

## North American fish fauna

*Freshwater Fishes of Canada.* By W. B. Scott and E. J. Crossman. Pp. xi+966. (Fisheries Research Board of Canada Bulletin No. 184.) (Information Canada, Ottawa, 1973.) \$9.75.

THE Fisheries Research Board of Canada has a most creditable publishing record on both fish and fisheries. By commissioning a series of excellent publications on the fishes of the major geographical regions of Canada, published in its Bulletin series, it has made the Canadian fish fauna the best documented in the world. In this, the latest of the series, the authors W. B. Scott and E. J. Crossman faced a formidable task in critically surveying the fishes of northern North America, a fauna which in part is poorly studied biologically and is beset with taxonomic problems, while the remainder (mostly the economically valuable species) has been studied in depth. The authors' achievement in bringing together the information in a large literature (over 1,400 references are cited) is alone a major contribution, and their original work welds the whole together to form one of the best books on a major fish fauna to be published this century.

The plan of the book is essentially a systematic account which commences with a key to the families of freshwater fishes in Canada. This relies on simple characters and is amply illustrated; it is clearly a key designed for use by others than systematic ichthyologists—and is all the better for that. Each family is preceded by a key to the species included in the fauna, and though these are necessarily more technical in nature they are still practical keys. The practical nature of the

means of identification is well illustrated by a page of line drawings devoted to the parr of the species of *Oncorhynchus*, *Salmo*, and *Salvelinus*—confusing the young stages of salmon, trouts, and charr.

Each account is illustrated by a drawing of the fish and has text under headings such as description, colour, systematic notes, distribution, biology, relation to man, nomenclature, etymology and common names. Of these headings, biology is frequently the most detailed, especially in the case of economically important species, and provides data on spawning, growth, age at sexual maturity, habitat, food competitors and predators, and parasites.

The more general parts of the book are confined to a brief note on Canada and its fish fauna, which is essentially a listing of the 181 species by geographical area and drainage basin. This seems to be a rather terse treatment of the zoogeography of Canada's fishes strangely so in contrast with the detailed zoogeographic discussions in McPhail and Lindsey's *Freshwater Fishes of north-western Canada and Alaska* (1970).

Such criticisms as one needs to make of Scott and Crossman's masterly treatment of the Canadian fish fauna are in extra-limital areas. For example, although most books on European fishes report the occurrence of *Ictalurus nebulosus* as introduced to Europe, the only specimens critically examined have proved to be *I. melas*. Surely too, it is time to forget about the death of Henry I of England in 1135 which is said (page 74) to have been caused by eating lampreys (*Petromyzon marinus*)—although the lampern (*Lampetra fluviatilis*) was more likely to have been involved.

Alwyne Wheeler

## Nice balance for ecologists

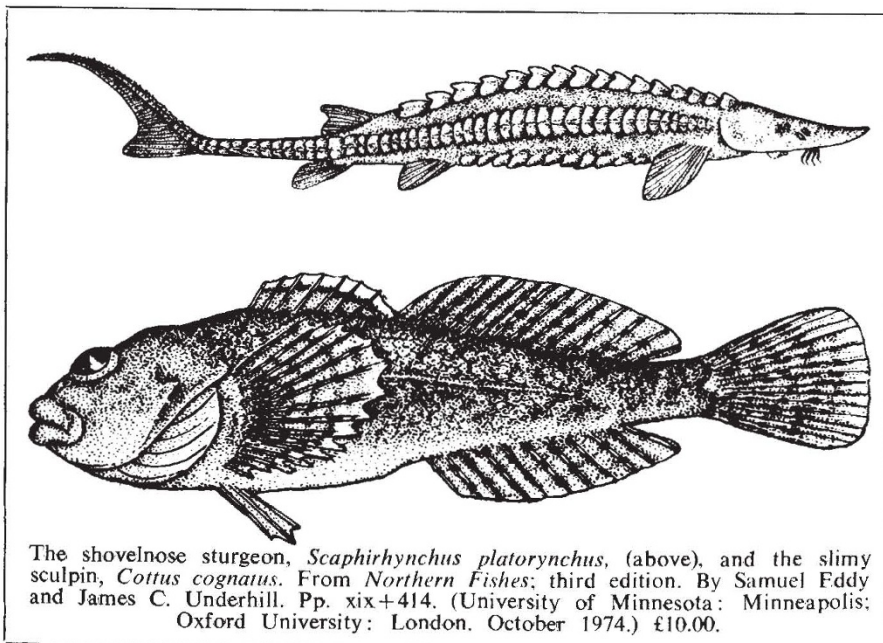
*Ecology, with Special Reference to Animals and Man.* By Charles Kendeigh. Pp. vi+474. (Prentice-Hall: Englewood Cliffs, New Jersey, 1974.) \$16.95.

ONE of the most frequent criticisms levelled at the examination scripts of modern ecology students is that their knowledge of ecological principles is not accompanied by evidence of experience of living organisms in the field. Ecological field courses were once exercises in field identification; now the recognition of plants and animals has become subservient to studies of ecosystem organisation, trophic structures, population dynamics, pattern analyses, and so on. The pendulum seems to have swung to the other extreme.

Charles Kendeigh's book is unusual in that it attempts to maintain a balance between theoretical principles and detailed accounts of field studies. He achieves this by the insertion of a section which considers certain habitats in detail, including both aquatic and terrestrial examples. By placing this section early in the book, immediately following an introductory section, he demonstrates his conviction that the understanding of ecological principles can only be achieved once the student has become familiar with the diversity of organisms and the complexity of the environment which is to be found in almost any habitat subjected to critical observation. I find this approach both stimulating and refreshing.

There follow three theoretical sections, dealing with ecosystem ecology (nutrient cycling, energy flow, food webs), population ecology and evolutionary ecology. Attempts to simplify language and concept in these sections have occasionally led to misleading expressions, such as the 'energy cycle' and the 'impervious' nature of carbon dioxide and water vapour to long wavelength radiation. Coverage is fairly thorough, however, especially in the section on energy flow, and the relevance of these concepts to the human manipulation and exploitation of nature is stressed. The concept of succession is mentioned on several occasions, but a detailed theoretical consideration of this important aspect of ecosystem ecology is lacking.

The coverage of biomes and geographical ecology lacks much of the flow of previous sections. It comprises largely a series of lists of birds and mammals for North American examples of the major biomes. One pleasing feature of these chapters is the inclusion of a few paragraphs dealing with the palaeoecology of the American



The shovelnose sturgeon, *Scaphirhynchus platyrhynchus*, (above), and the slimy sculpin, *Cottus cognatus*. From *Northern Fishes*; third edition. By Samuel Eddy and James C. Underhill. Pp. xix+414. (University of Minnesota: Minneapolis; Oxford University: London, October 1974.) £10.00.