

- 8a. Colour generally brownish; juveniles with 3 or 4 broad, oblique dark bars on dorsal part of body and another on dorsal half of peduncle; caudal fin truncate (slightly convex in small juveniles); ventral edge of subopercle and interopercle serrate: lateral-scale series 120 to 129 (Fig. 145, Plate XV) (tropical coast of western Africa) *E. goreensis*
- 8b. Body dark brown or greyish dorsally, often golden yellow ventrally; irregular white or pale grey blotches usually visible on head and body; median fins dark brown, the lower margin of anal fin and rear margin of caudal fin with a narrow white edge; margin of spinous dorsal fin and base of paired fins often golden yellow; caudal fin rounded (truncate with rounded corners in some fish larger than 40 cm standard length); subopercle and interopercle smooth: lateral-scale series 102 to 116 (Fig. 146, Plate XVIII) (Mediterranean and eastern Atlantic from Great Britain around southern tip of Africa) *E. marginatus*

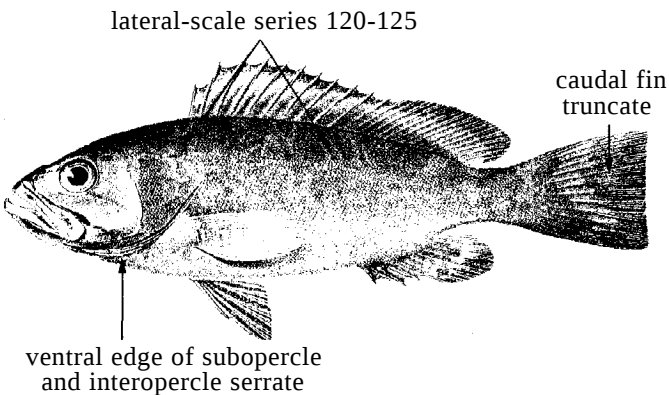


Fig. 145 *Epinephelus goreensis*

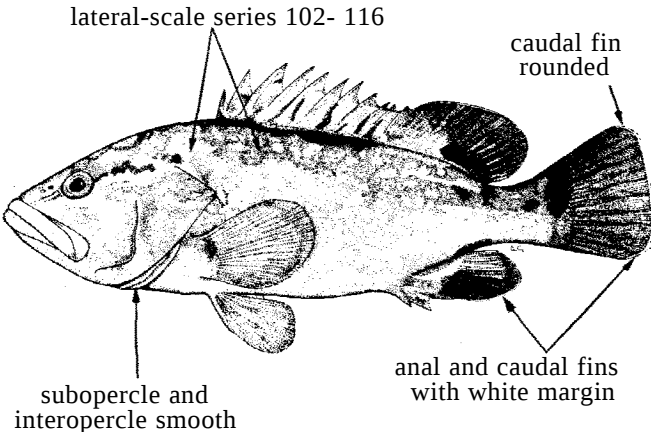


Fig. 146 *Epinephelus marginatus*

Key to Eastern Pacific Species of *Epinephelus*

- 1a. Dorsal fin with IX spines and 17 rays: adults with the second to fourth dorsal-fin spines greatly elongate (Fig. 147, Plate VII) (southern California to Peru) *E. acanthistius*
- 1b. Dorsal fin with X or XI spines and 13 to 18 rays; second to forth dorsal-fin spine not elongate (except in *E. cifuentesi* and possibly *E. exsul*) → 2

