

The cumacean family Lampropidae is the second of three families belonging to the clade of forms with articulated telsons. It, along with the families Diastylidae, and Gynodiastylidae form this clade. The Pseudocumatidae, the sister taxon to all other cumaceans, also has an articulated telson. The Lampropidae is smaller than the Diastylidae, which was previously covered, having only 58 species distributed among 13 genera in the Crustaceorum Catalogus treatment (Băcescu 1988). Additional forms have been described since. In the NEP only four genera of lampropids are known to occur, with 20 species; nearly a third of which are provisionals. Like the diastylids, the lampropids are primarily a cool water and/or deep water group (Day 1978). Most of the local lampropids are in the genus *Lamprops*, which is a generally shallow-water genus of the northern Hemisphere (Day 1978). The genus *Mesolamprops* is also primarily shallow-water, while *Hemilamprops* and *Paralamprops* are deeper dwelling. The family is sexually dimorphic along the lines of most cumacean families. Unfortunately, the taxonomy at the generic level is dominated by separations based on adult male morphology. This makes it impossible to accurately place females and juveniles of a species in the appropriate genus, although specific identity may be clear.

It should be noted that under ICZN Article 30.1.4.3. all generic group names ending in -ops are to be treated as masculine. In consequence, to retain agreement in gender, all species level names originally proposed as feminine or neuter must be recast in masculine. For species in this family, where most generic names end in -ops, the appropriate masculine ending for species level names is -us rather than -a. All names have been emended below to conform to this article.

NEP Lampropidae from McLaughlin et al (2005) augmented by known provisional taxa.
*= Taxa on the SCAMIT Ed 4 list + addenda. Valid taxa bolded, synonyms not.

Lampropidae

***Hemilamprops californicus** Zimmer 1936 – Japan, Puget Sound to San Diego;
13-177m

Hemilamprops gracilis J. F. L. Hart 1930 - Alaska to Puget Sound; 120-200m

***Hemilamprops sp A** MBC 1985§ - Oregon to Huntington Beach;
305-798m

Hemilamprops sp B Paquette 1985§ - Oregon to Anacapa Island; 185-732m

Lamprops augustinensis Gerken 2005 – Cook Inlet, Alaska; 0-1m

Lamprops beringi Calman 1912 – Arctic Alaska to Puget Sound; 0-129m

***Lamprops carinatus** J. F. L. Hart 1930 – Arctic Alaska to SCB; 18-120m

Lamprops fuscatus G. O. Sars 1865 – No. Atlantic; SE Alaska to Puget Sound;
2-121

Lamprops krasheninnikovi Derzhavin 1926 – NW Pacific to Puget Sound;
0-12 m

Lamprops obfuscatus Gladfelter 1975) – Tomales Bay; 18m

***Lamprops quadriplicatus** S. I. Smith 1879 – NW Pacific; Alaska to Oxnard; 0-104m

Lamprops serratus J. F. L. Hart 1930 – Puget Sound; 20-95m
Lamprops tomalesi Gladfelter 1975 – Tomales Bay; 6m
Lamprops triserratus (Gladfelter 1975) – Tomales Bay to Oxnard; 7-16m
Lamprops sp D MBC 1985§ - SCB; 69-197m
Lamprops sp E MBC 1985§ - off Pt. Arguello; 951m
Lamprops sp F MBC 1985§ - off Pt. Arguello to Tanner Basin; 954-1150+m
***Mesolamprops bispinosus** Given 1964 – Pt. Conception to San Diego;
 30-100m
Mesolamprops dillonensis Gladfelter 1975 – Tomales Bay; 13-21m
Paralamprops sp BAP1 Cadien 2001§ - Baja Abyssal Plain; 3880-3950m

Key to the NEP Lampropidae (modified from Jones 1969) – dbcadien 6 November 2006

- 1a. Males with pleopods.....2
- 1b. Males lacking pleopods.....*Lamprops* (see key to genus)
- 2a. Male with two pleopods.....*Mesolamprops* 3
- 2b. Male with three pleopods.....4
- 3a. Uropodal exopod shorter than endopod; telson with two pairs of lateral setae or spines; carapace lacking incised sulcus around ocular lobe and pseudorostrum, smooth.....*Mesolamprops bispinosus*
- 3b. Uropodal exopod as long as endopod; telson with 3-6 (usually 4-5) pairs of setae or spines laterally; carapace with incised sulcus around ocular lobe and pseudorostrum as in *Hemilamprops californicus*.....*Mesolamprops dillonensis*
- 4a. Basal article of uropodal exopod subequal to or longer than distal article; basis of third maxilliped distally widened*Hemilamprops* 5
- 4b. Basal article of uropodal exopod much shorter than distal article; basis of third maxilliped not distally widened.....*Paralamprops* sp. BAP1
- 5a. Carapace with incised sinus enclosing pseudorostrum and eyelobe extending $\frac{1}{2}$ carapace length then curving to dorsal midline.....*Hemilamprops californicus*
- 5b. Carapace lacking incised sulcus, but with other carapace sculpture.....6
- 6a. Carapace with serrate mid-dorsal crest on anterior $\frac{1}{2}$*Hemilamprops* sp A
- 6b. Carapace lacking mid-dorsal crest.....7
- 7a. Carapace with a single horizontal carina extending from position of antennal sinus posteriorly which sweeps up to the dorsal midline at the posterior carapace margin telson with three subequal terminal spines, and 4 pairs of lateral telsonic spines or setae.....*Hemilamprops gracilis*
- 7b. Carapace with series of anastomosing ridges which divide it into several irregular polygons of various sizes on each side of carapace; telson with three subequal terminal spines, and 2 pairs (♂) or 8-9 pairs (♀) of lateral setae or spines.....*Hemilamprops* sp B

