – The Norwegian Institute for Water Research; **Bioforsk** – the Norwegian Institute for Agricultural and Environmental Research; **CICERO** – Centre for International Climate and Environmental Research.
- **NODE** (www.node.org) is a multidisciplinary research and consulting consortium consisting of The Chr. Michelsen Institute (CMI) and Centre for International Environment and Development Studies (NORAGRIC), in addition to NINA.
- NINA is a partner in the **ALTER-net** (A Long-term Biodiversity, Ecosystem and Awareness Research Network; www.alter-net.info), a network of excellence consisting of 24 European research institutions in 17 countries, funded by EU's 6th framework programme.
- NINA is involved in collaborative projects and programmes with institutions in approximately ten developing countries in Central America, Africa and Asia, as well as a number of institutions in developed countries.

The human dimension of resource use

Photo: Trine Bekkby

The relationships between humans, their environment and the management of resources are of critical significance in the development of sustainable management practices. Consequently, an active collaboration across scientific disciplines is an important key to success when facing problems connected to utilization and management of natural resources.

Understanding the relationships between different stakeholders and interest groups in societies are essential. This requires knowledge regarding the administrative and sociological hierarchies and the interests of different stakeholders. It is also important to obtain insight into preventive and compensative measures and how these may influence both nature and societies. Important keywords are local involvement, resource use conflicts, management regimes, local rights to national resources and resource, and sustainable utilisation.

- *NINA has a wide competence within culture- and resource-geography, nature management, physiology, sociology, anthropology and organizational work. Such competence are essential in cross disciplinary work dealing with the human dimensions of resource use, as for example establishment of outdoor recreations opportunities, natural based industries and development of natural amenities.*

Design and function of marine protected areas

Photo: Trine Bekkby

The marine environments are on a global scale exposed to an increasing intensity and diversity of human impacts, and a worldwide transformation of coastal ecosystems are occurring due to fisheries and other impact factors. One of the most important instruments in marine management is the establishment of marine protected areas (MPAs). Marine reserves are important to preserve marine biodiversity as they serve as ecological benchmarks by preserving the integrity of non-disturbed ecosystems, they protect important or rich habitats, and they represent important fishing refugia in order to maintain sustainable fisheries. Key questions for an optimal design of MPA's are how to select adequate areas, how to determine the functional and optimal size of the MAP, and if the MPA's export biomass to the surrounding areas. Research within these topics is essential for a knowledge-based establishment of efficient MPA's. In most cases, environmental impact assessments (EIAs) should be performed when establishing MPA's as impacts and functions of the MPA should be evaluated and the protection of areas might represent major interventions in stakeholders' use of marine environments.

- *NINA has been involved in research on the design and function of MPA's in several countries. The institute has broad interdisciplinary knowledge including aquatic fauna (e.g. sea birds, sea mammals, fish, benthos), coastal habitats and ecology, socioeconomics, GIS, land and seascape ecology, and habitat mapping and modelling. In addition to skills within designing and evaluation of the function of MPA's, NINAs general aquatic competence makes the institute well qualified for working with environmental effects of human impacts.*

Photo: Arve Kjersheim

Aquatic ecosystems in a sustainable and viable economy

Photo: Odd Terje Sandlund

The marine, coastal and freshwater environments include a large diversity of land- and sea-scapes, ecosystems, habitats, species and genes. An optimal utilization of these environments is, however, determined by a tradeoff between economical interests and the commitment to conserve nature for coming generations. Moreover, economic utilisation also creates conflicts of interest between different stakeholders. To obtain a long-term and stable income from utilisation of aquatic resources, it is important to base the management on ecological principles, including knowledge of the interaction between species and their environment. To reduce conflicts and needs for costly restoration of damages, management plans should be based on adequate knowledge regarding the environment and its resources, their value and vulnerability, and take into account the interests of various stakeholders.

