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Extension of geographical distribution and first ocurrence of fishes in the northwest of Mexico

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ABSTRACT

Five species of fishes herein reported represent extension of known geographical ranges (*Hydrolagus colliei*, *Prionotus albirostris*, *Diplectrum labarum* and *Conodon serrifer*), or constitute the first occurrence (*Lepophidium prorates*) in the Pacific coast of the Baja California peninsula, México.

Key words: Fishes, range extension, new records, Baja California, México.

RESUMEN

Las cinco especies de peces aquí reportadas, representan extensiones de su ámbito geográfico conocido (*Hydrolagus colliei*, *Prionotus albirostris*, *Diplectrum labarum* y *Conodon serrifer*), o constituye la primera concurrencia (*Lepophidium prorates*) en la costa pacífica de la Península de Baja California, México.

Palabras Clave: Peces, extensión de ámbito geográfico, nuevos registros, Baja California, México.

INTRODUCTION

The northwest of México (20° - 32°N and 105° - 116°W: coasts of Pacific Ocean and Gulf of California) is a region with high marine biodiversity that has always attracted the attention of researchers of different parts of the world. This region, particularly the western coast of the Baja California peninsula, represents a very particular system within the oceanography of the eastern Pacific. The convergence of different water masses along its coast, in combination with its peculiar geological history and coastal morphology have produced a wide variety of marine biotopes. Therefore, this region is considered one of the country's richest fishery areas (De la Cruz-Agüero *et al.*, 1996).

Although the marine ichthyofauna of the west coast of the Baja California peninsula has been relatively well documented to an alpha level (e.g., Ruiz-Campos and Hammann, 1987; De la Cruz-Agüero and Galván, 1992; Danemann and De la Cruz-Agüero, 1993; De la Cruz-Agüero *et al.*, 1994, 1996; Rosales-Casián, 1996, 1997), the finding of species outside their known distribution ranges justifies the present contribution.

In this paper, we report collecting records of five fish species, four of them extending their known distribution ranges (*Hydrolagus colliei*, *Prionotus albirostris*, *Diplectrum labarum*, and *Conodon serrifer*) and one (*Lepophidium prorates*) recording by first time in the west coast of Baja California Sur. In addition, exact geographical locations for verified and curated specimens are also provided.

METHODS

All fish specimens that support this contribution were caught by personnel of CICIMAR-IPN or brought to the ichthyological collection (CI) of this institution for identification. The specimens were identified according to the criteria of Jordan and Evermann (1896-1900), Eschmeyer *et al.* (1983), Allen and Robertson (1994) and Fischer *et al.* (1995), and they were deposited and catalogued (CICIMAR-CI: Series). Date, locality and method of capture are provided for each species. Standard length (SL) for the four teleosteans and total length (TL) for the one chondrichthian is given in millimeters (mm). Ichthyogeographical affinities of the species were based in Brigss (1974). A comparison of present and previous records of these species is given in Table 1.

SPECIES ACCOUNTS

CHIMAERIDAE (ratfishes). *Hydrolagus colliei* (Lay & Bennett, 1849). Spotted ratfish. This species also known as chimaera, has long and smooth body, a short rounded and flimsy-pointed snout, a diphycercal tail and one single gill opening. *H. colliei* has the body sides marbled with a pattern of light reticulations, with bronze metallic hues, silvery below with numerous white spots. The spotted ratfish is rarely caught or reported because of its benthopelagic habits and its null commercial importance. This species is distributed from southeastern Alaska to Bahía Sebastián Vizcaíno, B.C.S. (28°40'N-114°17'W and 27°51'N-115°05'W), with two isolated populations in the Gulf of California at Isla Tiburón and Bahía de La Paz-Cabo San Lucas region (Miller and Lea, 1972; Knaggs *et al.*, 1975; Krupp and Bussing, 1995; Balart *et al.*, 1995). One specimen (370 TL; CICIMAR-CI:4441) was caught near Punta Prieta, B.C.S. (26°59'N and 114°02'W; Fig. 1A), extending so its known distribution range in the west coast of the peninsula of Baja California, about 200 km southward. This record constitutes the first occurrence between the known geographic limits of its distribution, as well as the southernmost record for the San Diegan Province.