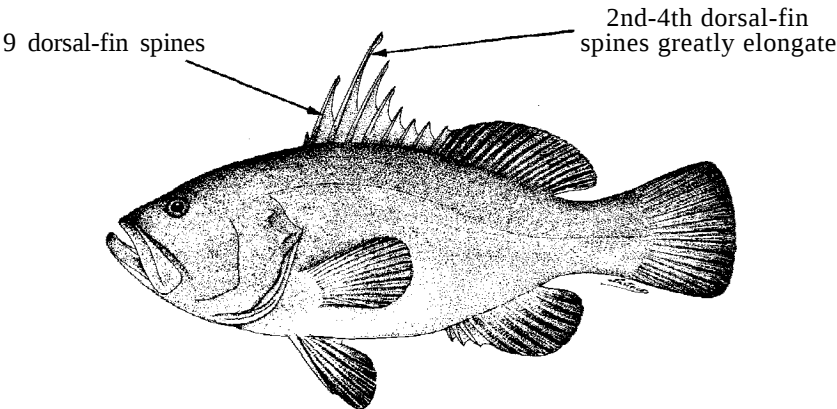


Fig. 147 *Epinephelus acanthistius*

- 2a. Dorsal-fin spines X; anal-fin rays 8 → 3
- 2b. Dorsal-fin spines XI; anal-fin rays 8 or 9. → 4

- 3a. Dorsal-fin rays 16 to 18; body pale, with dark spots (Fig. 148, Plate VIII) (southern California to Peru, Galapagos Islands) *E. analogus*

- 3b. Dorsal-fin rays 13 or 14; body dark brown with faint pale spots (colour pattern of adults unknown) (Fig. 149) (Gulf of California to Panama) *E. exsul*

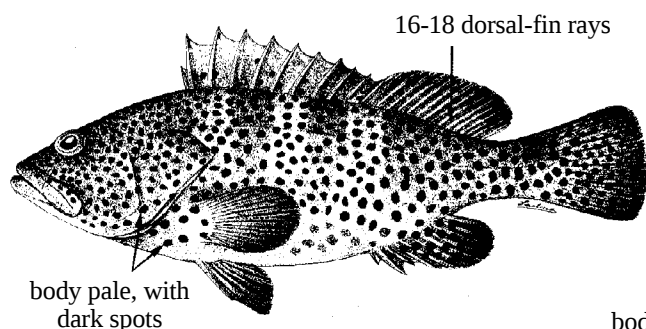


Fig. 148 *Epinephelus analogus*

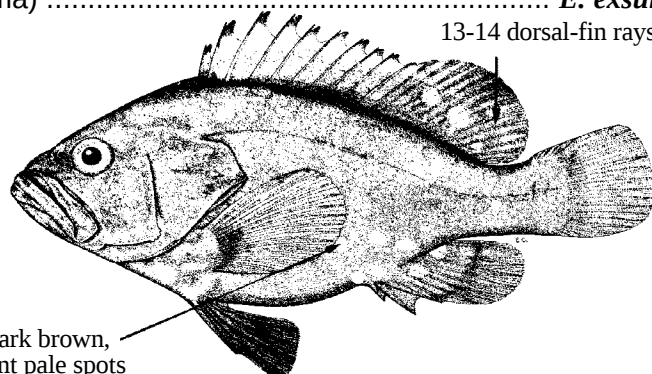


Fig. 149 *Epinephelus exsul*

- 4a. Caudal fin rounded; dorsal-fin rays 15 to 18; anal-fin rays 8; body with spots → 5

46. Caudal-fin rear margin convex or truncate with rounded corners; dorsal-fin rays 13 to 16; anal-fin rays 9; body with or without spots → 6

- 5a. Body reddish brown with pale reticulations and irregular white spots; black saddle blotch on peduncle; third or fourth dorsal-fin spines longest, longer than the longest dorsal-fin rays; dorsal-fin rays 16 to 18 (Fig. 150, Plate XVI) (Gulf of California to Peru, Galapagos Islands) *E. labriformis*

