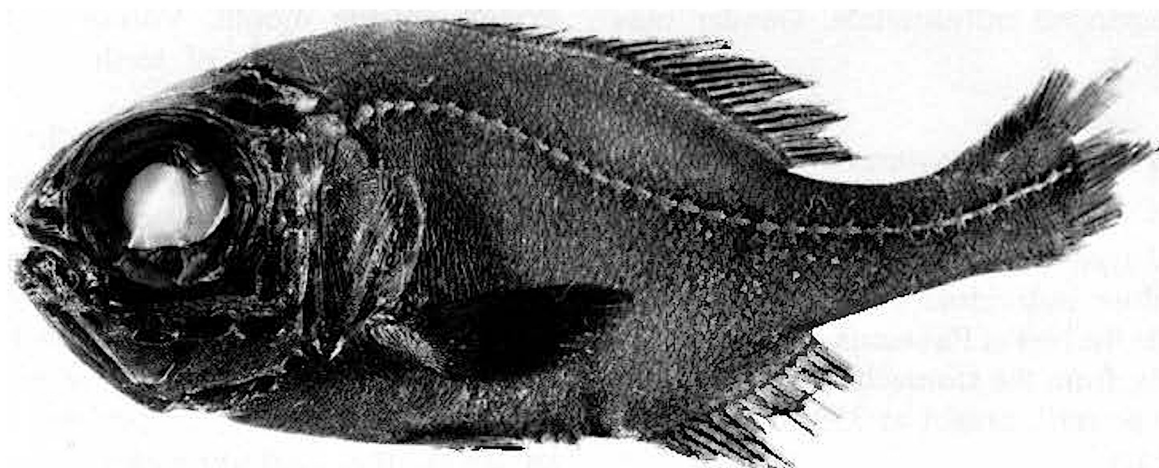


Order TRACHICTHYIFORMES

Flashlightfishes or Lanterneye Fishes

Family **ANOMALOPIDAE**

Gill 1889



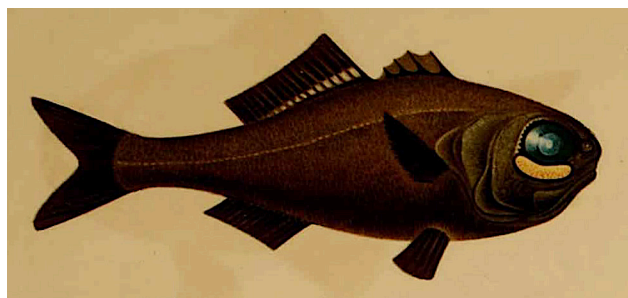
*Parmops coruscans*, holotype, immature specimen, 48.2 mm SL. From: Rosenblatt, R. H. and G. D. Johnson. 1991. *Parmops coruscans*, a new genus and species of flashlight fish (Beryciformes: Anomalopidae) from the South Pacific. *Proceedings of the Biological Society of Washington* 104 (2): 328–334.

**Anomalops**

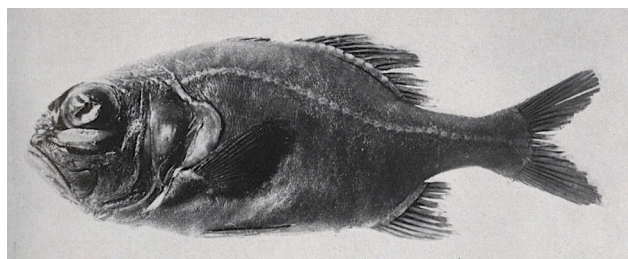
Kner 1868

*anama-*, from *anomalum* (L.), anomalous (i.e., deviating from the norm); *ōps* (ὤψ), eye, referring to two gland-like organs beneath its eyes, “to which no analogy among fishes is known” (translation) [Kner was not aware that these glands were luminous]

**Anomalops katoptron** (Bleeker 1856) *kátoptron* (κάτοπτρον), mirror, referring to inside of light organ enclosed by a guanine crystal reflector (although Bleeker was unaware of the specific structure and function of this reflector)



Possibly first-published image of *Anomalops katoptron*, 53 years after its description. From: Steche, O. 1909. Die leuchtorgane von *Anomalops katoptron* und *Photoblepharon palpebratus*, zwei oberflächenfischen aus dem Malaiischen Archipel. Ein Beitrag zur morphologie und physiologie der leuchtorgane der fische. *Zeitschrift für wissenschaftliche Zoologie* 93: 349–408, pl. 19–21.



*Kryptophanaron alfredi*, holotype. From: Silvester, C. F. and H. W. Fowler. 1926. A new genus and species of phosphorescent fish, *Kryptophanaron alfredi*. *Proceedings of the Academy of Natural Sciences of Philadelphia* 78: 245–247, Pls. 18–19.

