

***Prognatholiparis ptychomandibularis*, a new genus and species of the fish family Liparidae (Teleostei: Scorpaeniformes) from the Aleutian Islands, Alaska**

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*Abstract.*—A new species representing a monotypic genus of liparid fishes is described from the central Aleutian Islands. The new genus differs from all known liparid genera by its strongly protruding lower jaw and prominent folds and flaps of skin on the jaws and snout. It is similar to *Allocareproctus jordani* and *Careproctus pycnosoma*, which are also moderately slender liparids with large pelvic disks, but it is further distinguished from these species by its lower meristics, more slender body, and absence of pyloric caeca. *Ptychomandibularis* also differs from *Allocareproctus* in its possession of an eighth preoperculomandibular pore, absence of coronal and post-coronal pores, two epurals, and autogenous hypural plates.

A single specimen of a new liparid (Fig. 1) was collected during the 1997 triennial groundfish survey of the Aleutian Islands, conducted by the Alaska Fisheries Science Center of the U.S. National Marine Fisheries Service. The specimen was captured in Seguam Pass in the central Aleutians at 455 m depth (Fig. 2). The new species possesses unique morphological features that indicate its distinctiveness as the only known member of a new genus.

Methods

The holotype was fixed at sea in 10% formalin-seawater solution and later transferred to 70% ethanol. Counts and measurements follow Burke (1930) and Pitruk (1991), with the exception of pore and pectoral-fin ray counts. Pore counts follow Stein and Andriashev (1990). In pectoral-fin ray counts, the upper lobe includes the dorsalmost ray to the ray dorsal to the shortest ray; the lower lobe includes the shortest ray in the notch to the ventralmost ray. Caudal-fin morphology and counts of

dorsal- and anal-fin rays, branchiostegals, epipleural and pleural ribs, and vertebrae were obtained by examining radiographs. Osteology of the pectoral fin was not visible in radiographs. The holotype was deposited in the University of Washington Fish Collection (UW).

*Prognatholiparis*, new genus

*Type species.*—*Prognatholiparis ptychomandibularis*, new species, by monotypy.

*Diagnosis.*—Lower jaw projecting anterior to upper jaw (Fig. 3); prominent flaps and folds of skin on snout, upper jaw, and ventral portion of mandible; pelvic disk large, 37.4% head length (Fig. 4); body slender, depth at pectoral-fin base 20.5% SL, depth at anal-fin origin 19.0% SL; cephalic lateralis pores in 2-6-8-1 pattern, coronal and post-coronal pores absent (Fig. 5); epurals two, fused at base; hypural plates autogenous (Fig. 6); pleural ribs present; pseudobranchiae absent; subcutaneous ge-

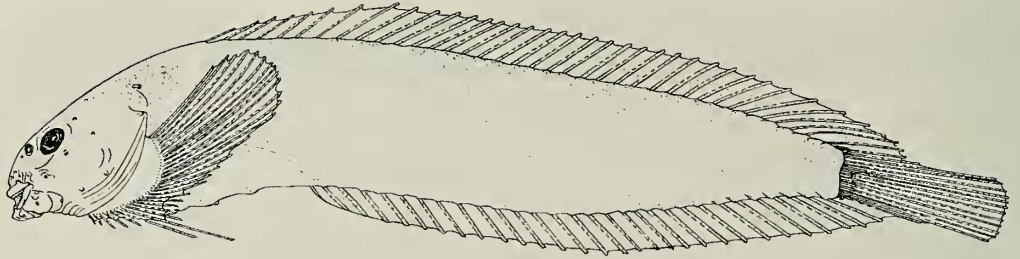


Fig. 1. *Prognatholiparis ptychomandibularis*, holotype, UW 042341, 88.0 mm SL, male. Illustration by B. Vinter.

latinous layer absent; pyloric caeca absent (Table 1).

*Description.*—See species account.