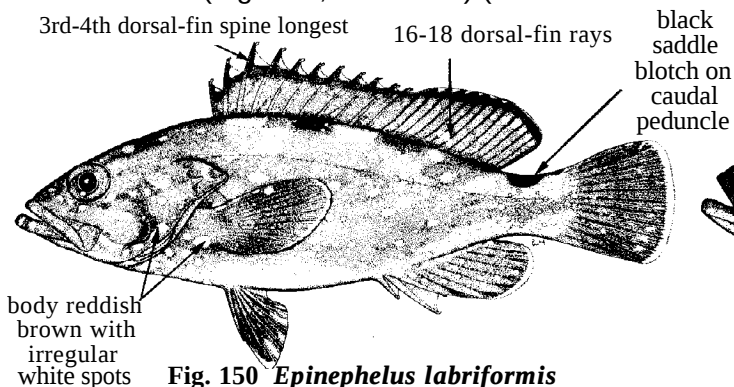


Fig. 150 *Epinephelus labriformis*

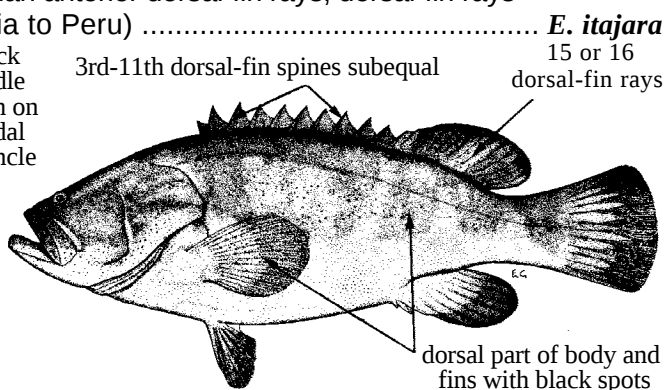


Fig. 151 *Epinephelus itajara*

- 6a. Body pale brown, with 8 or 9 subvertical dark bars (Fig. 152, Plate XIX) (Galapagos Islands). *E. mystacinus*

- 6b. No dark bars on body → 7

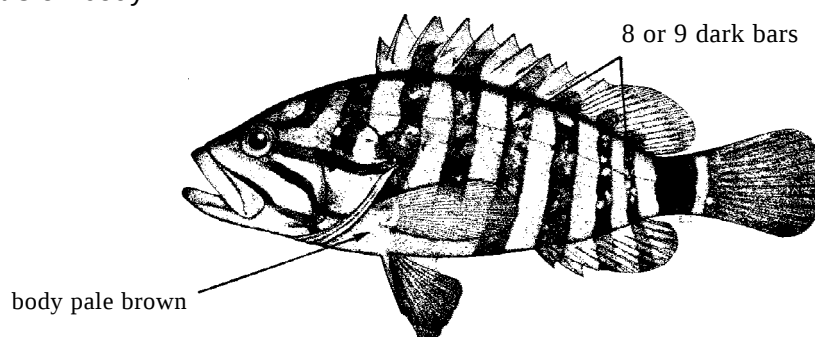


Fig. 152 *Epinephelus mystacinus*

- 7a. Rear nostrils distinctly larger than anterior nostrils; lower-limb gill rakers 15 to 17; body of juveniles dark reddish brown with white spots in vertical series and horizontal rows, and a black saddle blotch on caudal peduncle; lateral-scale series 100 to 106 (Fig. 153) (southern California to Peru) *E. niphobles*
- 7b. Rear nostrils not distinctly larger than front ones; lower gill rakers 17 to 20; juveniles without white spots on body or dark saddle blotch on caudal peduncle; lateral-scale series 131 to 144 (Fig. 154) (Galapagos Islands, Isla del Coco, off Costa Rica). *E. cifuentesi*