Hemilamprops – *Hemilamprops californicus* is very common at shallow shelf depths in the SCB. It can be confused with individuals of *Mesolamprops bispinosus*, particularly in the female. Close attention must be paid to the number and position of the lateral setal pairs on the telson to distinguish females and juvenile males of these two taxa. Adult males can easily be distinguished by the number of pleopods; 2 in *Mesolamprops*, 3 in *Hemilamprops*. The condition of the carapace also differs in the two, with the cephalic shield (termed an incised sulcus in the above key) better developed and more defined in *H. californicus* than in *M. bispinosus*. The two taxa can co-occur, so species identity is specimen dependant, and not based on the identity of the males in the sample. *Hemilamprops gracilis* is known only from boreal seas to the north of the NEP, but could range further south than current reports indicate under La Niña oceanographic conditions.

The two provisional taxa in the genus locally are very different, and only one is known to range into the SCB. *Hemilamprops* sp A was taken several times in B'03 sampling of bathyal depths, and from the L.A. 3 Dump Site off Newport Beach. It was originally taken in Central California as part of the MMS Santa Maria Basin Study, and has since been recorded on the Cascadia Slope off Newport, Oregon. There are similarities to several described species (*taseiana* described from Sagami Bay, Japan; and *normani* from the North Atlantic), but the species is still deemed separable. It is the only member of the genus in the NEP with a serrated dorsal crest.

Hemilamprops sp B was originally noticed in one of the BLM RIP samples from near Anacapa Island reexamined during the MMS Santa Maria Basin Study. A single juvenile male was present at Station 24844 at 185m on the island shelf between Anacapa Island and the mainland. A female of the species was taken at 492m off Pt. Sal in Central California. These remained the sole known representatives of the species until examination of samples from the Cascadia Slope in 2002 revealed the species was quite common at one 732m station (over 260 specimens of juveniles, adult males, and adult females). Sexual dimorphism is relatively strong in this species. Both males and females have the same base arrangement of three longitudinal ridges running obliquely forward on the carapace, but the pattern of anastomosing secondary ridges is very different in the two sexes, and more complex in the female. The telsons also differ markedly. In the female the telson bears 8-9 pairs of lateral setae, while in the male there are only two. The female telson is also somewhat longer relative to the uropodal peduncles than is that of the male.

Lamprops – This is the major genus in the family in the NEP, with 10 described and three provisional members. The occurrence of two provisional species in the vicinity of Pt. Arguello at nearly 1000 m depth is unusual. Both taxa are known from single specimens, however, and additional material may show that they belong in other genera in the family, *Leucon* being a predominantly shallow shelf genus. The number of species in the genus in the small area of Tomales Bay suggests that there is much hidden diversity in the NEP fauna, and that lampropids are locally underdescribed. Records of *Lamprops quadriplicatus* and *Lamprops krasheninnikovi* from the NEP may be difficult to unravel. *L. krasheninnikovi* was originally described as a subspecies of *quadriplicatus*, and it is not certain which form is referred to in earlier records of *L. quadriplicatus* from the area. Lomakina (1958) presents the forms as subspecies, providing a table for their

separation. Lie (1969) repudiated his earlier reports of *L. quadriplicatus krasheninnikovi* (Lie 1968), citing the observations of Given (1965) on Arctic material which suggested that the forms separated by Derzhavin were no more than variations, and not worthy of subspecific or specific separation. Hart (1987), however, continues to record *L. krasheninnikovi*, and no longer reports *L. quadriplicatus* from the Puget Sound area. McLaughlin et al (2005) do not offer a solution to this dilemma, listing *L. quadriplicata* only from the Atlantic, and not listing *L. krasheninnikovi* at all. In contrast Gerken (2005) expressed the belief that all the forms united under *L. quadriplicata* were probably separate species, as was the *L. quadriplicata longispina* identification of Gamô (1965) from Japan. Until the issue is further resolved, both taxa are presented here as being valid at the species level. They are, however, keyed together below. The provisional form *Lamprops* sp F is known only from females, so cannot be accurately placed in the absence of information on male pleopod count. Since the pseudorostrum is long and acute, and the telson is about equal in length to the urosomal peduncle, this may actually be a member of the genus *Pseudodiastylis*. Accurate placement awaits males, and it is retained in *Lamprops* pending their collection.