OPHIDIIDAE (cusk eel). *Lepophidium prorates* (Jordan & Bollman, 1889). Prowspine cusk eel. This species has been reported to inhabit soft bottoms between 4 and 73 m of depth, and it is often caught by bottom trawl nets (Lea, 1995). This eel was recognized by having a body color rather uniform, lateral line with a dark dash between each pore anteriorly, and small rounded scales in regular rows somewhat covered with skin (Robins, 1962). The specimen reported here (252 mm SL, CICIMAR-CI: 4444) was caught off Punta Prieta, B.C.S. (27°01'N - 114°03'W; Fig. 1B) by hook and line on 25 July 1995. Previously, the published distribution range was from the upper Gulf of California (San Felipe, Baja California, 31°06'17"N - 113° 58'37"W) to Peru (Robins, 1962; Pérez-Mellado and Findley, 1985; van der Heiden and Findley, 1988; Abitia-Cárdenas *et al.*, 1994; Allen and Robertson, 1994; Lea,1995). Aurioles-Gamboa (1991), reported the occurrence of *L. prorates* between latitudes 23° and 27° N in the west coast of B.C.S., but no one voucher specimens was deposited in a collection. Therefore our specimen of Punta Prieta represents the first documented record on range extension of the taxon (ca. 630 km).

TRIGLIDAE (gurnards). *Prionotus albirostris* Jordan & Bollman, 1889. Whitesnout searobin. The species is recognized by having two pale spots on the lips, single preopercular spine and first spine dorsal finely serrated. Body elongate, gray brown in color with darker mottling and white on ventral surface (Allen and Robertson, 1994). On 23 July 1995, three individuals of this species were captured by hook and line in a depth between 30 and 40 m at Bahía San Hipólito, B.C.S. (26° 57'N - 113° 53'W; Fig. 1C). These fish ranged in size from 172 to 185 mm SL. The previously known distribution range of the species includes the Cortez and Panamic Provinces, from the Gulf of California to Galapagos Islands (Gruchy, 1970; Amezcua-Linares,

Table 1. New and previous geographic range extensions for five fish species in Northwestern México. N=northern extension, + =first occurrence, S=southern extension.

Species	Present	Previous
Hydrolagus colliei (S)	27°01'N-114°02'W	28°11'N-114°35'W
Lepophidium prorates (+,N)	27°01'N-114°03'W	31°06'N-113°58'W
Prionotus albirostris (N)	26°57'N-113°53'W	26°18'N-113°25 W
Diplectrum labarum (N)	28°15'N-114°07'W	27°07'N-114°11'W
Conodon serrifer (N)	24°41'N-112°3'W	22°52'N-109°59'W

1985, 1996; van der Heiden, 1985; van der Heiden and Findley, 1988; Allen and Robertson, 1994; Bussing, 1995). Recently, Castro-Aguirre *et al.* (1993) and Huidobro-Campos and Schmitter-Soto (1993) reported the presence of the species in the western coast of B.C.S. as northern as 26 18'N, but no voucher specimens exist supporting their reports. Therefore, our record of Whitesnout for San Hipólito (CICIMAR-CI: 4442 and 4443) extends by about 100 km its known northern range.

SERRANIDAE(sand perchs, groupers). *Diplectrum labarum* Rosenblatt & Johnson, 1974. Highfin Pacific sand perch. This species is identified by its unique spinous dorsal configuration: 2nd-4th dorsal spines with black filamentous extensions (Rosenblatt and Johnson, 1974). *D. labarum* inhabits sand and mud bottoms, between 20 and 160 m of depth (Heemstra, 1995). On 28 June 1985, one specimen of highfin Pacific sand perch (CICIMAR-CI: 1437) measuring 123 mm SL, was taken in a otter trawl at a depth of 21 m, off Morro Santo Domingo, Bahía Sebastián Vizcaíno, Baja California (28° 15'N - 114° 07'W; Fig. 1D). The previously known northern limit of the species is Bahía Asunción, B.C.S.(27° 07'N - 114° 11'W; Rosenblatt and Johnson, 1974). Therefore, the new northern range for this species is thus extended 150 km.

