

highest importance to remember that the independence of any natural group in the animal kingdom can in no way be determined by the number of its representatives. The Squirrels and Mice are very numerous in comparison to the different families of Edentata or of Pachyderms; the Warblers or Herons are very numerous in comparison to the Ostriches or Pelicans; the Snakes and Lizards are very numerous in comparison to the Turtles or Toads; the Perches, the Mackerels, and the Suckers are very numerous in comparison to the Sharks and Skates, etc. But all the natural groups founded upon a knowledge of many of them are no more natural than if their existence had been ascertained from a careful examination of a single representative of each. The history of our science affords ample evidence to substantiate this assertion. The genus *Esox*, as limited by Linnæus, contains nine species, every one of which is now referred to a distinct genus: *Esox Lucius* has become the type of the genus *Esox* proper; *Esox Belone*, the type of the genus *Belone*; *Esox brasiliensis*, the type of the genus *Hemirhamphus*; *Esox Vulpes* belongs to the genus *Butirinus*; *Esox Synodus*, to the genus *Saurus*; *Esox Hepsetus*, to the genus *Engraulis*¹; *Esox gymnocephalus*, to the genus *Erythrinus*; *Esox Sphyræna* has become the type of the genus *Sphyræna*; and *Esox ossesus*, the type of the genus *Lepidosteus*. These nine genera are referred by some ichthyologists to four different families, and by others to eight distinct families. Now, if either Linnæus or Artedi had carefully studied the species in their time referred to the genus *Esox*, they might have recognized the different genera to which they were afterwards referred, quite as well as Lacépède or Cuvier, or any other ichthyologist; and they might even have perceived the necessity of separating some of them more widely than they were in the days of Cuvier, since, as I have shown, *Lepidosteus* differs greatly from all the other living fishes.

But, to come to the point I am aiming at. The genera *Belone*, *Hemirhamphus*, *Saurus*, *Engraulis*, *Butirinus*, *Erythrinus*, *Sphyræna*, and *Lepidosteus*, could as truly have been separated from *Esox* by Linnæus with the aid of that one species he knew of each, as they can be characterized now that we know many species of all of them; and, upon a discriminating discussion of their differences, they might have been characterized, not only in the same way as they are now in most works, but even with greater precision. What is needed for such systematic work is accurate knowledge of the animals before us, and not a large number of species; though it is true that we derive additional aid, and our task is made comparatively easy, when we become acquainted with many closely allied species, leading, by their near affinity, to a readier perception of their generic relations.

¹ I do not mean to enter here into a critical controversy as to the true affinities of this species, nor of two other Linnæan species of the genus

Esox, which have also led to extensive discussions among ichthyologists: for my purpose, one view of the case is as acceptable as another.