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A FIELD KEY TO FISH FAMILIES
REPORTED FROM SOUTH AMERICAN FRESH WATERS

*UNA CLAVE PARA LAS FAMILIAS DE PECES
REPORTADAS DE AGUAS DULCES SUDAMERICANAS*

By C. KELLY SWING AND JOHN S. RAMSEY²

This simple dichotomous key allows fishes taken in fresh water on the South American continent to be easily identified to family. It is intended for use by persons with even minimal experience in Neotropical ichthyology.

To use the key, one chooses a description from each couplet and then proceeds successively to the number that completes that selection. Distinguishing characters are easily visible features of the fishes that are indicated by arrows in the illustrations. Tentative identifications can be confirmed through comparison with the representative line drawings for each family. Figure references for each of these drawings are presented on the first line below the family name. To the left of the drawings, the approximate maximum size is given. Appearing on the second line below the family name, beginning with "Dist", is a code for the probable distribution of the family on the South American continent. Numbers in this distribution code refer to regions defined in Map 1. Numbers alone here imply that the family is a truly freshwater group or has one or more freshwater representatives. When numbers are followed by "M", the family has a marine distribution adjacent to the indicated regions where individuals

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may occasionally enter freshwater. A designation of "I" implies that the presence of the family is due to introduction by man. If the introduction has been well documented, region numbers will also be included. On the third line below the family name, beginning with "Ref", are numbers of the bibliographic citations that provide further information about that taxon. Although in many cases, more recent and more limited taxonomic and geographic articles are available, we have tried to cite sources that are of most general value. The literature section is cross referenced so that it is accessible according to taxon (in the key or Table 1) or geographic region (Table 2).

Classification (Table 1) follows that suggested by Nelson (1984), with some exceptions in the Characiformes.

El diseño de esta clave dicótoma debe facilitar la identificación de peces sudamericanos de agua dulce a nivel de familia. Esperamos que la clave sirva como punto de partida para aquéllos con interés en peces neotropicales.

Para usar la clave solo se requiere seguir los números, escogiendo las descripciones correctas, hasta llegar a la identificación. Las características usadas son visiblemente obvias y se indican con flechas en las ilustraciones. Para confirmar identificaciones dudosas, puede compararse con las ilustraciones representativas de cada familia. Cada figura incluye un número de referencia presentado en la primera línea debajo del nombre familiar. A la izquierda, se incluye el mayor tamaño aproximado. Abajo del nombre de familia, en la línea segunda, incluimos un código para su distribución, lo que empieza con "Dist". Números en este código se refieren a las regiones en el Mapa 1. Números sin calificativo de habitat implican que la familia es exclusivamente dulciaquícola o tiene una o más representantes en agua dulce. Números en el código con "M" indican que la familia es marina pero individuos ocasionalmente entran en agua dulce donde tienen acceso del océano. Números con "I" significan que la familia fue introducida. Si la introducción se ha documentado bien, los números de las regiones están incluidos. La tercera línea empieza con "Ref" e incluye números de referencias bibliográficas que se pueden usar para proseguir el estudio de grupos en particular. Aunque sin duda existen referencias más recientes y detalladas, hemos tratado de incluir aquéllas de más valor general. La literatura es accesible por grupo (en la clave o con el uso de Tabla 1) o área geográfica (Tabla 2).

La clasificación (Tabla 1) sigue la de Nelson (1984) con la excepción de los Characiformes.

Table 1. Index of families. Presented to the right of each family name is the place in the key where that identification is reached. An asterisk (*) indicates doubtful occurrence in South American fresh waters.

Tabla 1. Índice de familias. A la derecha de cada nombre familiar, se indica donde sale su identificación en la clave. Un asterisco () indica que su presencia en aguas dulces sudamericanas es dudosa.*

Petromyzontiformes		Cynodontidae	38A
Petromyzontidae	1A	Lebiasinidae	85A
Lamniformes		Parodontidae	79B
Carcharhinidae	4A	Gasteropelecidae	75A
Rajiformes		Prochilodidae	74A
Pristidae	5A	Curimatidae	69B
Rajidae	7B	Anostomidae	79A
Dasyatidae	8B	Hemiodidae	80A
Potamotrygonidae	8A	Chilodontidae	74B
Myliobatidae*	6A	Gymnotiformes	
Lepidosireniformes		Sternopygidae	48A
Lepidosirenidae	9A	Rhamphichthyidae	49A
Acipenseriformes		Hypopomidae	49B
Acipenseridae*	13A	Apterodontidae	46A
Osteoglossiformes		Gymnotidae	47A
Osteoglossidae	60A	Electrophoridae	45A
Clupeiformes		Cypriniformes	
Clupeidae	66B	Cyprinidae	15A,68A
Engraulidae	66A	Siluriformes	
Elopiformes		Diplomystidae	24B
Elopidae	57B	Ictaluridae	29A
Megalopidae	57A	Ariidae	30A
Anguilliformes		Doradidae	18A
Anguillidae	44B	Auchenipteridae	28A
Muraenidae	43A	Aspredinidae	21B
Ophichthidae	42A	Pimelodidae	30B
Salmoniformes		Ageneiosidae	24A
Salmonidae	69A,82B,83A	Hypophthalmidae	27A
Aplochitonidae	71A	Helogenidae	25A
Galaxiidae	50B,72B	Cetopsidae	26A
Characiformes		Trichomycteridae	23A
Characidae	72A,82A,84A,85B	Callichthyidae	20A
Erythrinidae	77A	Loricariidae	17B,32B
Ctenoluciidae	76A	Astroblepidae	17A

