Vincent Bels · Ian Q. Whishaw
Editors

Feeding in Vertebrates

Evolution, Morphology, Behavior, Biomechanics
This volume, assembled and edited by Bels and Whishaw, is a significant, scholarly, assessment of the current research on the evolution of vertebrate feeding systems in the context of the “form–function complex”. It constitutes a major contribution that: (1) illustrates the continuing integration across biological sub-fields to analyze complex systems, (2) celebrates technical advances, ranging from CT scanning and PIV to sophisticated analytical and statistical methodologies, (3) incorporates phylogenetic perspectives that are essential for evolutionary research, and (4) shows how diversity of methods and organisms is essential for advancing the field of evolutionary morphology.

Anatomy/morphology reigned as the king of the biological sciences in the mid—to the late nineteenth century, where its dominance was evident in Germany in particular. But newer fields, especially physiology and development, gradually superseded the older approaches, which slowly declined in influence. By the 1960s and 1970s, the change was evident. Functional morphology—exploration of the form–function interaction—developed rapidly and the first glimmerings of biomechanics could be seen. Phylogenetics became a necessary component of comparative investigations, including a renewed focus on the relation of ontogeny to phylogeny. Hypotheses and tests were increasingly emphasized. Development, behavior, and ecology became major components of functional studies. A renaissance of morphology was evident by the early 1980s. Key to the rebirth was a new sharp focus on problems and solutions, rather than description for its own sake. Studies of trophic systems began to consider the links among perception, integration, and action. Integrative approaches, frequently including either/both ontogenetic and paleontological time dimensions, were increasingly utilized. Central to the new movements were the rebirth of venerable organizations, for example, the American Society of Zoologists, which became the Society of Integrative and Comparative Biology (SICB) near the end of the twentieth century, and the appearance of new international organizations, such as the International Congress of Vertebrate Morphology (ICVM), which reliably meets every third year at diverse sites around the world. The programs of these organizations offer amazingly rich and diverse arrays of speakers and workshops and attract large
audiences of lively young people, as well as more seasoned researchers. We live in an age of excitement and opportunity for research in the field relevant to the present volume.

We are delighted to see that this entire volume presents the advances in our science using cases to represent the diversity of research perspectives on major chordate and vertebrate lineages. By presenting these in such a broadly comparative framework, many new ideas and extensive new research into the functional biology, sensu lato, of feeding will be stimulated.

This volume is a thoughtful, erudite, compendium of research formulation and ideas. The authors and editors have given researchers a forward-thinking overview. We predict that it will prove to be a resource for researchers in many subfields of biology, serving to integrate and synthesize new conceptions of the evolution and function of trophic systems.

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