*Etymology.*—*Prognatholiparis* from the Greek *pro* (προ) = in front of + *gnathos* (γναθος) = jaw + *Liparis*, a genus of snailfishes, applied in reference to the protruding lower jaw, which distinguishes this genus from all other known liparid genera.

*Prognatholiparis ptychomandibularis*, new species

Wrinkle-jaw snailfish  
Figs. 1–6, Table 1

*Holotype.*—UW 042431, 88 mm SL, male, Seguam Pass, east of Seguam Island, 52.31836°N, 172.7453°W, 455 m depth, W. Flerx, collector, R/V *Vesteraalen*, Cruise

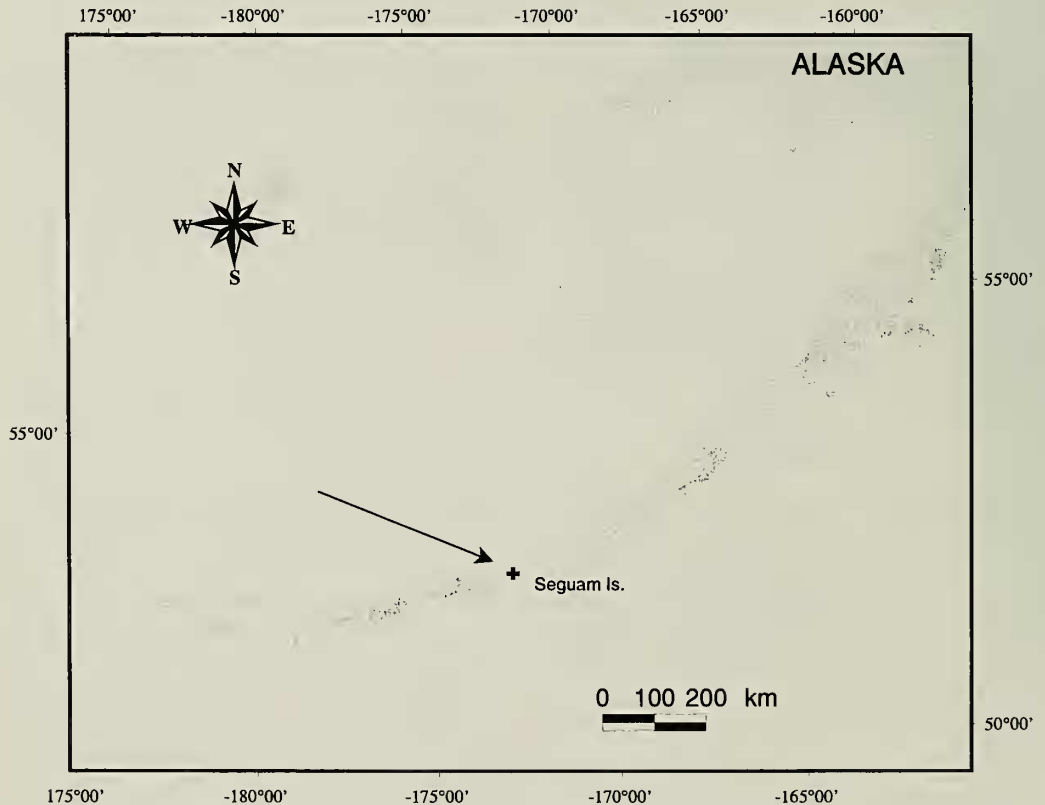


Fig. 2. Collection locality of *Prognatholiparis ptychomandibularis*, holotype, UW 042341, 88.0 mm SL, male, Seguam Pass, central Aleutian Islands, Alaska.

