GRIZZLIES, SATELLITES, AND COMPUTERS

A Definitive System for Analysis of Grizzly Bear Habitat and Other Wilderness Resources. J. J. Craighead, J. S. Sumner, and G. B. Scaggs. 1982. Wildlife-

Wildlands Institute Monograph No. 1, University of Montana Foundation, Missoula. 279 pages. $27.50 (paper).

The definitive system proposed in this monograph is an ecologically based vegetation map, constructed by computer from LANDSAT imagery and detailed vegetation analysis, for a portion of the Lincoln-Scapegoat Wilderness in Montana. Three objectives were stated for the study: 1) Clearly define grizzly bear habitat requirements, 2) Analyze food habits of the grizzly bear, and 3) Devise an accurate, rapid, and relatively inexpensive method for analyzing large expanses of remote wilderness by means of computer-interpreted satellite imagery. It is the third objective that constitutes the main focus and contribution of the monograph.

In Chapter I, the authors briefly give background information on grizzly bear distribution and abundance. From prior studies of grizzlies in Yellowstone National Park, the authors also summarize the habitat requirements of this threatened species.

Chapter II is an exhaustive description of the landforms and vegetation of the study area. The chapter contains, in great detail, data necessary to interpret the satellite photos and to develop the computer-drawn map. The detail presented is likely to make for tedious reading for any but those directly involved with the study area or adjacent wilderness.

Chapter III contains data on grizzly bear food habits on a portion of the study area. The authors use this admittedly limited data base to identify food plants and to judge their preference by grizzlies. Food plant abundances and distributions are then extracted from the data in Chapter II. Finally, an effort is made to rank habitat types by their importance to grizzly bears. Because of the limited and biased food habits data, this section is the least satisfying in the monograph. This shortcoming is ameliorated, to a degree, by the conclusion that each of the three defined altitudinal zones and their component habitat types are essential to the welfare of the grizzly bear.

Chapter IV is a highly technical treatise on the development of the "ecospectral" (ecological definitions of the color imagery) vegetation classification. Once the color map of the primary study area is completed, a computer extrapolation is made to secondary study sites and the accuracy of the technique is tested against ground-truthed vegetation data. This section, the major contribution of the book, describes how vegetation sampling of a small area can be combined with LANDSAT imagery to create a useful vegetation resource classification and inventory of a large remote area. Discussion of the difficulties and limitations of the process will be useful to ecologists working in different regions and ecosystems.

The last chapter is an attempt to illustrate the applications of the mapping technique, specifically to grizzly bear management in the Rocky Mountains. Further details are also given on the current status of the grizzly bear, threats to its survival, and suggestions for management. At this point the discussion returns to the long-standing feud between Frank and John Craighead and the Interagency Grizzly Bear Study Team (IGBST) over the management of the Yellowstone grizzly population. This rambling essay repeats previously published criticisms of the IGBST approach and contributes little to the current monograph.

As a whole, the monograph, because of the extensive and at times excessive detail, is laborious reading. The vegetation classification and map for portions of the Lincoln-Scapegoat and Bob Marshall wilderness areas likely will prove invaluable to resource managers and researchers in the northern Rocky Mountains. Portions of Chapter IV will also be useful to those attempting large-scale vegetation mapping. But, for the larger ecological audience I cannot recommend the book for general reading or for the personal reference library.

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