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COMMUNITY ADAPTATION AND VULNERABILITY IN ARCTIC REGIONS. Edited by GRETE K. HOVELSRUD and BARRY SMIT. Heidelberg, Germany: Springer-Verlag, 2010. ISBN 978-90-481-9173-4. xvi + 353 p., maps, b&w illus., colour plates, 24 contributors, index. Hardbound. €25.99.

This book aims to present a human approach to understanding the vulnerabilities and adaptive capacities of communities, particularly those in the Arctic, that are experiencing rapid socio-economic and environmental changes. Instead of looking at changes through a physical science lens, which has often been the norm in the past, this approach, entitled “Community Adaptation and Vulnerability in Arctic Regions (CAVIAR),” starts with the interests and observations of local communities—a human perspective—to identify the conditions and risks that communities are already facing, and then to proceed to future risks, sensitivities, and adaptive strategies. In other words, the approach puts people’s observations at the forefront, rather than as anecdotal evidence, which, it is hoped, will allow a fuller integration of social research into the broader realm of polar science.

The CAVIAR group had its beginnings during the 2007–2008 International Polar Year (IPY), when partners from Arctic countries came together to respond to the need for systematic assessment of community vulnerabilities and adaptations across the Arctic. The book describes the rationale, framework, and methodology for CAVIAR. It then provides 11 case studies in 16 Arctic communities across the Arctic (Russia, Norway, Sweden, Finland, Greenland, Canada, and Alaska). These communities have used the CAVIAR framework and its multidisciplinary methodology to describe the social and environmental conditions that have created exposure sensitivities and require adaptation measures. The final chapter summarizes the findings from the case studies and future adaptive capacity issues and challenges.

The authors succinctly summarize CAVIAR on page 4:

CAVIAR research is more than data collection or monitoring of change; it involves interdisciplinary integration and collaboration with Arctic community partners, in order to characterize vulnerabilities

or risks, to document the processes and forces that facilitate adaptation or management of risks, and to identify and evaluate means to improve the capacity of communities to adapt to changing conditions. By undertaking studies in communities in all of the Arctic countries using a common research framework and consistent methodologies, CAVIAR is able to compare results and synthesize findings across the circumpolar north.

A number of the case studies illustrate important stresses or vulnerabilities from diverse cultures and locations. For example, three municipalities in Norway, in discussing issues related to management of fisheries, note that although the municipalities are central actors in maintaining sustainable and functional communities, there is “a lack of adequate human capacity and finances to plan and prepare for new and different conditions despite their efforts to seek expertise and funding” (p. 49). Similar stresses are noted in Nunavut’s Arctic Bay case study (p. 107): “a number of barriers to adaptation are likely to constrain future adaptability including financial constraints on strengthening and protecting infrastructure, lack of knowledge of climate change projections and likely impacts on the community, and erosion of traditional knowledge...” In the case study of forestry practices and reindeer husbandry in Sweden (p. 293–299), multiple land uses and well-meaning regulations are putting stress on reindeer and their herders. Reindeer migrate between summer and winter pastures. With increased forestry practices and fertilization, however, the lichens on which reindeer depend for winter food are being outcompeted. Driving winds in the winter are creating hard pack, so the reindeer must spend more energy digging to get to the lichens. Also, because of habitat fragmentation from roads, railways, mining operations, and hydroelectric development, herders are often trucking the reindeer from winter to summer pastures, rather than herding them, to reduce losses. This trucking results in additional costs. The reindeer also have to be trucked farther away for slaughtering because European Union requirements are forcing local slaughterhouses to close. This case study is an example of a number of individual regulations and factors that accumulate to cause significant stress. As noted in one of the Russian case studies, “response strategies that do not reflect the values, priorities and needs of society will fail, either because they are not acted on or because they destroy the very thing they were supposed to help protect” (p. 135).

The concluding chapter (p. 346–347) notes that in all the case studies institutions act either as barriers or as facilitators for adaptation; however, when local decision makers have a greater understanding of the changing conditions, they are in a better position to engage in short- and long-term planning for impacts on resources, infrastructure, and culture. The authors also note that future adaptive capacity is contingent upon the connections between the local level and the broader socio-political institutional context of the northern regions.