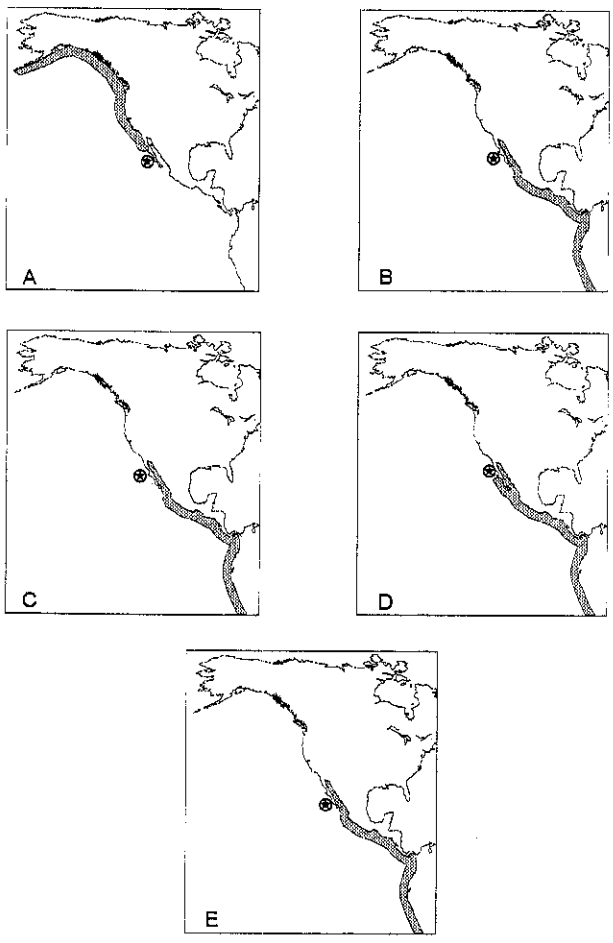

Figure 1. Known geographic range (shadow) and new extension (✪) for five fish species in Northwestern México. A) *Hidrolagus colliei*, B) *Lepophidium prorates*, C) *Prionotus albirostris*, D) *Diplectrum labarum*, and E) *Conodon serrifer*.

HAEMULIDAE (grunts). *Conodon serrifer* Jordan & Gilbert, 1882. Serrated grunt. The only specimen reported here (212 mm SL, CICIMAR-CI: 4234) was collected on 1 February 1995, between Punta Arenas and Puerto San Carlos in Bahía Magdalena, B.C.S. (24°41'N and 112°3'W; Fig. 1E). The specimen was captured during a night time purse seine set for Pacific sardines, *Sardinops sagax* by the crew of the vessel "El Mexicano," at 15 m of depth. *C. serrifer* was identified by its strongly serrated preopercle, including one or two enlarged spines at angle, the serrate on the lower margin directed anteriorly; brownish on the back, silvery blue-gray on the sides with six or seven blackish bars on the upper side; soft dorsal, anal, and pelvic fins yellowish (Allen and Robertson, 1994). Until now, the published records of the serrated grunt were from the Gulf of California through north of Peru (cf. van der Heiden, 1985; van der Heiden and Findley, 1988; Allen and Robertson, 1994; Mc Kay and Schneider, 1995; Balart *et al.*, 1995, 1997; Amezcua-Linares, 1996).

The records of *C. serrifer* in Bahía Magdalena extends the known northern distribution range for the species by 310 km, and constitute the first occurrence of the species in the west coast of Baja California Sur.

DISCUSSION

It is well known that the marine fish have developed adaptations to the environmental conditions in which they live, which are reflected in their ecomorphological features for feeding, growth, reproduction and defense. In the same way, the habitats and geographical ranges of fish are related to historical and geological processes (Vermeij, 1978).

Mechanisms as natural dispersion, trophic migration, organic deficiency, current movements, climatic change, the discard as baitfish, and transport in ship's seawater ballast have been offered by many authors as explanations for the northward movement of Pacific marine fishes (cf. Kukowski, 1972; Alvarez and Castro, 1983; Karinen *et al.*, 1985; Mearns, 1988). Of these causes, climatic change have been widely documented for several fish species inhabiting the

California Current System (e.g., Hubbs, 1948; Glynn, 1990) with the conclusion that recent warming of surface waters has allowed the penetration of warm water species, wich extended their northward distribution along the Pacific coast. Some of the present records (e.g., Haemulids) may be related to cyclic warming periods of surface temperatures. In addition, the "newness" of fish records along coasts of the Baja California peninsula also may be explained because precise ichthyological evaluations are absent in these regions (Danemann and De la Cruz-Agüero, 1993; De la Cruz-Agüero *et al.*, 1996).

Reporting present records and observations, supported by geographically referenced and catalogued specimens, is essential to support future taxonomical and biogeographical studies, as well as for establishing the significance of climatic change on fish distributions. All specimens curated at CICIMAR are available on request (coleict@vmredipn.ipn.mx).

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