Table 1, *Tabla 1*, cont.

Scoloplacidae	21A	Lutjanidae	103A
Batrachoidiformes		Gerreidae	99A
Batrachoididae	89B	Haemulidae	103B
Lophiiformes		Sciaenidae	94B
Ogcocephalidae	36A	Nandidae	108B
Cyprinodontiformes		Cichlidae	90A
Exocoetidae	59A	Mugilidae	55A
Belonidae	59B	Polynemidae	37A
Cyprinodontidae	63B	Zoarcidae	44A
Anablepidae	62A	Nototheniidae	86A
Jenynsiidae	64A	Dactyloscopidae	88A
Poeciliidae	64B	Blenniidae	89A
Atheriniformes		Eleotrididae	54B,106B
Atherinidae	55B	Gobiidae	35B
Syngnathiformes		Microdesmidae	108A
Syngnathidae	32A	Stromateidae	50A
Synbranchiformes		Belontiidae	107A
Synbranchidae	2A	Gobiesociformes	
Perciformes		Gobiesocidae	35A
Centropomidae	93A	Pleuronectiformes	
Percichthyidae	101A,105B	Bothidae	12B
Serranidae	93B,102A	Soleidae	11A
Centrarchidae	102B	Cynoglossidae	12A
Percidae	94A,97A,105A	Tetraodontiformes	
Carangidae	99B,104A	Tetraodontidae	33A

MAP 1 (facing page). Definition of Regions. Region 1, Magdalena River and Lake Maracaibo basins; Region 2, Orinoco River basin; Region 3, Guianian river drainages between Orinoco and Amazon Rivers; Region 4, Amazon River basin; Region 5, eastern drainages between Amazon and La Plata Rivers; Region 6, La Plata River drainage (Parana and Uruguay basins); Region 7, Atlantic Ocean tributaries south of the La Plata River; Region 8, Pacific Ocean tributaries in Chile; Region 9, westward drainages north of Chile. Although regions depicted on this map resemble physiographic provinces, some have been compromised by political boundaries to facilitate use with Table 2.

MAPA 1 (próxima página). Definición de Regiones. Región 1, cuencas del Río Magdalena y del Lago de Maracaibo; Región 2, cuenca del Río Orinoco; Región 3, cuencas guianias entre la cuenca orinóquia y la cuenca amazónica; Región 4, cuenca del Río Amazonas; Región 5, cuencas orientales entre la cuenca amazónica y la cuenca del Río La Plata; Región 6, cuenca del Río La Plata (cuencas del Río Paraná y del Río Uruguay); Región 7, tributarios del Océano Atlántico al sur del Río La Plata; Región 8, tributarios del Océano Pacífico en Chile; Región 9, cuencas occidentales al norte de Chile. Aunque regiones en este mapa parezcan provincias fisiográficas, unas se han comprometido con fronteras políticas para facilitar el uso con Tabla 2.

