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Table 1. Comparison of morphometric measurements and meristic counts with the present study and published previous studies.

Parameter	Present study, n=3			Hanif et al. (2021), n=3			Han et al. (2014), n=1
Morphometric characters	1st specimen	2nd specimen	3rd specimen	1st specimen	2nd specimen	3rd specimen	
Total length (TL)	28.6	22.5	23.1	13.7	14.2	14.1	-
Standard length (SL)	23.1	18.2	18.7	11.5	11.7	11.7	37.1
Body depth (BD)	8.9	6.2	6.4	5.1	5.2	5.0	35.1
Body width (BW)	4.1	3.1	3.3	1.9	2	2.1	18.7
Head length (HL)	11.3	8.4	8.6	4.3	4.4	4.4	40.7
Inter-orbital length (IOL)	1.6	1.1	1.2	0.9	0.9	0.9	7.9
Eye diameter (ED)	2.1	1.8	1.9	0.7	0.8	0.8	-
Snout length (SL)	5.3	4.9	5.1	1.0	1.1	1.1	10.7
Pre-dorsal length	9.6	7.2	8.5	4.1	4.3	4.2	33.1
Pre-pectoral length	10.2	8.2	8.6	4.4	4.5	4.5	38.7
Pre-anal length	18.2	14.1	14.3	7.6	7.8	7.9	71.7
Upper jaw length	4.8	3.8	3.9	1.7	1.8	1.8	19.0
Caudal peduncle depth (CPD)	2.7	2.0	2.1	1.0	1.1	1.0	-
Meristic counts							
Dorsal fin spines	11	11	11	11	11	11	11
Dorsal fin soft rays	14	14	14	14	14	14	14
Pectoral fin soft rays	16	16	16	16	17	17	17
Pelvic fin spine	1	1	1	1	1	1	-
Pelvic fin soft rays	5	5	5	5	5	5	-
Anal fin spines	3	3	3	3	3	3	3
Anal fin soft rays	8	8	8	8	8	8	-

Table 2. Morphometric measurements and Otolith morphometrics for *Epinephelus radiatus*.

Parameters	Max	Min	Mean+s.d
TL (mm)	230.44	202.09	219.35±0.01
SL (mm)	187.30	175.24	181.60±0.04
Wt (gr)	185.76	165.59	174.43±0.02
OL (mm)	6.76	6.58	6.66±0.01
OH (mm)	3.78	3.08	3.39±0.01

Note: Total length (TL), Standard length (SL), Total weight (Wt); Otolith length (OL), Otolith height (OH), Weight of the otolith (OWt).

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Table 3. Genetic distance between the several genera of grouper species based on the COI gene.

	Alphestes afer	*Alphestes immaculatus*	*Alphestes multiguttatus*	*Cephalopholis argus*	*Cephalopholis boenak*	*Cephalopholis fulva*	*Cephalopholis hemistiktos*	*Cephalopholis oligosticta*	*Cephalopholis sexmaculata*	*Dermatolepis inermis*	*Gonioplectrus hispanus*	*Hyporthodus ergastularius*	*Hyporthodus flavolimbatus*	*Hyporthodus niphobles*	*Mycteroperca bonaci*	*Mycteroperca rubra*	*Plectropomus leopardus*	*Variola albimarginata*	*Variola louti*	*Epinephelus polylepis*	*Epinephelus areolatus*	*Epinephelus chlorostigma*	*Epinephelus awoara*	*Epinephelus corallicola*	*Epinephelus cyanopodus*	*Epinephelus erythrurus*	*Epinephelus fasciatus*	*Epinephelus flavocaeruleus*	*Epinephelus hexagonatus*	*Epinephelus howlandi*	*Epinephelus irroratus*	*Epinephelus itajara*	*Epinephelus longispinis*	*Epinephelus maculatus*	*Epinephelus bleekeri*	*Epinephelus coeruleopunctatus*	*Epinephelus coioides*	*Epinephelus_diacanthus*	*Epinephelus malabaricus*	*Epinephelus_latifasciatus*	*Epinephelus radiatus*	*Epinephelus epistictus*	*Epinephelus morrhua*
Alphestes afer																																											
Alphestes immaculatus	9.4																																										
Alphestes multiguttatus	9.1	7.5																																									
Cephalopholis argus	18.6	18.5	18.7																																								
Cephalopholis boenak	19.6	20.3	18.3	15.7																																							
Cephalopholis fulva	18	17.8	16.1	15.3	17.2																																						
Cephalopholis hemistiktos	19.9	18.7	19.2	15.4	17.7	12.4																																					
Cephalopholis oligosticta	19.8	16.4	17.7	16.7	16.8	12.4	10.5																																				
Cephalopholis sexmaculata	18.2	18.4	17.1	17.8	15.1	12.6	10.9	7.6																																			
Dermatolepis inermis	14.2	15.4	15.2	20.3	19.9	18.3	19	16.2	16.5																																		
Gonioplectrus hispanus	22.3	19	20.4	20.1	19.9	19.4	16.4	19.9	17.3	16.9																																	
Hyporthodus ergastularius	15.6	15.5	13.8	16.9	18.3	16.3	17.3	17	17.2	13.3	20.2																																
Hyporthodus flavolimbatus	15.4	14.8	14.5	17	18.6	12	16.6	15.8	16.8	16.6	19.4	7.3																															
Hyporthodus niphobles	15.9	14.4	14.3	16.9	19.2	15	17.6	16	18.1	14.4	19.7	5.8	8.6																														
Mycteroperca bonaci	16.5	15.1	15.7	17.1	19.2	16.8	16.5	17.6	17.7	15.7	18.2	12.8	11.9	12.6																													
Plectropomus leopardus																																											
Variola albimarginata																																											
Variola louti																																											
Epinephelus polylepis																																											
Epinephelus areolatus																																											
Epinephelus chlorostigma																																											
Epinephelus awoara																																											
Epinephelus corallicola																																											
Epinephelus cyanopodus																																											
Epinephelus erythrurus																																											
Epinephelus fasciatus																																											
Epinephelus flavocaeruleus																																											
Epinephelus hexagonatus																																											
Epinephelus howlandi																																											
Epinephelus irroratus																																											
Epinephelus itajara																																											
Epinephelus longispinis																																											
Epinephelus maculatus																																											
Epinephelus bleekeri																																											
Epinephelus coeruleopunctatus																																											
Epinephelus coioides																																											
Epinephelus_diacanthus																																											
Epinephelus malabaricus																																											
Epinephelus_latifasciatus																																											
Epinephelus radiatus																																											
Epinephelus epistictus																																											
Epinephelus morrhua																																											