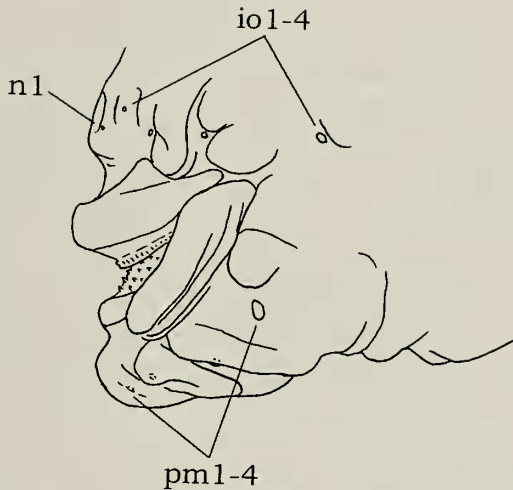


Fig. 3. *Prognatholiparis ptychomandibularis*, holotype, UW 042341, 88.0 mm SL, male. Left lateral view of snout and lower jaw. n1 = nasal pore 1; io1-4 = infraorbital pores 1-4; pm1-4 = preoperculomandibular pores 1-4. Illustration by B. Vinter.

199701, T. Cosgrove, Captain, haul 58, 22 Jun 1997.

*Diagnosis.*—Same as for genus.

*Counts.*—See Table 1.

*Description of holotype.*—Body slender, depth at pectoral-fin base 20.5% SL, depth at anal-fin origin 19.0% SL; predorsal length 28.2% SL; preanal length 35.7% SL; head slightly depressed; maxilla 18.5% HL, ending well anterior to orbit; mandible 25.6% HL, articulation with quadrate ante-

rior to orbit; fleshy lip originating well posterior to the tip of the mandible leaving a narrow anterior edge on lower jaw; snout and mandible with longitudinal folds of skin bracketing pores of the cephalic lateralis, folds on snout broadened distally with slightly constricted base, folds on mandible formed as strong ridges (Fig. 3); mandible projecting anterior to snout, with 4 rows of weakly trilobate teeth tapering to a single row posteriorly; teeth in 4 rows at tip of



Fig. 4. *Prognatholiparis ptychomandibularis*, holotype, UW 042341, 88.0 mm SL, male. Ventral view of anterior portion of body, including lower jaw and pelvic disk. pm1-7 = preoperculomandibular pores 1-7 (Pore 4 of right side is not visible; see text for discussion). Illustration by B. Vinter.

Table 1.—Meristics and morphometrics of the holotype of *Prognatholiparis ptychomandibularis* n. sp., UW 042431. Pectoral-fin ray counts are presented with upper + lower lobe in parentheses; caudal-fin ray counts are presented as dorsal procurent, dorsal principle + ventral principle, ventral procurent rays. Vertebral counts are presented with precaudal + caudal in parentheses.

Character	Counts	Percent	Measurement (mm)
Dorsal-fin rays	37		
Anal-fin rays	30		
Pectoral-fin rays	30 (21+9)		
Branchiostegal rays	6		
Caudal-fin rays	3, 5+7, 2		
Vertebrae	41 (10+31)		
Pyloric caeca	0		
Cephalic pores	2-6-7-1		
Standard length			88.0
Head length			19.5
Caudal-fin length			17.9
% SL			
Head length		22.2	19.5
Predorsal length		28.2	24.8
Preanal length		35.7	31.4
Snout-to-anus length		23.9	21.0
Snout-to-disk length		11.6	10.2
Disk-to-anus length		4.1	3.6
Body depth at pectoral-fin base		20.5	18.0
Body depth at anal-fin origin		19.0	16.7
Pectoral-fin upper lobe length		15.1	13.3
Pectoral-fin lower lobe length		13.1	11.5
Disk diameter		8.3	7.3
Caudal-fin length		20.3	17.9
% HL			
Maxilla length		18.5	3.6
Mandible length		25.6	5.0
Snout length		33.8	6.6
Orbit diameter		22.1	4.3
Gill slit length		20.0	3.9
Disk diameter		37.4	7.3
% CL			
Dorsal fin overlap on caudal fin		33.0	5.9
Anal fin overlap on caudal fin		25.1	4.5

upper jaw tapering to a single row posteriorly. Eye small, orbit diameter 22.1% HL. Pyloric caeca absent.