Key to known NEP members of the genus *Lamprops* – drcadien 6 November 2006

- 1a. Telson armed with terminal spines, but lacking lateral setae or spines.....2
- 1b. Telson armed with terminal spines and one or more pairs of lateral setae or spines
.....5
- 2a. Carapace with dorsal carina or keel for at least ½ length.....3
- 2b. Carapace lacking dorsal carina or keel.....4
- 3a. Thoracic somites T1-T3 each with anterior tooth on dorsal midline.....
.....*Lamprops triserratus*
- 3b. Thoracic somites T1-T3 lacking teeth on dorsal midline.....*Lamprops carinatus*
- 4a. Terminal telsonic spines with middle spine and outer pair subequal in length,
intermediate pair only half as long.....*Lamprops obfuscatus*
- 4b. Terminal telsonic spines with middle spine and inner pair subequal in length,
outer pair shorter (about 2/3 length of central 3).....*Lamprops tomalesi*
- 5a. Telson bearing a single pair of lateral setae.....*Lamprops* sp F
- 5b. Telson with 2 or more pairs of lateral setae.....6
- 6a. Telson with 5-6 pairs of lateral setae.....*Lamprops beringi*
- 6b. Telson with 2-4 pairs of lateral setae.....7
- 7a. Carapace lacking carinae or ridges..... *Lamprops* sp D
- 7b. Carapace bearing one or more ridges or carinae.....8
- 8a. Carapace with single horizontal or mid-dorsal carina.....9
- 8b. Carapace with multiple oblique ridges.....12
- 9a. Carapace with a single horizontal carina extending from the antennal sinus 2/3 of
the distance to the posterior carapace edge.....*Lamprops* sp E
- 9b. Carapace with a mid-dorsal carina.....10
- 10a. Median telsonic terminal spine only about ½ length of the other four.....
.....*Lamprops fuscatus* (♂)
- 10b. Median telsonic terminal spine subequal in length to intermediate pair.....11

- 11a. Median telsonic terminal spine and intermediate pair subequal and about 2/3 the length of outer spine pair.....*Lamprops serratus*
- 11b. Outer terminal spine pair slightly longer than median three spines.....
.....*Lamprops fuscatus* (♀)
- 12a. Carapace bearing partial ridges between the four major oblique carapace ridges; eyelobe reaching nearly to edge of pseudorostrum.....*Lamprops quadriplicatus* and *Lamprops krasheninnikovi*
- 12b. Carapace lacking partial ridges between the four major oblique carapace ridges; eyelobe separated by ½ its length from the pseudorostral margin.....
.....*Lamprops augustinensis*

Mesolamprops - Băcescu (1988) lists only four species in this genus, two of which occur in the NEP. The bathymetric distribution of these taxa is peculiar. Both of the local species are inner to mid shelf animals, while the Mediterranean *M. denticulatus* is upper bathyal, and *M. abyssalis* from the Tropical West Atlantic is abyssal (Băcescu 1988). Gladfelter (1975) provides a useful character table for the separation of the two local species in the genus, and adds *Hemilamprops californicus*, which can be confused with *M. dillonensis*. There should be little difficulty in applying this table in the SCB, as *M. dillonensis* is not known to occur south of Central California. While the cephalic shield is better expressed in *Hemilamprops californicus* males than in females, it is well-enough marked that separation of *H. californicus* from *M. bispinosus* females can be based on the carapace alone. It is wise, however, to also check the number of lateral setal pairs on the telson, which will also separate the two forms. As mentioned under *Hemilamprops*, the two species can and do occur together, with males of each species found with females of either.

Paralamprops - The characters used in the above key to lampropids are those of the genus, and do not serve to separate *P. sp* BAP1 from others in the genus. Currently only one species in the genus is known from the NEP. The genus is composed of at least 15 species worldwide, distributed primarily in the Atlantic and Antarctic. While the majority of the species are known from bathyal depths, they also occur at abyssal and hadal depths (Băcescu 1988). Most of these taxa are keyed in Day (1978), but the three species of Reyss (1978), and that of Mühlenhardt-Siegel (2005a) are missing as is the local provisional. The local species is, like much of the genus, large. The single known specimen being a mature male over 2 cm long. *Paralamprops sp* BAP1 differs in carapace morphology from all other members of the genus, not fitting either half of couplet one in Day's key. It bears a single pair of dorso-lateral ridges, which are not marginal. It also has a very prominent crest like hump behind the obscure ocular lobe, The dorso-lateral ridges and the post-ocular hump are both rounded. Thoracic somites T1-T5 all bear flattened lateral alae which are largest on T2. The lobe on T5 is not a flattened alar plate as are those on the preceding segments, but a short lateral swelling of the somite. The telson is nearly as long as the uropodal peduncles; the pre-anal portion very short, and the post-anal portion linear and not tapering.

