

the sphenotic (autosphenotic) bone posterodorsad to the eye. Harrington (1955), Reno (1966), and others have noted that this element is already a vestige; and its extreme reduction or absence is not surprising since the associated section of the IO canal is one of the last to form during ontogeny (Lekander, 1949; Swift, 1970; H. W. Reno, pers. comm.).

The condition of the IO canal at the position of the dermosphenotic bone was classified in one of three categories: (1) complete, the IO and POC segments of the canal continuous; (2) partially interrupted, the IO and POC segments being connected by an open trough or slit; (3) incomplete, the IO and POC branches entirely separate. Ossification of the dermosphenotic bone was studied on specimens cleared and stained by the method of Taylor (1967).

In *N. ardens* the IO canal is complete in about 95 percent of the specimens examined, and the dermosphenotic bone is present and fully formed. In a second group of forms, *N. b. alegnotus*, *N. fumeus*, and *N. lirus*, the IO canal is almost always incomplete at the position of the dermosphenotic bone; and the bone is usually absent or very weakly ossified. In the remaining species of the subgenus, the IO canal ranges from incomplete to complete at the position of the dermosphenotic bone; and the bone either is absent or present but poorly formed. Cleared and stained specimens reveal that the IO canal may be complete even though the dermosphenotic bone is weakly ossified or absent. The canal in such cases apparently is formed primarily of connective tissue. *N. b. bellus* is representative of this third grouping of species. Data presented in Table 1 indicate that canal closure is correlated with size. Most smaller specimens have the IO canal completely or partially interrupted; in larger ones the probability that the canal will be closed increases, but even at maximum adult sizes, a substantial portion of the population will retain the juvenile condition.

Some additional species of *Notropis* exhibiting irregularities in the development of the cephalic lateral line canals are *N. bifrenatus* (Cope) (Harrington, 1955), *N. altipinnis* (Cope) (Snelson, 1968:798), *N. chalybaeus* (Cope), *N. texanus* (Girard), *N. welaka* Evermann and Kendall (Swift, 1970), and *N. alborus* Hubbs and Raney (Snelson, 1971). Except for *N. chalybaeus* and *N. texanus*, these species are not intimately related and none are closely related to species of *Lythrurus*. Not only does canal reduction not follow phylogenetic lines, it is not directly correlated with obvious ecological parameters. For example, *N. bifrenatus*, *N. chalybaeus*, and *N. welaka* inhabit Coastal Plain creeks characterized by dark-stained acid waters, low gradients, and, often, abundant vegetation. *N. lirus* and *N. b. alegnotus*, with an equally reduced cephalic