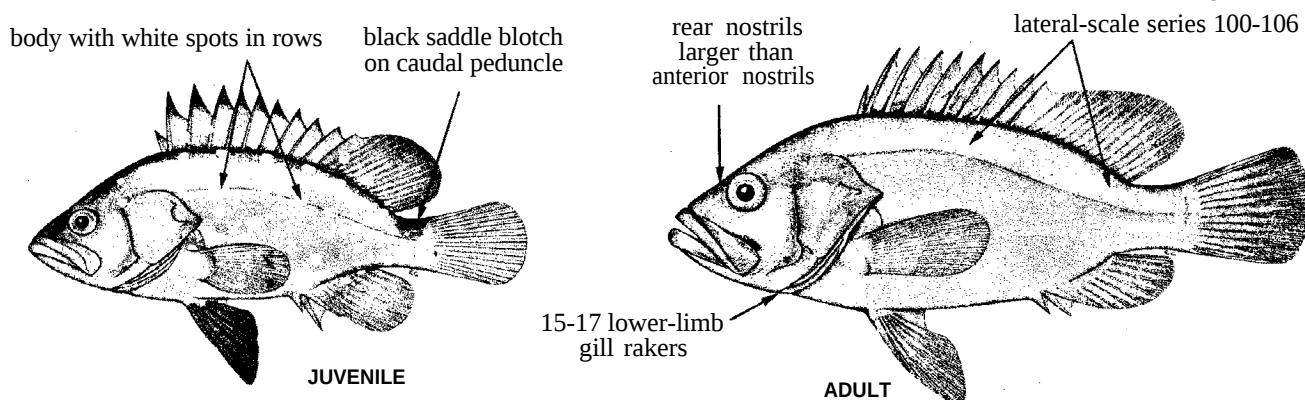


Fig. 153 *Epinephelus niphobles*

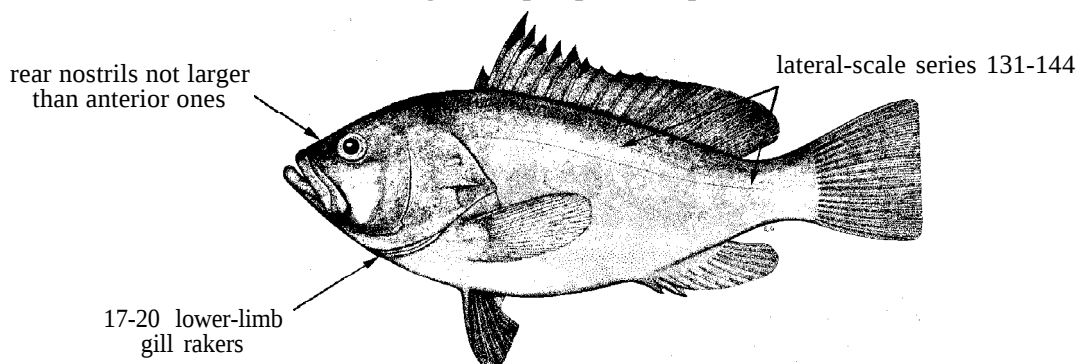


Fig. 154 *Epinephelus cifuentesi*

Key to the Indo-Pacific Species of *Epinephelus*

- 1a. Caudal fin of adults emarginate to truncate (slightly rounded on juveniles and some specimens of *E. bleekeri*, and convex in adults if broadly spread) → 2
- 1b. Caudal fin rounded (some specimens of *E. latifasciatus* from the Indian Ocean and some *E. fasciatus* from Oceania may have a truncate caudal fin). → 17
- 2a. Interspinous membranes of dorsal fin not incised (Fig. 155) → 3
- 2b. Interspinous membranes of dorsal fin incised (Fig. 156) → 7