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Mycteroperca rubra	17.5	15.6	16.9	17.4	18.4	16.9	16.2	15.6	16.5	14.8	18.9	12.5	10.7	13.3	9.1																			
Plectropomus leopardus	22.4	22.9	22.1	21.9	22.0	19.6	21.1	22.4	23.6	23.3	20.7	21.9	20.7	22.0	21.9	22.5																		
Variola albimarginata	20.7	18.5	19.6	19.8	19.7	22.1	21.9	19.8	12.2	18.2	21.4	19.5	19.4	20.5	19.3	19.9	21.7																	
Variola louti	21.1	29.9	20.8	21.0	27.8	24.4	22.1	21.1	21.4	21.3	23.1	25.5	25.5	23.0	20.8	25.6	23.6	8.2																
Epinephelus polylepis	18.9	17.8	16.7	16.6	19.2	16.4	16.9	18.9	18.3	19.2	19.5	15.3	13.4	13.8	13.4	13.7	18.8	18.8	22.4															
Epinephelus areolatus	19.7	19.5	17.3	18.2	20.4	16.5	18.6	19.8	18.5	19.5	20.6	15.5	16.5	21.9	16.1	19.1	20.8	18.1	8.1															
Epinephelus chlorostigma	19.1	18.8	16.7	16.8	19.2	16.1	17.9	19.8	19.5	19.9	15.3	15.6	13.4	13.8	19.9	22.6	22.3	8.3																
Epinephelus awoara	18.6	15.4	17.5	18.7	17.8	17.7	17.7	16.6	15.6	16.8	15.5	12.3	12.2	18.4	18.0	12.3	13.3	12.5																
Epinephelus corallicola	18.7	16.2	17.6	19.9	18.8	18.8	18.8	16.8	12.0	14.2	13.1	14.5	14.7	18.9	21.5	13.7	15.7	13.9	13.8															
Epinephelus cyanopodus	18.0	17.5	18.9	18.7	18.8	19.4	20.4	28.7	19.8	20.5	14.6	17.7	17.3	19.6	22.9	27.2	27.7	23.9	14.7	15.1														
Epinephelus erythrurus	17.7	15.6	11.9	11.3	17.7	14.7	11.6	11.6	11.7	12.6	11.3	11.3	11.4	19.8	12.2	14.4	14.4	14.2	13.4	17.4	14.3													
Epinephelus fasciatus	19.5	12.5	20.7	18.5	21.6	11.2	19.4	19.8	18.6	18.9	17.5	16.6	15.9	12.0	14.1	14.4	13.3	15.5	13.4	14.4	14.9	13.6	19.9											
Epinephelus flavocaeruleus	18.4	20.3	16.8	17.8	18.7	19.9	19.8	20.5	15.4	20.6	15.4	17.7	17.7	17.9	21.4	17.5	13.8	18.1	14.4	14.5	19.8	14.2	14.1	14.4										
Epinephelus hexagonatus	19.1	17.2	16.4	18.6	17.9	18.5	18.6	16.8	15.3	17.5	13.9	13.4	13.1	19.9	12.7	14.4	15.9	12.9	13.6	14.9	14.9	14.4	15.4	14.4										
Epinephelus howlandi	18.9	18.8	17.1	19.8	18.9	18.8	18.6	19.0	17.6	16.7	16.6	15.6	15.6	19.2	22.2	16.3	16.4	16.6	12.5	15.1	15.5	14.4	15.5	15.1	17.2									
Epinephelus irroratus	19.9	19.8	11.8	18.7	19.8	18.4	19.7	17.7	15.1	19.4	15.5	15.3	15.3	19.2	22.0	13.4	12.3	13.3	12.5	13.8	13.3	13.4	12.2	10.3	13.3									
Epinephelus itajara	17.8	16.5	14.8	18.8	14.0	19.7	18.9	18.9	15.4	14.5	14.4	14.0	18.3	17.4	14.3	15.4	17.4	15.5	14.4	15.7	17.4	14.8	14.4	16.5	15.5									
Epinephelus longispinis	11.8	18.7	17.5	17.1	18.2	18.4	18.9	17.8	19.3	19.5	15.4	15.5	15.5	12.2	12.3	12.5	15.2	12.4	14.4	13.4	15.5	13.1	15.5	15.4	16.5	16.6								
Epinephelus maculatus	18.3	17.9	17.7	18.1	17.6	18.8	16.7	16.8	17.4	18.4	14.4	16.5	16.6	22.1	22.4	14.2	14.3	14.5	15.3	15.5	15.5	13.4	14.5	15.5	16.6	18.2								
Epinephelus bleekeri	18.6	18.2	18.5	17.4	18.7	17.2	17.8	17.6	15.9	19.1	14.4	15.7	18.8	12.8	19.2	11.9	15.1	19.9	17.7	16.6	17.7	19.9	19.9	16.6	16.6	12.2	12.3	13.2	18.7					