- *NINA's research improves our understanding of interactions between animals, ecosystems, and human stakeholders. This supports improved planning procedures and management practices. An ecosystem approach to research for management is facilitated by our wide competence within geology, botany, zoology, and the social sciences. Furthermore, NINA has an extensive competence in resource studies both through traditional methods, and remote sensing techniques (e.g., VHF, acoustic telemetry, satellite imagery). Our scientists has a wide experience on issues such as impacts of invasive species and climate change in terrestrial, marine and freshwater habitats.*

Resources across borders - freshwater/-sea and sea/land interactions

Photo: SAIAB

It is essential that the management and exploitation of aquatic resources are based on profound knowledge regarding the links to associated marine, estuarine, freshwater- and terrestrial ecosystems. The knowledge on land, freshwater, coastal and marine ecosystems should be integrated in a way that provides a holistic understanding of the environment, including the effects of human activities.

- *NINA has established a comprehensive experience regarding resource management across ecosystem borders. NINA's research on aquatic resources relates to exploitation of stocks of aquatic organisms, effects of pollution, restoration of habitats, re-establishment of stocks, mapping of migration routes and resource distribution, impacts of resource exploitation and ecological links between fish and terrestrial animals.*

Photo: Jørn Thomassen

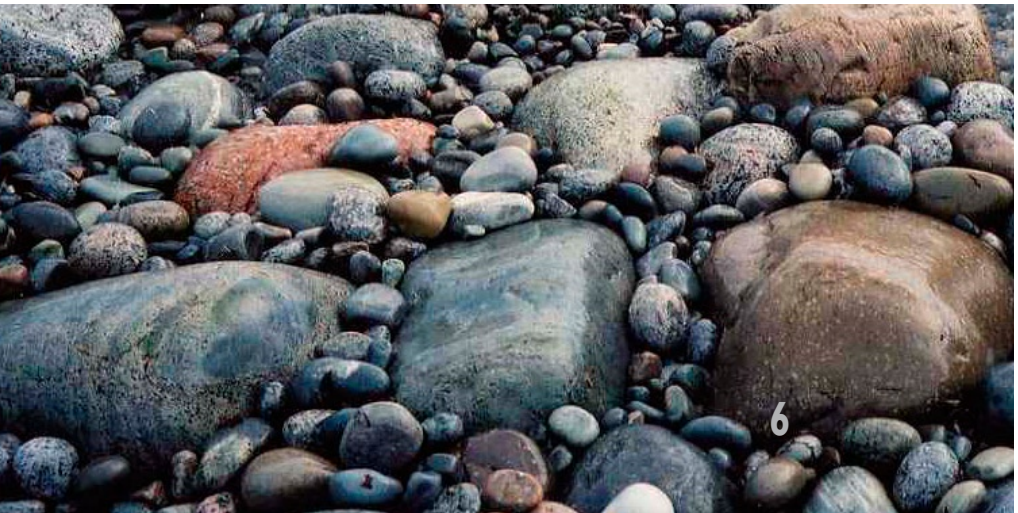
Classify habitat value and vulnerability

Photo: Tor F. Næsje

The structures of the land- and sea-scapes are important for species, populations and ecological processes. We may therefore classify land- and sea-scapes (such as for example migration corridors and habitat islands) representing areas and functions of importance for the survival and productivity of species and populations. To develop such indicators, habitat mapping and holistic and integrated approaches are needed.

- *NINA has knowledge and experience in landscape ecology, analyses and geographical information systems (GIS) and may contribute to cost efficient management of areas and resources in a way that preserves the environment. GIS are the basis for the integration and analyses, and are useful tools for communicating research results to managers and users of the environment and resources.*

Photo: Trine Bekkby



Optimal utilization of aquatic areas

Photo: Odd Terje Sandlund

The marine, estuarine and freshwater environments offer a multitude of exploited and unexploited resources available for humans. The population increase in these areas augment the risk of over-utilisation of the aquatic resources. Utilisation of the resources is often a subject to contradicting interests (e.g. fishing, aquaculture, tourism and maintenance of biodiversity).