Cephalic lateralis in 2-6-8-1 pattern on left side, preoperculomandibular pore 4 not opened on right side (Figs. 3-5). Nasal pores small, without tubes. Infraorbital pores small, only pore 6 on short tube. Mandibular canal from opposing sides united on dental symphysis at a single pore. Preoperculomandibular pores 1-5 large,

without projecting tube; pores 6-8 small, on short tubes. Supratemporal pore one, on short tube.

Gill opening small, 20% HL, slit extending to above first pectoral-fin ray. Branchiostegal rays six.

Dorsal fin with 37 soft rays gradually increasing in length from anterior to posterior, membrane of posteriormost ray connected to dorsalmost ray of caudal fin for about 33.0% of caudal-fin length. Anal fin with

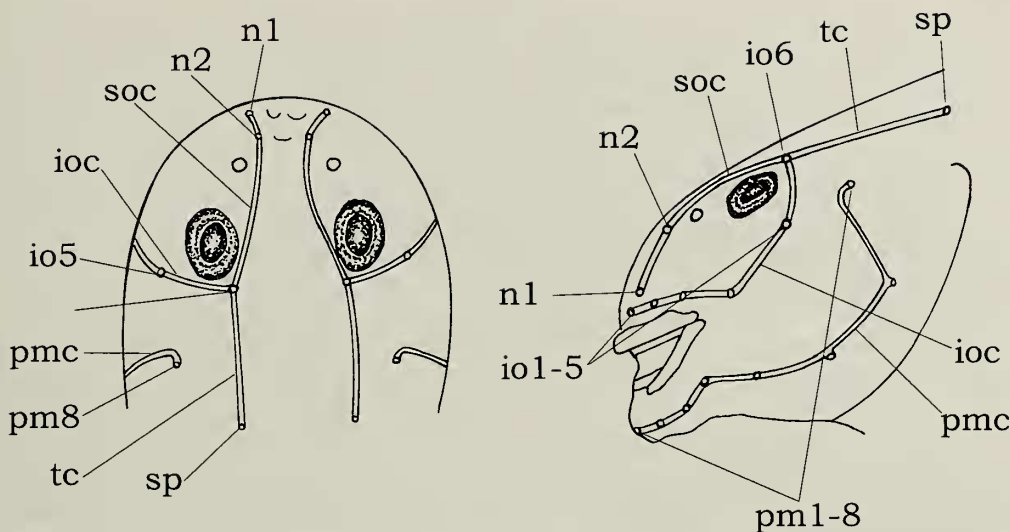


Fig. 5. *Prognatholiparis ptychomandibularis*, holotype, UW 042341, 88.0 mm SL, male. Diagrammatic view of cephalic pores. Abbreviations from anterior to posterior: n1 and n2 = nasal pores 1 and 2; soc = supraorbital canal; ioc = infraorbital canal; io1-6 = infraorbital pores 1-6; pm1-8 = preopercularmandibular pores 1-8; pmc = preoperculomandibular canal; tc = temporal canal; sp = suprabranchial pore. Illustration by B. Vinter.

30 rays gradually increasing in length from anterior to posterior, membrane of posteriormost ray connected to ventralmost ray of caudal fin for 25.1% of caudal-fin length.

Pectoral fin with 30 rays in two lobes, lobes separated by shallow notch with 21 rays in upper lobe and 9 rays in lower lobe. Pectoral-fin rays in notch spaced as in rays of lobes. Upper lobe rounded, extending to anal-fin origin, length 15.1% SL, with rays 3-10 longest; length of rays gradually shortening from ray 10 to ray 22; lower lobe pointed, extending beyond anus, length 75% of upper lobe length, 13.1% SL, with ray 24 longest; rays 25-30 shortening ventrally; tips of lower rays of dorsal lobe and all rays of lower lobe exerted.