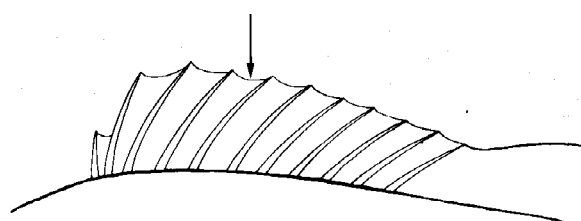


Fig. 155

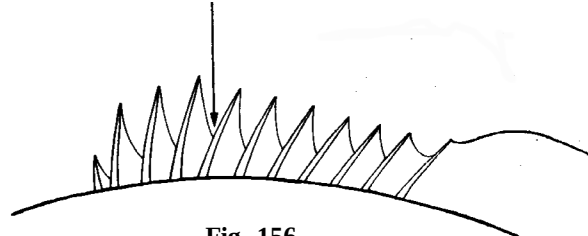


Fig. 156

- 3a.** Gill rakers elongate (no rudiments), 12 to 16 on upper limb and 20 to 23 on lower limb; dorsal-fin rays 17 to 19; colour purplish to brownish grey with yellowish brown dots on head and longitudinal brown lines on dorsal part of body (lines usually lost on large adults) (Fig. 157, Plate XXIV) (Kenya to western Pacific) *E. undulosus*
- 3b.** Gill rakers not elongate and rudiments often present, 6 to 11 on upper limb and 13 to 18 on lower limb; dorsal-fin rays 15 to 17; colour not as in 3a → 4

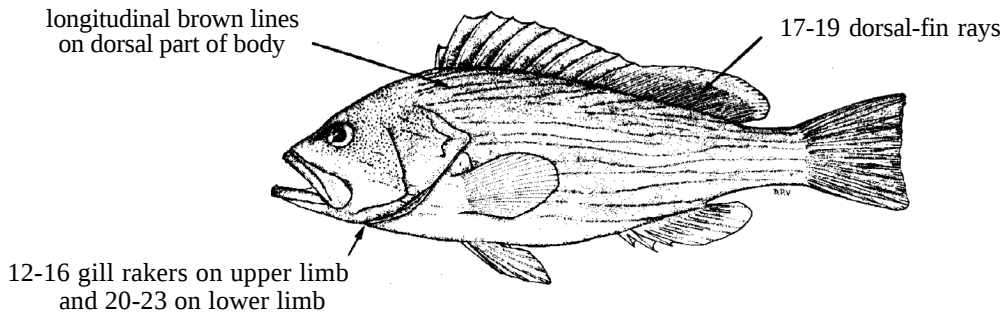


Fig. 157 *Epinephelus undulosus*

- 4a.** Second dorsal-fin spine of adults elongate, its length 1.8 to 2.4 times in head length; total gill rakers 20 to 23; body depth 2.7 to 3.2 times in standard length; body reddish brown with a white dot on each scale; broad dark red margin on spinous portion of dorsal fin (Fig. 158, Plate XVI) (Marquesas Islands, and possibly Minami Tori Shima) *E. irroratus*
- 4b.** Second dorsal-fin spine not elongate (third or fourth spines longest); gill rakers 24 to 28; body depth 2.3 to 2.9 times in standard length; colour not as in 4a. → 5

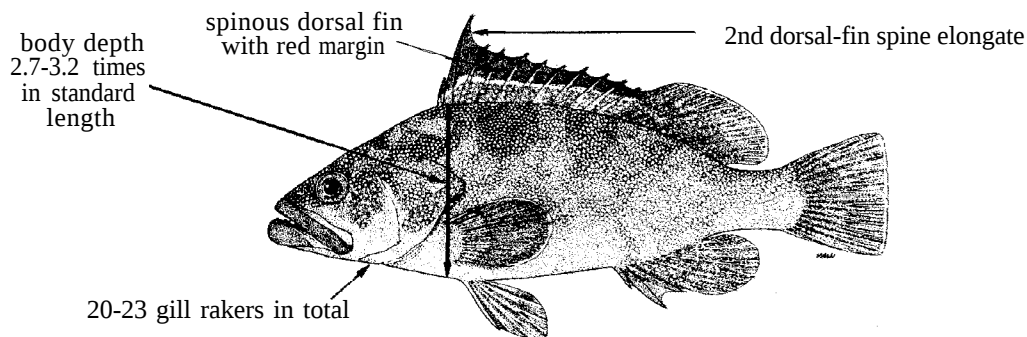


Fig. 158 *Epinephelus irroratus*

- 5a.** Colour in life usually dark blue or grey, but without black or white spots, the caudal peduncle (at least posteriorly) and fins bright yellow; large adults lose yellow coloration and become chestnut brown, dark blue, grey, or nearly black and have numerous small, irregular pale blue spots that are more conspicuous underwater; dorsal-fin rays modally 17 (Fig. 159, Plate XIV) (Indian Ocean but not in Red Sea) *E. flavocaeruleus*
- 5b.** Colour not as in 5a (numerous dark or white spots present); dorsal-fin rays modally 16. → 6

