**Meristics** is an area of [ichthyology](http://en.wikipedia.org/wiki/Ichthyology) which relates to counting quantitative features of [fish](http://en.wikipedia.org/wiki/Fish), such as the number of fins or scales. A **meristic** (countable trait) can be used to describe a particular [species](http://en.wikipedia.org/wiki/Species) of fish, or used to identify an unknown species. Meristic traits are often described in a shorthand notation called a *meristic formula*.

Meristic characters are the countable structures occurring in series (e.g. myomeres, [vertebrae](http://en.wikipedia.org/wiki/Vertebrae), fin rays) in fish. These characters are among the characters most commonly used for [differentiation](http://en.wiktionary.org/wiki/differentiation) of [species](http://en.wikipedia.org/wiki/Species) and [populations](http://en.wikipedia.org/wiki/Populations). In the [salmonids](http://en.wikipedia.org/wiki/Salmonids), scale counts have been most widely used for the differentiation of populations within species. In rainbow and steelhead [trout](http://en.wikipedia.org/wiki/Trout) the most notable differences among populations occur in counts of scales.

Meristic characters are used in many other fields, such as in [botany](http://en.wikipedia.org/wiki/Botany) or in [zoology](http://en.wikipedia.org/wiki/Zoology). Meristic comparison is used in [phenetic](http://en.wikipedia.org/wiki/Phenetic) and [cladistic](http://en.wikipedia.org/wiki/Cladistic) analysis.

**Meristic analysis**

A meristic study is an often difficult task, as counting the features of a fish is not as easy as it may appear. Much of meristic analyses are performed on dead fish that have been [preserved](http://en.wikipedia.org/wiki/Fixation_%28histology%29) in alcohol. Meristic traits are less easily observed on living fish, though it is possible. On very small fish, a microscope may be required.

Ichthyologists follow a basic set of rules when performing a meristic analysis, to remove as much ambiguity as possible. The specific practice, however, may vary depending on the type of fish. The methodology for counting meristic traits should be described by the specialist who performs the analysis.

**Meristic formula**

This a shorthand method of describing the way the bones (rays) of a bony fish's fins are arranged, comparable to the [floral formula](http://en.wikipedia.org/wiki/Flower#Floral_formula) for flowers.

The meristic formula of *Siganus luridus* (a rabbitfish with venom tipped bones in its fins found in the Eastern Mediterranean) is: D, XIV+10; A, VII+8-9; P, 16-17; V, I+3+I; GR, 18-22

This means the fish has 14 rays (bones) in the first part of its dorsal fin (D), followed by 10 in a second array. A means the Anal fin, P means Pectoral (fins near the gills and eyes where 'arms' would be), V are the ventral or belly fins (equivalent to 'legs') GR represents the tail fin and the number of rays in the top lobe (18) and the bottom lobe (22).

**Morphometrics** (from Greek *μορϕή* "morphé", meaning 'shape' or 'form', and *μετρία* "metría”, meaning 'measurement') or **morphometry** [[5]](http://en.wikipedia.org/wiki/Morphometrics#cite_note-5) refers to the quantitative analysis of ***form***, a concept that encompasses size and shape. Morphometric analyses are commonly performed on organisms, and are useful in analyzing their fossil record, the impact of mutations on shape, developmental changes in form, covariances between ecological factors and shape, as well for estimating quantitative-genetic parameters of shape. Morphometrics can be used to quantify a trait of evolutionary significance, and by detecting changes in the shape, deduce something of their [ontogeny](http://en.wikipedia.org/wiki/Ontogeny), function or evolutionary relationships. A major objective of morphometrics is to statistically test hypotheses about the factors that affect shape.

"Morphometrics", in the broader sense of the term, is also used to precisely locate certain areas of organs such as the brain,[[*verification needed*](http://en.wikipedia.org/wiki/Wikipedia:Verifiability)] and is used in describing the shapes of other things.