• **BRANCHIOSTEGAL RAYS, PYLORIC CAECA, AND VERTEBRAE**: These and certain other taxonomic characters may be used for fish identification, but are less commonly used under field conditions. Methods of making these counts are given by Hubbs & Lagler (1947).

• **BARBELS:** The numbers and relatives lengths of barbells (whiskers) are important in such fishes as the catfishes, as in their branching in mochokidae. Tiny barbles are sometimes well hidden in grooves at the sides of the head in some cyprinids. Similarly the dorsal filaments present in some gymnotoids are well hidden in the congealed mucous cover of preserved specimens, necessistating probing them out before they can be seen.

• **COLOUR:** Fish colours may changes diurnally, according to habitat, with emotional displays, and on death; also breeding colours, often brightest in bright colours fade, basic colour patterns, such as dark stripes or spots, remain in preserved fishes and are important characters in some groups (e.g Cichlidae, Characidae). Differences in breeding colours may also give important clues to species. 'For example, in Lake Nyasa (now Malawi) two species of tilapia are practically indistinguishable except by the colour of the breeding male and differences in time of year and depth of spawning. Such cases stress the importance of non morphological characters and the need to relate field and ecological data to the specimens kept for museum examination.

• **Statistical analysis:** Since taxonomic conclusions are reached on the basis of samples from large populations, it is incumbent upon a classifier of fishes to be knowledgeable regarding the statistical treatment of data. He should also, as far as possible, be careful to avoid bias, and should evaluate statistically the conclusions that he reaches. For example, often available statistically the conclusions that he reaches. For example, often available samples of two kinds of fish will differ in respect to the mean value of some count or measurement; in that event the degree of confidence in the reality of this difference must be established statistically, as well as the variation (standard deviation) of the count in both species, and degree of overlap. Taxonomic hypotheses formulated in terms of quantitative characteristics may be tested by means of the chi-square test, Student's t-test, analysis of variance, multiple range or non-parametric tests (Steel & Torrie 1960). The t-test has sometimes been misapplied in taxonomy; Rothschild (1963) discuss this problem and suggests proper procedures. Multivariate analysis may be useful when it is necessary to combine information on several characters to obtain the best possible discrimination between two groups (Sokal & Sneath, 1963; Royces, 1954).

• **Taxonomic references for different parts of the world**

• Only the main works can be listed here, those with keys where available, otherwise check lists, or papers with good bibliographies of the numerous short papers on the region concerned. Where no recent synoptic treatmemts exist, it is wise to consul a specialist about the literature. Contact a local museum, or see the list of taxonomists working on Pisces, pp. 79-85 in the Directory of Zoological Taxonomists of the World (compiled by Blackwelder, R.E. and R.M., 1961, for the Society of Zoology, Southern Illinois University Press, Carbonadale, Illinois); this gives the specialities and addresses of fish taxonomists. The Smithsonian Information Exchange, Washington, D.C., may also be able to help with such information.

• As the literature is growing rapidly, the Pisces Section of the Zoological Record should be consulted to keep up to date. The Zoological Record (Section 15, Pisces) is available, singly or by annual subscription, from the Publications Officer, Zoological Society of London, Reagent's Park, London, NWI. Many back issues are still available. Abstracting journals are another source of information especially Biological Abstracts (Philadelphia) and Referativnyi Zhurnal (Moscow).

References
• Balogun, J. K. (2006) Basic fisheries biology
and management . Pp 88
• Lowe-McConnel (1978) Identification of
freshwater fishes, In the biological basis of
freshwater fish production eds Shelby D.
Gerking and E. David Le Cren. Pp 305

1 **Identification of fish species:**
- Use of monographs to identify members of cichlids, clupeids and cynoglossids.

2. **Important world commercial species:**
- Commercial production of sardines, tuna, and anchovies.
- Methods of exploitation e.g. use of purse seine net

3. **Biological attributes of fish population:**
- Population (species composition, species abundance and relative composition)
- Population growth
- Population density
- Regulation of population size

4. Phylogenetic relationships:
Phylogeny: It defined as the history of organismal evolution. It generates diagram that resembles a tree commonly referred to as "the tree of life". Existing species as generally located at the terminal twigs while extinct species are located at the interior twigs.
The following shall be emphasized:
- The tree of life
- Systematics: the science of ordering or organizing the history of organismal evolution.
- Identification of species: Recognizing the place of an organism in a classification with the aid of keys and monographs.
Taxonomy: It is the assigning scientific names to organisms according to legal rules of International
Code of Zoological Nomenclature (ICZN).
Taxonomy of major commercial fish species in Nigeria.