

Meristic characters

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Meristic characters which are countable have been widely used in studies of fish population and species. Unlike the body proportions or colouration, meristic characters are fixed usually at or before metamorphosis and remain constant throughout the life of an individual.

All the meristic characters should be treated separately and the frequency distribution of meristic characters must be given so as to find out any variation between species or between population of a species.

The following abbreviations are used in fins, scales and gill rakers of a teleost:

D – Dorsal fin

A – Anal fin

P 1 – Pectoral fin

P 2 or V 2 – Ventral fin

C – Caudal fin

L1 – Lateral line scales

Ltr – Lateral transverse row of scales

O – Adipose dorsal fin

Gr – Gill rakers

Dorsal fin count and anal fin count includes spines and rays. Among two dorsals one spinous and other ray type, then the formula may be given as D1 and DII where, DI stands for spinous first dorsal and DII stands for rays of second dorsal fin. If 3 spines and 7 branched rays are present in a single dorsal fin, then the formula may be given as DIII, 7.

The anal fin count includes spines and rays. If two spines and 5 rays are present, the formula may be given as All, 5.

Pectoral fin count can be made on the left side. However, counts can be made on both sides in a few number of specimens to permit estimation of bilateral variations.

Pelvic fin count includes both spines and rays if present.

Fin count formula is given as below:

D1, I, VII-VIII - This denotes first dorsal fin with one spine separated from the rest of spines (VII-VIII).

D2, I, 15-16 - This denotes second dorsal fin with one spine followed by 15-16 rays.

All, I, 10-15 - This denotes anal fin with two spines separated from one spine

followed by 10-15 rays.

Fig added (Meristic Character) (FAO Figure)

Gill raker counts are for lateral gill rakers on the first arch, normally on the left side. The raker at the junction of the upper and lower limbs (epibranchial and ceratobranchial) is included in the lower limb count as the major part of the base of the raker is over the ceratobranchial. Rudimentary gill rakers, with the base width (lateral) of the raker equal to, or less than the raker length, occur at the anterior ends of the upper and lower limbs and these are included in the counts, though differentiated as ii, 7+19, iv=32.

Lateral line scales (L1) are scales along the lateral line from its origin to its posterior most part of the lateral line. In some teleostean fishes as in clupeids lateral line is absent. In such case scales will be counted along the row where the lateral line normally would have been present.

Predorsal scales are scales on the midline in front of the dorsal fin origin. These scales are counted as the scale rows which intersect the midline from the anterior point of the dorsal fin to the orbit.

Scales above and below the lateral line (Ltr) – A transverse series below of scale rows; below the lateral line scales are counted from the origin of the anal fin, not including the median ventral scale row, along a forward diagonal to the lateral line; above lateral line scales are counted from the origin of the dorsal fin, not including the median dorsal scale row, on a diagonal backward to the lateral line; the lateral line row is not included in these counts.

Orders of Fishes, with Selected Families

Class/subclass	Order	Number of Families	Representative families	Common names	# species in order
Myxini	Myxiniformes	1	Myxinidae	hagfish	43
Cephalaspidomorphi	Petromyzontiformes	1	Petromyzontidae	lamprey	41
Chondrichythes					
Holocephali	Chimaeriformes	3	Chimaeridae	chimaeras	31
Elasmo branchi i	Heterodontiformes		Heterodontidae	bullhead sharks	8
	Orectolobiformes	7	Rhincodontidae	whale sharks	31
	Carchiniformes	7		ground sharks	208
	Lamniformes	7	Cetorhinidae	basking sharks	16

	Hexanchiformes	2	Hexanchidae	cow sharks	5
	Squaliformes	3	Squalidae	dogfish	74
	Squantiniformes	1	Squantinidae	angel sharks	12
	Pristiophoriiformes	1	Pristiophoridae	saw sharks	5
	Rajiformes	9	Rajidae	skates, rays	456
Sarcopterygii					
Coelocanthimorpha	Coelacanthiformes	1	Latimeriidae	coelacanth	1
Dipnoi	Ceratodontiformes	1	Ceratodontidae	Australian lungfish	1
	Lepidosireniformes	2	Lepidosirenidae	S. Am., African lungfish	5
Actinopterygii					
Chondrostei	Polypteriformes	1	Polypteridae	birchirs, reedfish	10
	Acipenseriformes	2	Acipenseridae	sturgeons, paddlefish	26
Neopterygii	Semionotoformes	1	Lepisosteidae	gars	5

	Amiiformes	1	Amiidae	bowfin	1
Div. Teleostei		6	Hiodontidae	mooneye	217
		2	Megalopidae	tarpon	8
		3	Albulidae	Bonefish	29
		19	Anguillidae	Eels	738
		4		Swallowers, gulpers	26
	Clupeiformes	4	Clupeidae	Herrings	357
	Gonorynchiformes	4		Milkfish	35
	Cypriniformes	6	Cyprinidae	Carp, shiners	2,662
			Catostomidae	Suckers	
	Characiformes	10	Characidae	Hatchetfish	1,343
	Siluriformes	31	Ictaluridae	Catfish	2,405
	Gymnotiformes	6		Knifefish	62
	Esociformes	2	Esocidae	Pikes	5
			Umbridae	Mudminnow	5

				s	
	Osmeriformes	13	Osmeridae	Smelt	236
	Salmoniformes	1	Salmonidae	Salmon, trout, ciscoes	66
				Whitefish, chubs	
	Stomiiformes	9		Lightfish, dragonfish	321
	Ateleopodiformes	1	Ateleopodidae	Jellynose fish	12
	Aulopiformes	12		Lizardfish	219
	Myctophiformes	2		Lanternfish	241
	Lampridiformes	7		Ribbonfish, oarfish	19
	Polymixiiformes	1	Polymixiidae	Beardfish	5
	Percopsiformes	3	Percopsidae	Trout-perch	9
	Ophidiiformes	4		Cusk-eels	355
	Gadiformes	12	Gadidae	Cod,hake	482

	Batrachoidiformes	17	Batrachoididae	Toadfish	69
	Lophiiformes	16	Lophidae	Anglerfish	297
			Ogvocephalidae	Batfish	
	Mugiliformes	1	Mugilidae	Mulletts	80
	Atheriniformes	5		Silversides, grunion	285
	Beloniformes	5		Needlefish, flying fish	191
	Cyprinodontiformes	13	Cyprinodontidae	Livebearers	807
			Pegasidae	Seamoths	
			Syngnathidae	Pipefish, seahorses	
			Indostomidae	<i>I. Paradoxus</i>	
	Synbranchidormes	3	Synbranchidae	Swamp eels	87
	Scorpaeniformes	20	Cottidae	Scorpionfish, sculpin	1,271
			Dactylopteridae	Flying	

				gunards	
	Perciformes	128	Percichthyidae	Temperate bass	9,293
			Centrarchidae	Sunfish	
			Percidae	Perch, bass	
			Sciaenidae	Drum	
			Mullidae	Goatfishes	
			Cichlidae	Cichlids	
			Mugilidae	Mulletts	
			Gobiidae	Gobies	
			(also: bluefishes, remoras, blennies, mackerels, dolphins, snappers, tunas, swordfish)		
	Pleuronectiformes	6	Pleuronectidae	Flounder,	570

				flatfishes	
	Tetraodontiformes	9	Balistidae	Triggerfishes	339
			Ostraciidae	Cowfish, boxfish	
			Tetraodontidae	Puffers	
			Moridae	Molas (ocean sunfish)	
Totals:5 classes	57 orders		478 families	~ 26,000 species	