The book could have benefited from a circumpolar map indicating the location of the communities being studied. Although the colour photos in the centre of the book are informative, the black and white photographs, local maps, and charts in the individual chapters are sometimes of poor quality and difficult to understand. The book also could have benefited from a more thorough editorial review. There are numerous errors, particularly in the first half of the book. For example, on p. 27, we read “celcius” rather than “Celsius”; on p. 56, “slate” instead of “sleet”; p. 113 says that most snowfall falls between May and November instead of between November and May; on p. 133, we see “evading” rather than “avoiding”; and on p. 248, “CYSN” is given as abbreviation for Council of Yukon First Nations (CYFN), and the Yukon Environmental and Socioeconomic Assessment Act is referred to as the “Yukon Environmental Assessment Act.”

I recommend this book particularly for Arctic researchers, whether they are physical or social scientists; such readers will understand the framework and methodology of this approach and gain a fuller understanding of the social and environmental conditions such as climate change that affect Arctic communities across the North. The book is also recommended for students in the social sciences, who can increase their understanding of the vulnerability of Arctic communities and apply the framework and knowledge developed by the multidisciplinary team in their studies and future careers.

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**SEALS OF GREENLAND.** By AQQALU ROSING-ASVID. Translated by DAID YOUNG. Nuuk: Ilinnisiorfik Undervisningsmiddelforlag, 2010. ISBN 978-87-7975-540-6. 144 p., maps, colour illus., charts, figures, further reading, index. Softbound. Available online at <http://www.atuagkat.com/>. DKK160.00, €20.00.

*Seals of Greenland*, by Aqqalu Rosing-Asvid, is the fourth in a series of books on the marine mammals of Greenland, following volumes on walrus, polar bears, and ice-adapted whales (bowheads, belugas, and narwhals). The series is published by the Greenlandic educational publishers Ilinnisiorfik, and English, Danish, and Greenlandic editions are available. The books, co-operatively produced by Ilinnisiorfik, the Greenland Institute of Natural Resources (GINR), and the Aage V. Jensen Foundation, are written for educational institutions (secondary school and college levels) and for those with a general interest in Greenland's

wildlife. Dr. Rosing-Asvid, a research scientist at GINR, is an expert on the seals of Greenland, with over 15 years of experience with polar bears and seals. The author has conducted much of the primary research described in the book, including studies on movements and migrations, diving behaviour, feeding and predation, ecological interactions, relationships with climatic and environmental conditions, reproduction, and harvest management.

Marine mammals are of significant cultural and socio-economic importance to residents of Greenland, and the various phocid seal species (the “true” seals of the family Phocidae) are perhaps the most important of all. Seals play a large role in the lives of Greenland residents, and around 150 000 are harvested annually. The meat is eaten by much of the population, and sealskins are the main source of income for most of the ca. 2500 full-time hunters. Six species of Arctic and Subarctic seals are included. Four are ice-adapted (pagophilic, or “ice loving”) species that pup on sea ice: bearded seal (*Erignathus barbatus*), hooded seal (*Cystophora cristata*), harp seal (*Pagophilus groenlandicus*), and ringed seal (*Pusa hispida*). The other two species give birth on land: common (or harbour) seal (*Phoca vitulina*) and grey seal (*Halichoerus grypus*, a recently confirmed species for Greenland).

The goal of the book is to make the latest scientific information about Greenland's seals accessible to everyone, and it certainly accomplishes this. Dr. Rosing-Asvid describes the features and characteristics common to the different seal species, but his overall focus is on the various specializations of the six species, their ecology and life history, and their role in the marine ecosystem. The book begins with a brief but effective summary of the evolution of the group, its approximate time of origin and phylogenetic relationships, and the origin of the extant species. Pinnipeds evolved from terrestrial carnivores, and the author describes the oldest known transitional fossils, including the recently discovered *Puijila darwini* (Rybczynski et al., 2009). The next section describes the various pinniped adaptations to life in the sea, including diving, sensory perception, adaptations to living in salt water, and sleep patterns.

The next section (p. 20–56) describes the six species and their ecology, life history, and seasonal cycle. Species descriptions are augmented by a variety of excellent photographs, described in further detail below. The species descriptions are followed by a thorough section (p. 57–78) on the role of the different seal species in the Greenlandic marine environment. This section includes topics on how seal food preferences are studied, the important prey items for the various species, seal interactions with other marine mammals, and the relationships between seals and the fishing industry. This leads into a discussion of the ways in which seal populations are regulated (the longest section in the book, p. 79–133), which include natural population dynamics, food availability, predation by polar bears and other species (Arctic fox, Atlantic walrus, Greenland shark, killer whales), human harvesting, climate and climate