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Diversity of tissues in acanthodians with *Nostolepis*-type histological structure

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Acanthodian scales with *Nostolepis*-type histological structure are separated into five groups based on the presence/absence and extent of stranggewebe, odontocytic and syncitial mesodentine networks, cellular unipolar mesodentine, bone-like mesodentine and durodentine in scale crowns. Two new families of acanthodians are erected, based primarily on histological structure of scales: the Vesperaliidae (stranggewebe extending throughout the scale crown) and the Acritolepidae (bone-like mesodentine in the scale crown). The latter family includes species erected for articulated fish. The families Tchunacanthidae and Lenacanthidae are united in the single family Tchunacanthidae, characterized by having scale crowns with mesodentine formed mainly by unipolar cells. A sixth group, which we exclude from the Nostolepis-type, has scale crowns composed of dentine without lacunae, plus durodentine, and bases with only rare osteocyte cavities. The new groups promote the revision and reassignment of many 'nostolepid' taxa, in particular removing many species from the genus *Nostolepis*. Four new genera are erected: *Pechoralepis* (including part of *Nostolepis*), assigned to *Acritolepidae* nov.; and three genera assigned to an indeterminate family, which scales are composed of only odontocytic mesodentine without stranggewebe: Nostovicina (including part of *Nostolepis*), *Nobilesquama* (including part of *Nostolepis*), and *Peregrinosquama* (including part of *Watsonacanthus*). Histological structures are considered the primary characters of taxonomical value when based on isolated scales. Unfortunately, scale histology is unknown for most articulated acanthodians.

Key words: Dentine, mesodentine, stranggewebe, bone, Acanthodii, Nostolepis, Silurian, Devonian.

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