Pelvic disk large, 37.4% HL and 8.3% SL, length about equal to width, fleshy covering obscuring internal structure (Fig. 4). Anus located midway between pelvic disk and origin of anal fin; distance from disk to anus 49.4% disk length (4.1% SL).

Caudal fin 20.3% SL, with 12 principal and 5 procurent rays (3 + 5/7 + 2). Neural and haemal spines of preural centrum 2 complete and fused to centrum. Epurals 2,

partially fused together at base. Hypural plates autogenous; parhypural fused to ventral hypural (Fig. 6). Vertebrae 41, precaudal vertebrae 10, caudal vertebrae 31. Pleural ribs present on vertebrae 8-10, epipleurals on vertebrae 1-20, epineurals on vertebrae 1-19.

Color in alcohol pale brown, with scattered melanophores over body beneath translucent cutaneous layer, darker on nape and at anterior base of dorsal fin. Oropharyngeal cavity, stomach, peritoneum, and intestines pale.

*Ecology.*—The single known specimen of *Prognatholiparis ptychomandibularis* was captured at 455 m depth with species typical of moderately deep waters of the Aleutian Islands. The haul was dominated by *Reinhardtius hippoglossoides* and *Bathyraxa maculata*. The holotype had a full stomach that contained ostracods and rocks.

*Etymology.*—*ptychomandibularis* from the Greek *ptyx*, *ptychos* (πτύξ, πτυχός) = a fold + Latin *mandibula* = jaw, in reference to the skin folds on the snout and along the ventral margin of the mandible.

