

## Introduction: Man and the Barents Sea Ecosystems

As a rule, we study man and nature separately, within the boundaries of specific disciplines to deepen our knowledge and enlarge our understanding of man and his natural environment. But man and nature do not function in mutual isolation. It is important, therefore, to reflect also on the relationship between nature and man and the interaction between them.

The interplay between man and nature assumes particular characteristics in the polar areas. Conditions there are extreme for humans, and the cold climate makes the Arctic and Antarctic very vulnerable to anthropogenic phenomena. Nature recovers much more slowly from disturbance in the polar areas than in more temperate zones. The indigenous peoples in the Arctic are aware of this and have adapted their way of life to it. Fully benefiting from the possibilities nature offers, they have survived in extreme conditions without fundamentally affecting their surroundings. But newcomers have behaved quite differently. Although the polar areas lie far away from the population centres of the world, they are rich in natural resources like fish, marine mammals, minerals and space, and people have come from many places to exploit these resources. The wilderness has been turned into what has been called a resource frontier region and the interaction of human society and nature has turned into a confrontation. In search of raw materials, man has pushed on ever further, leaving his tracks deeply imprinted in the Arctic environment. Where exploitation has assumed an industrial scale nature has been damaged severely, with grave consequences not only for the indigenous peoples and the alien society on the spot, but also for societies at a distance, in temperate latitudes, where the masses live.

The study of the interaction between man and nature demands an interdisciplinary approach. The various disciplines, however, differ greatly with regard to their methods and cultures, and these differences handicap cooperation. The Arctic Centre of the University of Groningen aims at overcoming this handicap. Founded over 25 years ago, the Centre is a platform for polar research in the Netherlands and has a long-term, multidisciplinary research program in the polar regions. As one means to bridging the gap between the disciplines, it organizes international symposia. The Ninth International Symposium of the Arctic Centre, held in Groningen, the Netherlands, in November 1992, dealt with the interaction between man and the ecosystems of the Barents Sea. Specialists of several disciplines met to discuss many relevant questions. What are the characteristics of the Barents Sea ecosystems, and how do these systems function? What natural resources are available in the area? By whom and how have they been exploited? What effects has this exploitation had on nature and society? The articles presented here are the edited versions of papers presented at the Symposium. Individually, they are hardly interdisciplinary. But they all approach the same geographical area, trying to answer the same questions from their own angles. We hope that this volume will tempt the reader to take note of problems and processes which may not have his constant attention, but which are certainly related to problems and processes which are the object of his specialization and which are part of the chain of causes and effects known as reality. We also hope that these articles will contribute to the rise of new perspectives and new, truly interdisciplinary formulations of problems.

The Barents Sea, bordered by the archipelagos of Spitsbergen, Franz Josef Land and Novaya Zemlya, and by the northern coasts of mainland Scandinavia and European Russia, is an outstanding example of an area that combines the arctic extremities of climate, situation, natural wealth, and attractiveness. The natural resources of the Barents Sea are so abundant that, for centuries, they have attracted people from far and wide. Fishermen, hunters, traders, and oilmen arrived from Russia, Finland, Sweden, Norway and many other countries. Consequently, the composition of the population of the Barents Sea area has changed considerably since the Middle Ages. The indigenous people, the Sami, have had to adapt to the presence of the newcomers.

The single most famous man who sailed the Barents Sea was the one who gave it his name, the Dutch navigator Willem Barentsz. Four hundred years ago, Barentsz was one of the officers of three Dutch expeditions that crossed these northern waters three years in a row, in 1594, 1595, and 1596, in search of a northeast passage to the East Indies. The last journey in this series ended in the wintering of Barentsz and his men on Novaya Zemlya from August 1596 to June 1597. Barentsz survived the wintering, but died soon after he and his party set off to make their way home in the boats of their ship, which had been wrecked during the winter. Barentsz did not travel north to exploit the natural riches of the area as so many

others did. His quest draws attention to yet another function of the Barents Sea—that of connecting East and West—for the Barents is one of those seas which link rather than divide the lands around them. The northeast passage to the East Indies was never established, and a more-or-less regular northern sea route to the Pacific was set up only in the twentieth century. But as early as the ninth century, the Vikings sailed the Barents Sea destined for unknown regions to the North and East. In the seventeenth and eighteenth centuries, the Pomors of the White Sea coast plied it on their hunting expeditions to Spitsbergen. And from the sixteenth century on, the English, the Dutch, and other nations sailed the Barents Sea to reach the Murman coast and the North Dvina delta to trade with the Russians. Russia and Western Europe have been connected by regular shipping via the Barents Sea for more than 400 years now. During the time of Soviet rule in Russia, regional communication between the people of northwest Russia and their Nordic neighbours was at an ebb. But in recent years contacts have markedly increased, which has led to the establishing of a Euro Barents Region Council to strengthen the cooperation among the countries in the Barents region.

In the twentieth century, the exploitation of the natural riches of the Barents Sea area has assumed commercial proportions. Parties from near and far catch fish on a commercial scale and drill for natural gas and oil. The wilderness of remote islands has been used to test atomic bombs and to dump nuclear waste. And tourists flock to be awed by the majesty of the Arctic. These developments have involved major economic and social changes for the regional societies. Also, they have drastically affected the natural environment, which has led to new upheavals within the local communities. The region has been affected by long-distance pollution, too. Many pollutants from anthropogenic sources at mid latitudes find their way into the Barents Sea area. They are carried primarily via the atmosphere, but also by the Gulf Stream (Norwegian Atlantic current) and the great Russian rivers. In addition, the Barents Sea region is one of the places where we can trace the consequences of global change processes for the Arctic environment. In both the marine and terrestrial ecosystems, these processes influence the abiotic and biotic levels. To study these changes, the Working Group on Global Change in the Arctic of the International Arctic Science Committee in 1994 designated the Barents Sea as one of its priority regions. This illustrates the important position the Barents Sea occupies in the global system.

Of course, not all of the topics mentioned above were addressed in detail during the Arctic Centre Symposium of 1992, but several of them were. And we are proud to present here this selection of articles—the result of a stimulating encounter with many devoted colleagues who worked very hard to make our venture a success.

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