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Epinephelus coeruleopunctatus	18.6	16.9	16.7	17.1	18.6	18.2	16.9	16.6	17.7	15.5	18.3	15.5	13.3	15.5	16.1	15.5	20.5	20.1	23.7	15.3	17.2	15.5	14.7	6.5	16.6	8.1	16.7	16.4	15.4	16.1	14.7	14.7	14.5	13.9											
Epinephelus coioides	17.7	15.5	14.5	19.2	18.8	17.6	19.1	18.8	18.7	15.7	20.4	11.9	11.1	13.3	13.5	14.8	19.7	19.1	22.3	15.1	16.8	15.5	13.3	13.3	15.6	11.4	16.7	15.4	14.6	16.6	10.1	15.4	14.5	12.7											
Epinephelus_diacanthus	16.6	17.8	18.2	11.8	18.4	17.7	15.5	16.6	15.5	17.7	12.0	14.4	14.1	14.3	13.8	13.3	20.0	20.0	22.3	11.3	11.3	11.3	9.8	13.3	11.3	14.1	14.7	13.2	11.2	11.2	11.4	11.2	11.1	11.2	14.5										
Epinephelus malabaricus	16.5	15.8	12.0	18.7	19.9	11.1	18.8	11.7	18.5	11.2	12.2	14.4	12.2	14.1	14.4	14.1	19.1	19.7	22.3	15.7	11.7	11.7	15.4	15.3	13.7	12.2	17.7	17.7	11.9	11.7	10.5	14.3	13.5	14.4	14.5	3.5	14.7								
Epinephelus_latifasciatus	18.6	16.9	17.5	17.5	19.2	19.4	19.8	20.1	19.9	14.7	20.4	13.9	13.4	14.8	13.9	13.3	21.3	20.3	23.6	15.4	17.5	15.6	16.6	11.9	16.7	10.9	16.6	16.5	15.4	15.6	11.1	17.4	16.5	11.9	10.4	16.2	10.1								
Epinephelus radiatus	17.4	11.3	16.7	11.7	18.9	17.3	16.9	15.9	17.5	14.4	18.4	11.1	10.5	11.8	19.1	19.8	20.1	20.0	22.5	14.4	14.4	14.6	14.4	13.7	13.7	13.2	17.6	17.5	12.5	15.7	14.4	15.4	13.7	14.5	12.4	13.6	13.9	12.1	13.1						
Epinephelus epistictus	17.7	15.3	16.2	17.1	19.9	17.4	18.2	16.7	18.5	15.6	18.7	11.6	10.3	13.1	10.4	10.0	20.9	19.2	22.5	15.5	15.8	15.5	15.7	15.9	17.4	14.8	17.5	17.3	13.7	16.7	14.4	14.2	14.4	13.6	12.4	13.4	14.7	11.1	14.3	15.5					
Epinephelus morrhua	17.3	14.3	14.4	11.4	18.9	19.8	18.3	17.9	19.9	15.1	18.1	13.3	16.6	11.1	13.3	14.0	19.0	19.1	22.0	15.4	17.8	17.7	12.2	18.8	13.3	14.4	16.6	11.1	14.5	15.8	16.6	14.2	18.8	18.4	14.4	15.7	16.9	18.8	18.4	14.4	15.3	16.9			