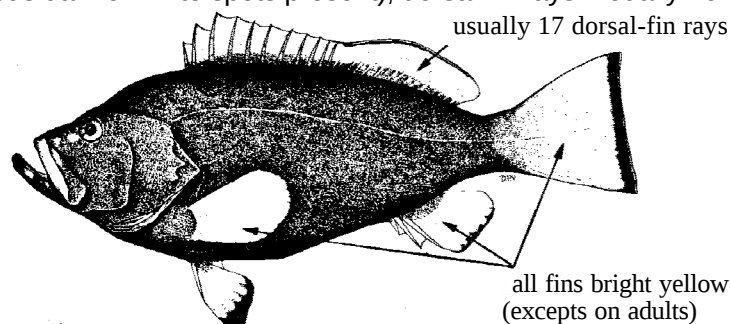


Fig. 159 *Epinephelus flavocaeruleus*

- 6a. Body dark purplish grey with scattered irregular whitish blotches; in western Indian Ocean (except Gulf of Oman and Persian Gulf) small dark brown spots on ventral part of body (Fig. 160, Plate XIX) (Indian Ocean) *E. multinotatus*

- 6b. Head, body, median, and pelvic fins bluish grey with numerous blackish dots; large adults with scattered irregular blackish spots and blotches, most smaller than pupil (Fig. 161, Plate XI) (central to western Pacific). *E. cyanopodus*

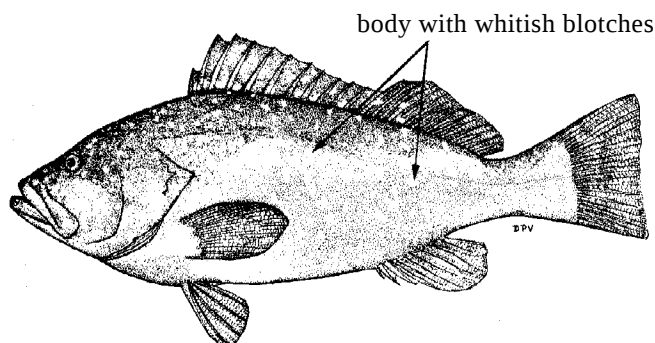


Fig. 160 *Epinephelus multinotatus*

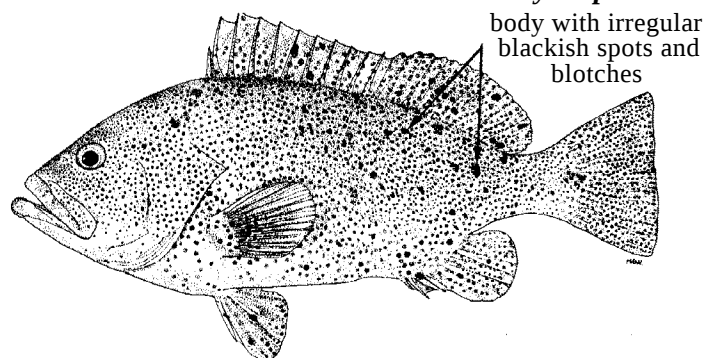


Fig. 161 *Epinephelus cyanopodus*

- 7a. Lateral-line scales 48 to 54; head and at least front of body with small spots, either yellow (pale in preservative) or brown → 8

- 7b. Lateral-line scales 56 to 76; small spots on head and body dark brown or absent.....→12

- 8a. Dorsal-fin rays 14 or 15; serrae at corner of preopercle slightly enlarged (about 1.5 times longer than those above corner); body depth 3.2 to 3.6 times in standard length (Fig. 162, Plate XIV) (Somalia to southern Oman) *E. gabriellae*

