

despite initial skepticism on the part of some whalers. One result of this research has been the IWC's acknowledgment that the bowhead population is indeed larger than they had thought, confirming the validity of Iñupiat observations. Another result is the mutual recognition of specialist knowledge by all participants on the North Slope. Whalers are actively interested in what they can learn about the health of the bowhead population from scientists who are on the scene. Scientists actively seek the observations and opinions of whalers to flesh out their research—and indeed, to direct it. The extent to which Brewster has been able to contextualize this story with fine detail is testimony not only to Brower's enduring commitment to sharing his knowledge, but also to Brewster's obvious respect and affection for her interlocutor, a respect that was generated as part of her long-standing engagement with the community at large. In this, Brewster's work stands apart from the work of Margaret Blackman with Sadie Neakok and from that of William Schneider with Waldo Bodfish, Sr., of Wainwright, two recent life histories that reflect the lives of North Slope residents. Those accounts are read locally with lively interest and active enjoyment, but neither Blackman nor Schneider had comparable community experience. Thus it seems to me that Brewster is better able to catch intricate connections and to reflect the rhythms of Barrow daily life in a nuanced way. She writes with a light, descriptive style that makes the whole an easy and pleasurable read. I recommend it.

My one note of caution concerns the history chapter, which seemed a bit flat to me. For an oral historian, Brewster makes curiously little recourse to first-person accounts, and where she does—with Charles Brower, Sr.'s description of reindeer herding, for instance—more detail of this relatively unrecorded part of Barrow history would have been welcome. There is virtually no historiographic analysis of source material, so that complex information is simply presented as historical fact. That being said, the book as a whole is well worth reading. Harry Brower was an important figure whose attitudes and actions have influenced Iñupiaq relations on an international scale. In addition, this volume nicely complements the life history of his sister Sadie Neakok. To date, the North Slope life histories known to me—of Jim Allen, Charles D. Brower, Waldo Bodfish, and Sadie Neakok—contribute to a collective account of North Slope life from the late 19th century on. But all are accounts of major figures who were either among the first Euro-Americans to settle in the region (Charles D. Brower and Jim Allen), or people whose position in the community was mediated by one Euro-American parent. That is an important social fact, but in certain respects it is also a particular one. Partial life histories of other members of North Slope communities have been produced through the Iñupiaq History, Language and Culture Commission, particularly with reference to land-use inventories, but accounts as detailed and descriptive as those listed above have yet to appear. This is by no means a criticism of Brewster's work, since I

know that she has spent many, many hours with many elders in the community. It is simply a plea—to future publishers as well as to future oral historians—to recognize the importance of producing some of those other accounts.

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TAXONOMY, ECOLOGY AND DISTRIBUTION OF *HYGROCYBE* (FR.) P. KUMM. AND *CAMAROPHYLLOPSIS* HERINK (FUNGI, BASIDIOMYCOTA, HYGROCYBEAE) IN GREENLAND. By TORBJØRN BORGEN and EEF ARNOLDS. Copenhagen: Danish Polar Center, 2004. Meddelelser om Grønland, Bioscience 54. 68 p., map, b&w illus., appendix, bib. Softbound. DKK198 + DKK58 s&h; US\$49.00.

This manual focuses on a group of mushrooms that in Greenland commonly inhabit grasslands and, to a lesser extent, the oceanic mossy dwarf-shrub heaths and fens dominated by *Empetrum*. The objectives were to review the current status of knowledge of these mushrooms, provide an aid to identifying collections, and present detailed descriptions of the species. The authors have done an excellent job of presenting their results. The colors of the pictures are accurately reproduced, the text is displayed in an easy-to-read format, and the quality of the printing is very high.

Of the 29 species and varieties recognized in the 450 collections studied, 28 are assigned to the genus *Hygrocybe* and one species to *Camarophyllopsis*. Seventeen of these have been reported from Canada and the United States. Presumably most will be found in these areas when an intensive survey of the preferred habitats is undertaken.

The authors recognized two taxa that were unnamed and propose one as a new species (*H. rubrolamellata*) and the other as a new variety (*H. conica* var. *aurantiolutea*). Fresh mushrooms of the new taxa are shown in color, which is important because the mushrooms shrink and discolor on drying. Previous reports of three species (*H. coccinea*, *H. marchii*, and *H. coccineocrenata*) from Greenland could not be confirmed; those species have been excluded from the flora. Furthermore, the circumscriptions of six species have been revised on the basis of new data accumulated by Borgen and Arnolds.

