

J.M. Leis & A.C. Hay

D XI, 10-11 A III, 10-11 P₁ 16-18 P₂ 1,5 C 14 V 28

Distribution Endemic to southeastern Australia from southern Queensland to eastern Victoria. Adults are found on rocky coastal reefs, they spawn during the winter (July-October) and the young recruit primarily into estuarine sea grass beds during winter (Gillanders, 1999).

Diagnostic characters

- Myomeres 12-14 +14-16 = 28
- Dorsal count XI, 10-11
- 1 melanophore mid ventrally on tail at posterior end anal-fin base
- A large internal melanophore or group of melanophores on midgut dorsally
- Melanophore series that may merge on the posterior mid-hind gut and anus
- No melanophore dorsally on the brain

Description of larvae

Morphology Body elongate, but gradually becomes deeper (BD 9-22% preflexion and 21-25% postflexion). Head is initially small in preflexion (HL 18-27%) becoming moderate during flexion and postflexion (HL 31-36%). The lips become increasingly thick from about 7 mm. Small canine teeth are present on the premaxilla and dentary by early postflexion (6 mm). Gut is moderate to long (PAL 54-63%), somewhat rugose and is initially straight and coils during flexion. No scales are present prior to settlement, but they begin to form shortly thereafter.

Size at

Hatching	<3.0 mm
Notochord flexion	5.1-6.2 mm
Settlement	7.2-9.6 mm
Formation of fins:	
Caudal	3.9-6.2 mm; Dorsal 5.0-6.5 mm; Anal 5.0-7.0 mm; Pectoral 5.3-6.5 mm; Pelvic 6.2-8.5 mm (rays only, spine forms after settlement)

Pigmentation Larvae are lightly pigmented. *External:* A small melanophore about midway between the cleithral symphysis and the base of the pelvic fins is present in 80% of preflexion and flexion-stage larvae and 50% of postflexion larvae. A small midventral melanophore at about the level of the gas bladder is present in 70% of preflexion larvae, is not present in available flexion-stage specimens, and is present in 20% of postflexion specimens. A small melanophore about midway between the one previously described and the anus is present in 60% of preflexion and flexion-stage larvae, and all postflexion larvae. A ventral melanophore is present at the anus. A large, distinct melanophore on the ventral midline, about 7-8 myomeres posterior to the anus, near the most posterior base of the anal fin is present in all but some of the largest presettlement larva. In a small proportion of specimens a small melanophore may be found at the tip of the lower jaw, dorsolaterally on the trunk near the base of the dorsal fin and at the posterior end of the dorsal-fin base. Once settlement takes place, pigment spreads rapidly to cover nearly all the head, trunk and tail with tiny, peppery melanophores. *Internal:* Dorsal to the gut are 2 large, internal melanophores or groups of melanophores: one over the gas bladder and one near the posterior end of the gut near the anus. The latter divides into several smaller melanophores that descend and with the ventral anal melanophore tend to encircle the anus. Anterior to the gas-bladder melanophore a small melanophore may be present over the gut near the cleithrum.

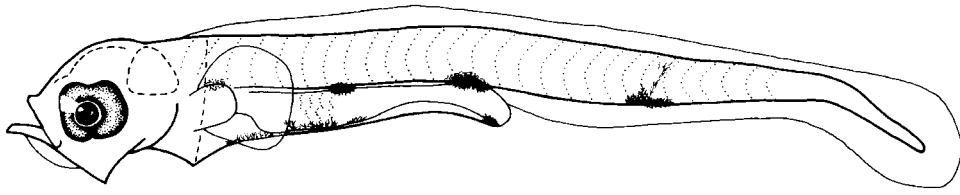
Figure - Larvae of *Achoerodus viridis* **A** Preflexion; note straight gut (I.33889-013). **B** Preflexion (I.33897-016). **C** Flexion; note coiling gut; dotted oval ventral to gut anteriorly represents a thickening that is apparently the pelvic-fin base (I.33912-016). **D** Postflexion; note gut fully coiled (I.33989-012). **E** Postflexion (I.41676-001). **F** Settled, metamorphosing larva. Scales are shown only along the lateral line, but extend below it for about seven rows (I.42514-001). A-F from NSW coastal waters. Illustrated by J.M. Leis, inked by S. Bullock. After Leis & Hay (2004).

Material Examined The description is based on detailed examination of 30 larvae (3.0-9.6 mm), and more superficial examination of more than 400 others from Lake Macquarie and off Sydney, NSW. AMS I.33889-013, I.33889-014, I.33897-016, I.33901-024, I.33901-025, I.33901-026, I.33901-027, I.33912-016, I.33912-017, I.33920-019, I.33924-015, I.33924-016, I.33970-015, I.33989-012, I.33993-013, I.34016-015, I.34016-016, I.41647-001, I.41647-002, I.41669-001, I.41676-001, I.41690-009, I.42514-001, I.42514-002, I.42514-003. This description is based on the publication Leis & Hay (2004).