- 8b. Dorsal-fin rays 16 to 18 (rarely 15 in *E. areolatus*); serrae at corner of preopercle about 3 to 5 times longer than those above corner → 9

- 9a. Caudal fin truncate to slightly rounded; body depth 3.0 to 3.5 times in standard length; head, body, dorsal fin, and upper third of caudal fin with small orange-yellow spots, the lower two-thirds of caudal fin dark grey; dorsal-fin rays modally 17 (Fig. 163, Plate IX) (India to Taiwan, Hong Kong and Philippines) *E. bleekeri*

- 9b. Caudal fin slightly emarginate (truncate on some specimens of *E. chlorostigma*); body depth 2.7 to 3.3 times in standard length; spots on head, body, and fins yellow or yellowish brown to dark brown, the caudal fin entirely spotted; dorsal-fin rays modally 16 (except *E. chlorostigma* with 17). → 10

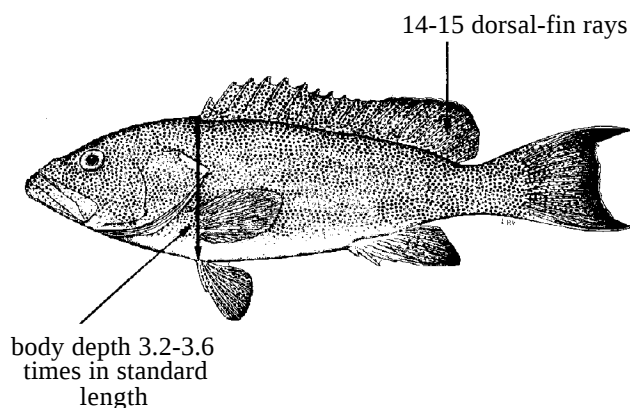


Fig. 162 *Epinephelus gabriellae*

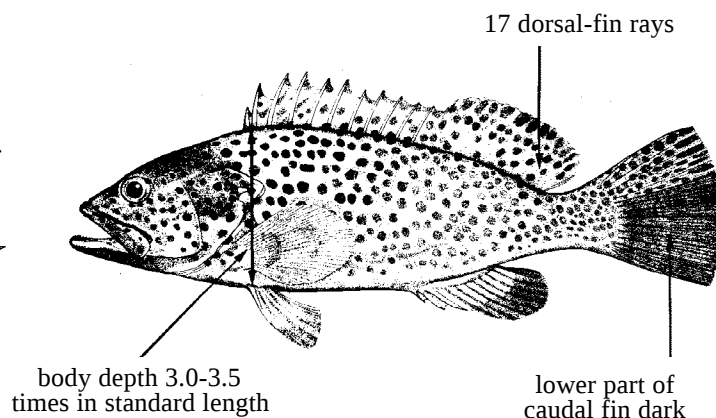


Fig. 163 *Epinephelus bleekeri*

- 10a.** Head and front of body with small round well-separated bright yellow spots (pale in preservative): distal margin of caudal, soft dorsal, and anal fins with close-set dark yellowish brown spots (Fig. 164, Plate XXIV) (Timor Sea, Western Australia, Fiji, Phoenix Islands, and Samoa; in deep water) *E. timorensis*
- 10b.** Head and body with small close-set yellowish brown to dark brown spots (dark in preservative); fins with small dark spots → 11