- *NINA has an extensive knowledge regarding land- and sea-scapes, ecosystems, habitats, species and genetics as a basis for sustainable resource exploitation. Furthermore, NINA has a long tradition in providing useful services for the different sectors responsible for managing aquatic resources.*
- *NINA has introduced a GIS based "suitability analysis" in order to analyse interests and nature values for finding suitable areas for new activities. The aim of the suitability analysis is to evaluate the consequences of different activities on the environment, resources and communities. The suitability analysis is a valuable tool for facilitating an optimal long-term utilisation of the aquatic resources.*

Development of sustainable aquaculture

Photo: Eva B. Thorstad

A sustainable aquaculture industry is a compromise between economical viability and environmental and ethical values. In many cases aquaculture might significantly affect the local ecosystems, and the development of a sustainable aquaculture is a challenge, not only for the industry, but also for scientists and management.

Adaptation of aquaculture to the local ecosystems and conditions is one of the key principles for achieving sustainability. On a global scale, aquaculture is one of the most important human impact factors on aquatic environments, for instance through the escape of farm organisms and attraction of wild animals to the farms. Understanding the ecological role of aquaculture is thus crucial for successful development of an environmentally sound and economically viable aquaculture industry. In this context, a close collaboration between scientists, management authorities and the industry is essential.

- *NINA has during the development of a successful aquaculture industry in Norway been actively contributing with knowledge regarding environmental effects of aquaculture and optimisation of the culture methodology. Therefore, NINA has expertise and know-how which significantly contributes to the development of sustainable aquaculture industries.*

Monitoring environmental changes and modelling the future

Photo: Tor F. Næsje

Natural resources are managed and utilized in a changing environment. It is therefore important that environmental changes in the aquatic environment are monitored and taken into account when formulating long-term management strategies.

- *Since NINA was established, the institute has continuously been working with monitoring environmental changes due to climatic changes, pollution, and other external factors. The work include mapping of changes both in terrestrial and aquatic environments and the interactions between these systems. Important tasks in this work have been to select reliable indicators for monitoring environmental changes, and to develop scenario models describing how the changes may affect the environment in the future.*

Improving the state of the environment

Photo: Eva B. Thorstad

The carrying capacity of an ecosystem, and thus also the scope for resource utilization, might in many cases be increased by restoring the environment. In the aquatic zone, as in the rest of the nature, this might be done by reversing or reducing environmental degradation, including destruction of habitats, negative effects of human activities and deforestation/soil runoff. Improvement of the existing habitat might also be a possibility, for instance by constructing artificial fish reefs. Furthermore, profound knowledge of the ecological and physical links between freshwater, estuary and coastal habitats is a prerequisite for improving the state of the environment.

- *NINA possesses a comprehensive competence regarding how to restore and to improve the environment, with the purpose of conserving biodiversity and to enhance the value of the natural resources, both in a recreational and an economic context.*

Capacity building and technology transfer

Photo: Odd Terje Sandlund

NINA's overall objectives are to strengthen the expertise and capacity of our partners and to develop applied and sustainable management and resource utilisation. Sustainable use of natural resources requires that knowledge and expertise are available in local and national institutions as well as stake holders.

- *NINA is in a position to assist in formal and informal training of personnel at all technical and professional levels, regarding the theoretical basis of natural resource management, as well as more specific and practical issues such as management of aquatic organisms and biodiversity, fish behaviour, fish biology, and aquaculture.*

- *Through institutional collaboration we may achieve true capacity building and relevant technology transfer. We collaborate with a range of universities in Norway and abroad. Most of our scientists have experience in supervising Master- and PhD-level students, as well as developing educational programmes and courses at lower levels.*

Photo: Odd Terje Sandlund

Næsje, T.F. & Uglem, I. (eds.) 2006. An international centre for aquatic research: Marine, coastal, freshwater - Norwegian institute for nature research, Trondheim. 8 pp.
Grafic design: K. Sivertsen, NINA

Photos: Tor F. Næsje, Jørn Thomassen, Odd Terje Sandlund, Tycho Anker-Nilssen

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Norwegian Institute for Nature Research NINA
NO-7485 Trondheim • NORWAY
Tel: +47 73 80 14 00 • Fax: +47 73 80 14 01
http://www.nina.no

ISBN: 82-426-1432-6

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