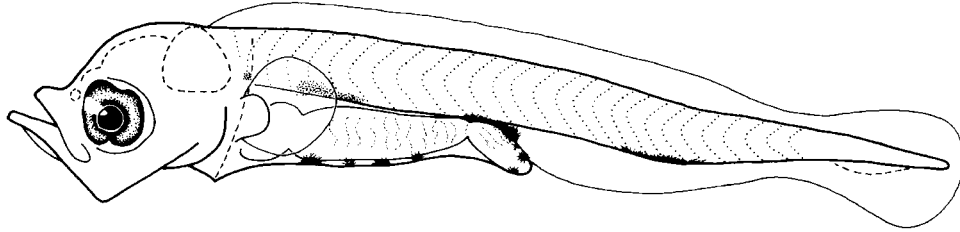
Identification justification Labrids of 83 species of 30 genera occur in NSW waters (Hoese *et al.* in press), and of these, only four genera (15 species) have more than 25 vertebrae. Of these, only the eight *Bodianus* species, and *Achoerodus viridis* have 28 vertebrae. Larger larvae in the series had fin-

ray counts of DXI, 11; AIII, 11 and P1 17-18, which excludes any *Bodianus* spp. The meristic peculiarities along with its' restricted distribution (SE Australia only) thus identifies the larvae as *A. viridis*.

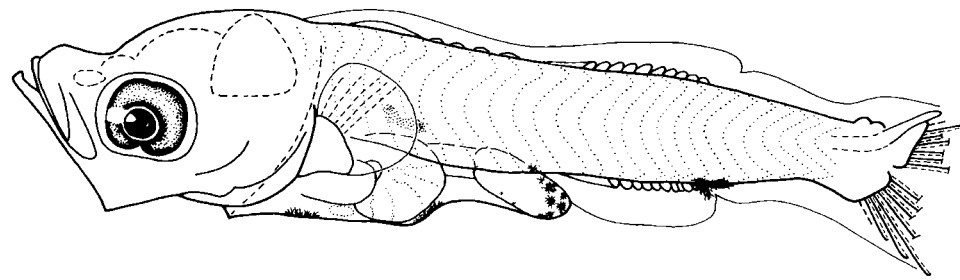
References Gillanders B (1999). Blue groper. In: Andrew N (ed) Under southern seas: the ecology of Australia's rocky reefs. University of New South Wales Press, Sydney, pp. 188-193
Hoese DF, Bray DJ, Allen GR, Allen C, Cross N, Paxton JR (in press). Pisces: Mugilidae to Molidae. Zoological Catalogue of Australia, Vol. 7 part 2. Australian Biological Resources Survey, Canberra
Kuitert, R.H. (1993). Coastal Fishes of South-Eastern Australia. Crawford House Press. Pp. 437
Leis JM, Hay AC (2004). Larval development of *Achoerodus viridis* (Pisces; Labridae), the Australian eastern blue groper. Ichthyological Research. 51, 46-51.



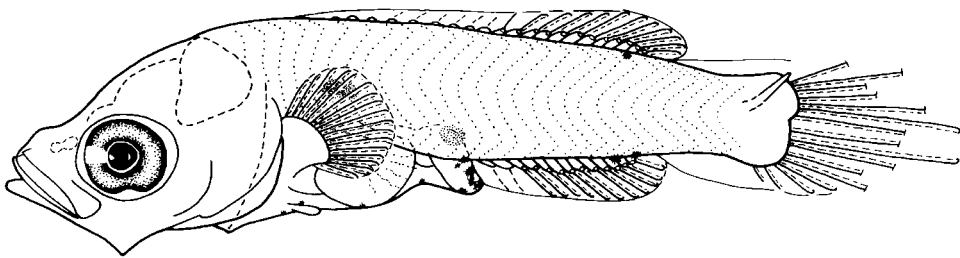
A 3.0 mm



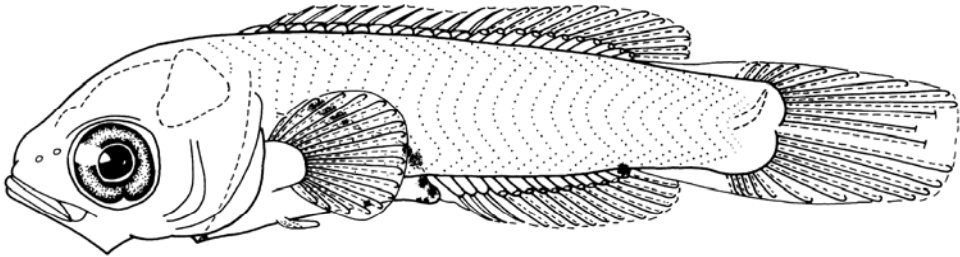
B 4.5 mm



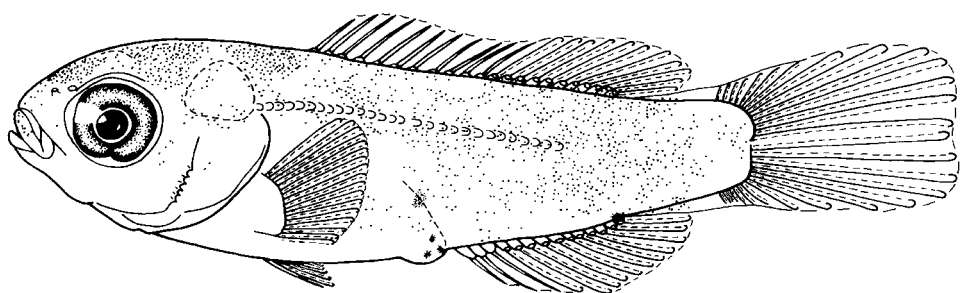
C 5.5 mm



D 6.4 mm



E 7.6 mm



F 9.6 mm