The study focused on the macroscopic features of the fresh mushrooms. Characters of the cap, gills, and stem that were evaluated included size, shape, colors, odor, and taste. However, to critically distinguish the species and varieties in this group, it was essential to characterize several microscopic features, such as basidiospores, the various types of cells in the hymenium (the spore-bearing

layer lining both sides of the gills), and the tissues of the mushroom. Not only were features measured, but the data were used to make critical comparisons between species. Such comparisons are essential in evaluating the significance of the features in separating taxa.

The manual has two major sections. The introductory part (nine pages) discusses a) the materials and methods; b) observations on some critical characters, i.e., the stipe trama, the broad hairs at the stem apex, the taxonomic significance of the greyish scales on the cap, and the size of the terminal elements of the cap exterior; c) the geographic distribution of these mushrooms in Greenland; d) the ecology of the species; and e) phenology. The major portion of 39 pages, titled "Taxonomic part," is composed of sections on classification, i.e., an overview of the apparent relationships between the taxa; dichotomous keys to aid in the naming of collections; and detailed descriptions of the characters of the 29 taxa, including observations pertinent to each species. The manual concludes with the citation of nearly 80 references consulted in its preparation.

This is a carefully prepared technical manual that is recommended for ecologists, botanists, mycologists, advanced students, and others studying the biodiversity of grasslands and shrub-heaths of the boreal forest and more northern areas.

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FISH OTOLITHS FROM THE PALEOCENE (SELANDIAN) OF WEST GREENLAND. By WERNER SCHWARZHANS. Copenhagen: Danish Polar Center, 2004. Meddelelser om Grønland, Geoscience 42. 32 p., maps, b&w illus., bib. Softbound. DKK125 + s&h.

Fish otoliths, the aragonitic "ear stones" of the acoustico-lateralis sensory system, are often preserved in sediments where no other parts of the animal survive. Otoliths are the oldest records of some fish lineages, with millions of years between the oldest otolith record of a given family and the oldest record based on other remains. Otoliths, therefore, are valuable in providing information on the age and past distributions of fishes that are not documented by other evidence.

In this book, Schwarzhans describes a new otolith-based marine ichthyofauna from a mid-Palaeocene (roughly 60 million years old) site in Greenland. The site contains 24 species, seven of which are new, based on over 170 otoliths collected. For each new species, diagnoses and descriptions are presented, as well as a section on ontogeny and variability where appropriate. Drawings of all the taxa are presented, and each taxon includes a "remarks" section, which is very useful to indicate the geological and geographical range of each group. While Schwarzhans

himself is an expert, two other otolith experts, B. Reichenbacher and D. Nolf, also reviewed the book, indicating that the identification and classification of the material can be relied upon.

Schwarzhans not only describes the material, but uses this otolith fauna to interpret the depositional environment of the locality. The mixture of taxa suggests the palaeoenvironment was predominantly that of an intermediate shelf area, but that the faunal assemblage may have been influenced by transportation of sediments and their fossils from other environments in shallower water. If this is the case, it would be interesting to know how the otoliths have been affected, as Nolf (1985) pointed out that otoliths may be distinctly eroded by post-mortem transportation. Nolf (1985) also noted that most otolith assemblages are the result of predators' excreting otoliths into the sediments. The predators might feed in a variety of habitats, but the otoliths of various taxa would be mixed in the predator's excreta, which would explain the mixture of shallow- to deep-water specimens in the otolith fauna. If this is the case, possible damage to otoliths may occur during digestion.

Schwarzhans also compares this Greenland fauna with other contemporaneous otolith faunas from Europe and the United States. From the species composition of these faunas, he determines that certain areas had similar climatic conditions and indicates probable climatic changes in the region. He also suggests palaeogeographic connections that best fit with the evidence of the otolith faunas.

Although the book is well laid out, with good reproduction of figures, the editing could have been better. In a number of places in the text, grammar, and spelling are rather confused. However, this will not greatly interfere with the readers' understanding of the material, and being written in English greatly increases the book's potential number of readers.

Most figures of otoliths in published works are drawings of the specimens, as is the case with this book. Scanning electron micrographs of otoliths might be more helpful to those of us who are less familiar with these remains, but who nevertheless have found otoliths in fossil sites and would like to identify them more easily. Additionally, for the non-expert, a figure of a generalized otolith depicting the relevant terms (e.g., antistrostrum, colliculum, cauda, excisura) would greatly help. Although references to previously published works will guide readers to terminological information, non-specialists would have benefited from finding it included in this book, rather than having to rifle through other works to understand Schwarzhans' terminology. In the same vein, the most substantial complaint is that the figure captions contain less information than wanted. None of the captions indicate the view in which each otolith is drawn, or whether the otolith is from the right or left side, although the text indicates this information is clearly relevant.

While this book would be difficult for the general reader, it is a valuable resource for palaeontologists and ichthyologists who are interested in the past distribution of