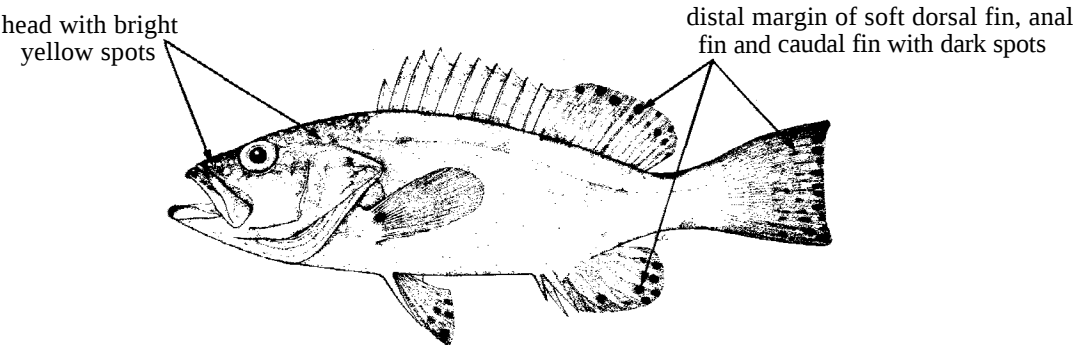


Fig. 164 *Epinephelus timorensis*

- 11a.** Dorsal-fin rays 15 to 17; margin of anal fin of adults rounded to slightly angular, the longest ray 2.0 to 2.6 times in head length; lower gill rakers 14 to 16; pyloric caeca 11 to 17; dark spots on body of adults subequal to pupil (Fig. 165, Plate VIII) (Red Sea to western Pacific) *E. areolatus*
- 11b.** Dorsal-fin rays 16 to 18; anal fin of adults angular or pointed, the longest ray 1.9 to 2.3 times in head length; lower gill rakers 15 to 18; pyloric caeca 26 to 52; largest dark spots on body of adults distinctly smaller than pupil (Fig. 166, Plate X) (Red Sea to western Pacific) *E. chlorostigma*

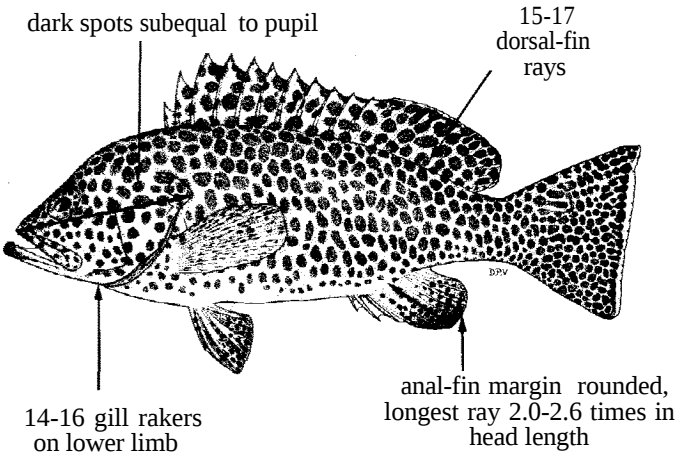


Fig. 165 *Epinephelus areolatus*

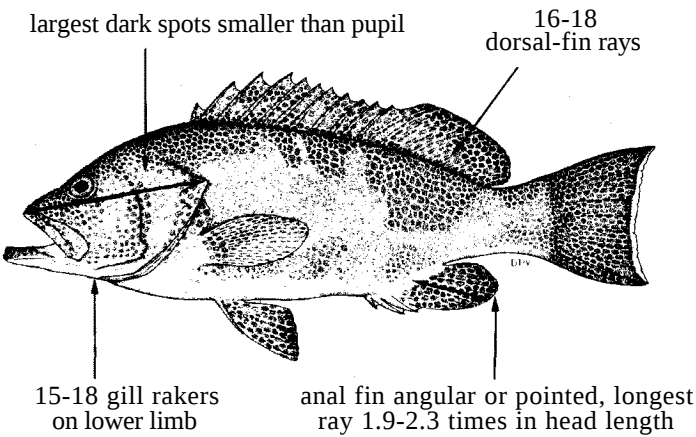


Fig. 166 *Epinephelus chlorostigma*

- 12a.** Anal-fin rays 9 (rarely 8); 1 to 4 small spines often present on ventral edge of preopercle near corner; dorsal-fin rays 13 to 15; posterior nostrils of adults 2 to 4 times larger than anteriors. → 13
- 12b.** Anal-fin rays 8; no spines on lower edge of preopercle; dorsal-fin rays 14 to 17; posterior nostrils not enlarged (except *E. darwinensis*). → 14