*Comparisons.*—Some 25 genera of lipar-

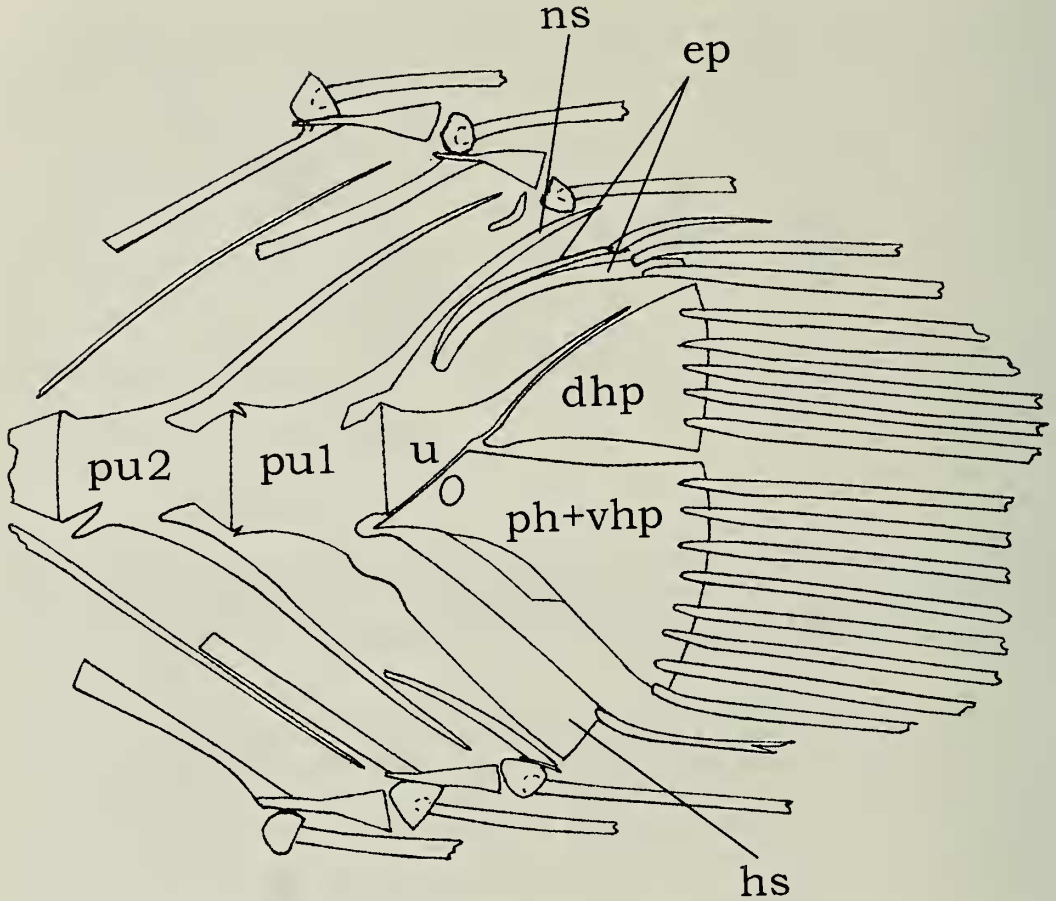


Fig. 6. *Prognatholiparis ptychomandibularis*, holotype, UW 042341, 88.0 mm SL, male. Caudal skeleton as illustrated from radiograph. pu1 and pu2 = preural centrum 1 and 2; u = urostyle; dhp = dorsal hypural plate; vhp = ventral hypural plate; ph = parhypural; ns = neural spine; hs = haemal spine; ep = epural. Illustration by B. Vinter.

ids are recognized worldwide, and the phylogenetics of the Liparidae are poorly understood (Kido 1988, Balushkin 1996, Andriashev & Stein 1998). However, *Prognatholiparis* is easily distinguished from all other liparid genera on the basis of its strongly projecting lower jaw and the folds of skin on the upper and lower jaws. Generally, among species of the North Pacific, it is phenetically most similar to the species *Allocareproctus jordani* and *C. pycnosoma*, which are also characterized by a moderately slender body, pale coloration, large disk, and small gill slit. Both species possess either trilobed teeth as in *Prognatholiparis* or both simple and trilobed teeth

(Burke 1930, Kido 1985, 1988; Pitruk & Fedorov 1993).

*Prognatholiparis* differs from both these species in its lower meristics, including dorsal-, anal-, and pectoral-fin rays, and vertebrae. Both *A. jordani* and *C. pycnosoma* have at least 41 dorsal-fin rays, 33 anal-fin rays, 36 pectoral-fin rays, and 46 vertebrae. *Prognatholiparis* also differs in several other characters, including the absence of fleshy flaps on the rim of the cephalic pores (present in *Allocareproctus* and *C. pycnosoma*), and a longer lower pectoral-fin lobe that extends beyond the anus (does not reach the anus in *Allocareproctus* and *C. pycnosoma*).

In addition to characters of the lower jaw and snout, these species may differ from *Prognatholiparis* in the configuration of the anterior dorsal-fin rays, which project above the fin membrane. In the holotype of *Prognatholiparis*, the anterior rays appear to have been connected by membrane to their tips but were damaged during the specimen's collection.

*Prognatholiparis* differs from most liparids (Kido 1988, Balushkin 1996), including *Allocareproctus jordani* (Pitruk & Federov 1993), in the structure of its caudal skeleton, which includes hypural plates autogenous from the preural centrum and two epurals. Most liparids, especially those considered more derived, possess a relatively consolidated caudal skeleton, with fused hypural plates and a single epural (Kido 1988; Balushkin 1996).

Kido (1985, 1988) and Burke (1930) also considered *C. curilanus* and *C. ectenes* similar to *C. pycnosoma*, and therefore possibly similar to *Prognatholiparis*. *Careproctus ectenes* is a very slender and elongate species with exerted anterior dorsal rays and is similar to *C. curilanus* in its possession of an elongate protruding snout, a character that distinguishes both species from *Prognatholiparis*.

With the exception of *Allocareproctus jordani*, which was recently redescribed by Pitruk & Fedorov (1993) on the basis of 15 additional specimens, each of these species is known from less than five individuals. For each of these, the cephalic pore morphology, caudal skeleton, and features of the axial skeleton are not known. Recent surveys and collections of additional liparids from the Aleutian Islands may serve to shed light on these similar species and their relationships.

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