**Kryptophanaron**

Silvester & Fowler 1926

*kryptós* (κρυπτός), hidden; *phānárion* (φανάριον), torch or lantern, referring to phosphorescent organ under eye, which can be covered by a “membranous curtain”

**Kryptophanaron alfredi** Silvester & Fowler 1926 in honor of American businessman Alfred Mitchell (1832–1911), who lived in Jamaica and provided collecting opportunities for Princeton biologist Ulrich Dahlgren (1870–1946), who found holotype floating on the surface

**Parmops**

Rosenblatt & Johnson 1991

*pármē* (πάρμη), a light shield or buckler; *ōps* (ὤψ), eye, referring to first four infraorbital bones, which are expanded laterally to form a shelf beneath the eye

**Parmops coruscans** Rosenblatt & Johnson 1991 Latin for flaming or flashing, referring to ovoid luminous organ below eye

**Parmops echinatus** Johnson, Seeto & Rosenblatt 2001 Latin for prickly, referring to strongly ctenoid scales and well-developed spination on head and fin rays

**Photoblepharon**

Weber 1902

*phōtō-* (φωτω-), combining form of *phōs* (φῶς), light; *blépharon* (βλέφαρον), eyelid; Weber was among the first scientists to understand that there is a luminescent patch under each eye and that the fish uses an elastic black skin (functioning like an eyelid) that reveals or conceals this patch, in effect blinking it on and off at will

**Photoblepharon palpebratum** (Boddaert 1781) *-atum* (L.), provided with: *palpebra* (L.), eyelid, referring to skin folds that slide up to cover the eyes in the manner of an eyelid (blinking the luminous organs on and off, but this was unknown to Boddaert)

**Photoblepharon steinitzi** Abe & Haneda 1973 in honor of the late Heinz Steinitz (1909–1971), marine biologist and herpetologist (Hebrew University, Jerusalem), who sent specimens to the first author and suggested he describe it



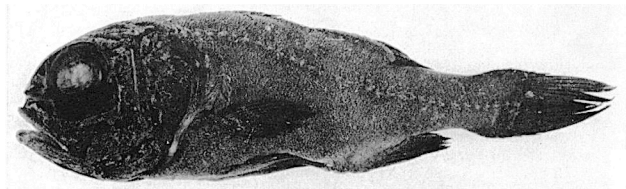
*Photoblepharon palpebratum*, neotype, 72.6 mm SL. Photo by Daniel Golani. From: Golani, D., R. Fricke and B. Appelbaum-Golani. 2019. Review of the genus *Photoblepharon* (Actinopterygii: Beryciformes: Anomalopidae). *Acta Ichthyologica et Piscatoria* 49 (1): 33–41.

### ***Phthanophaneron***

**Johnson & Rosenblatt 1988**

*phthánō* (φθάνω), do first or before others, i.e., early;  
*phaneron*, from *phanerós* (φανερός), shining or visible, referring  
to apparent primitiveness of the manner in which it occludes its  
continuously shining luminous organ

***Phthanophaneron harveyi* (Rosenblatt & Montgomery 1976)** in honor  
of American zoologist Edmund Newton Harvey (1887–1959), Princeton  
University (New Jersey, USA), a specialist in bioluminescence, for his  
“pioneering” investigations of the biology of the Anomalopidae



*Phthanophaneron harveyi*, holotype, 67.7 mm SL. From: Rosenblatt, R. H. and W. L. Montgomery. 1976. *Kryptophaneron harveyi*, a new anomalopid fish from the eastern tropical Pacific, and the evolution of the Anomalopidae. *Copeia* 1976 (3): 510–515.

### ***Protolepharon***

**Baldwin, Johnson & Paxton 1997**

*prótos* (πρῶτος), first; *blépharon* (βλέφαρον), eyelid, referring to  
cladistic position of genus as first in the lineage of flashlight fishes that  
occlude the light organ with an erectable shutter

***Protolepharon mccoskeri* Ho & Johnson 2012** in honor of American  
ichthyologist John E. McCosker (b. 1945), California Academy of Sci-  
ences, for his interest in and contribution to our knowledge of flashlight  
fishes

***Protolepharon rosenblatti* Baldwin, Johnson & Paxton 1997** in honor  
of American ichthyologist Richard H. Rosenblatt (1930–2014), Scripps  
Institution of Oceanography, a mentor to the second author and friend  
and valuable colleague to all three, for his contributions to the system-  
atics and functional morphology of flashlight fishes, which have shed  
much light on the evolution and biology of the Anomalopidae



*Protolepharon mccoskeri*, holotype, 305 mm SL. From: Ho, H.-C. and G. D. Johnson. 2012. *Protolepharon mccoskeri*, a new flashlight fish from eastern Taiwan (Teleostei: Anomalopidae). *Zootaxa* 3479: 77–87.