MAP 1 MAPA 1

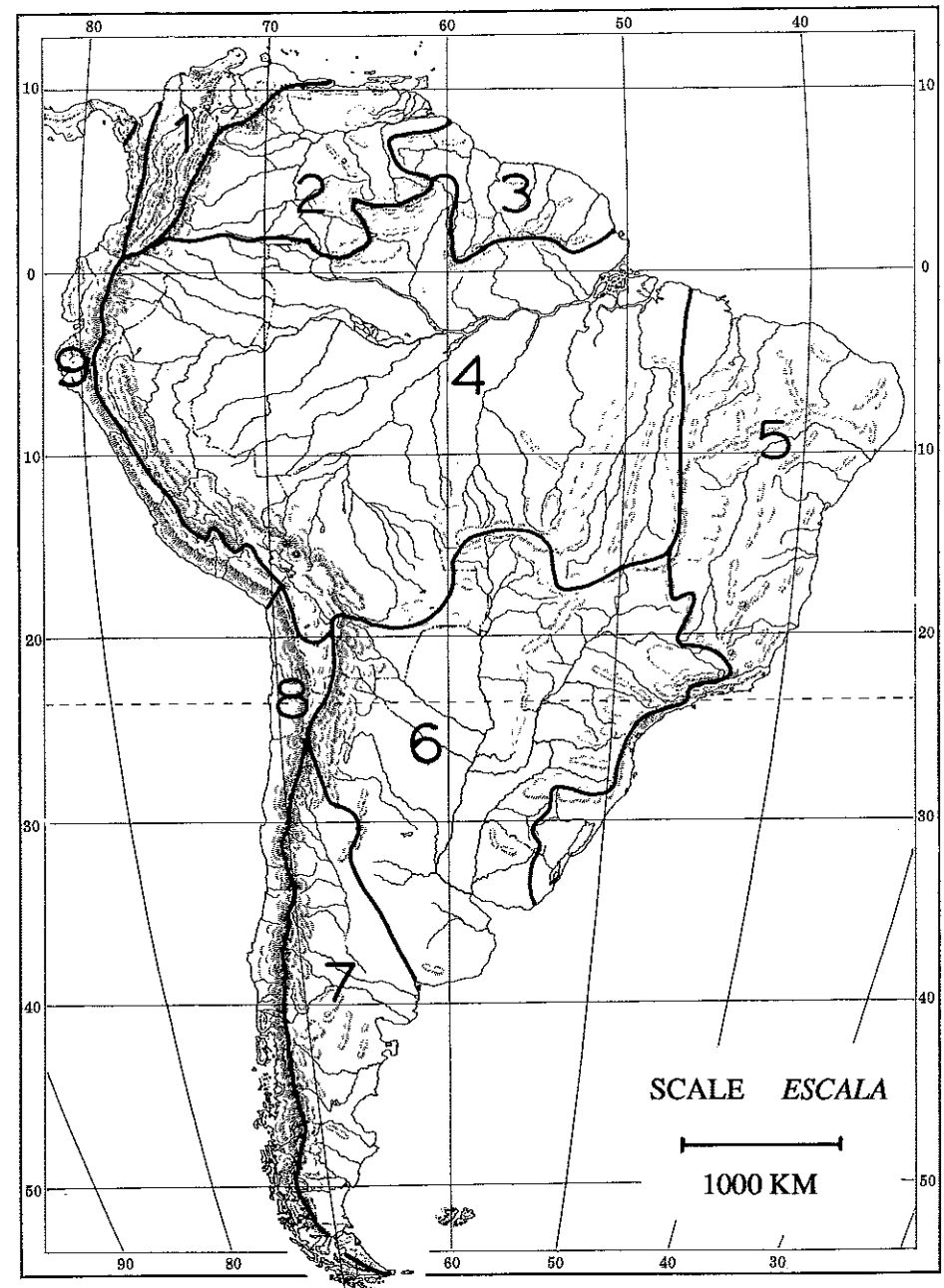


Table 2. Numbers of bibliographic citations that refer to the fishes of a particular region (Map 1).

Tabla 2. Los números de las citas bibliográficas que se refieren a peces de una región en particular (Mapa 1).

Region 1

27, 28, 29, 30, 32, 35, 37, 41, 50, 56, 57, 87, 93, 96, 115, 129, 136

Region 2

18, 27, 28, 29, 30, 32, 35, 37, 41, 50, 51, 56, 57, 86, 87, 93, 96, 97, 98, 115, 129, 136, 137, 141, 142, 154, 156

Region 3

8, 9, 10, 11, 12, 27, 28, 29, 30, 32, 35, 37, 38, 41, 72, 75, 76, 87, 90, 91, 92, 93, 104, 105, 126, 129, 134, 136

Region 4

7, 13, 16, 17, 23, 24, 25, 26, 27, 28, 29, 31, 32, 37, 44, 53, 55, 58, 60, 65, 66, 67, 80, 82, 83, 85, 87, 93, 108, 109, 116, 117, 118, 119, 121, 122, 123, 125, 129, 135, 139, 144, 145, 154

Region 5

6, 37, 54, 60, 66, 87, 93, 138, 147

Region 6

6, 21, 22, 33, 34, 37, 63, 87, 89, 95, 127, 129, 150, 158

Region 7

2, 6, 20, 21, 36, 87, 89, 102, 103, 111, 124, 127

Region 8

2, 5, 19, 20, 21, 36, 43, 44, 47, 52, 59, 87, 101, 102, 103, 111, 121, 124

Region 9

24, 35, 37, 41, 44, 47, 55, 58, 64, 87, 93, 116, 118, 119, 121, 144

THE KEY LA CLAVE

- 1A Jaws absent; seven pairs of gill openings
Sin mandíbulas; siete pares de aberturas branquiales

.....**Petromyzontidae**

Fig 1

Dist 6,7,8

Ref 111,125

120 cm

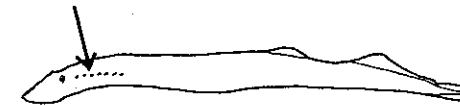


Figure 1

- 1B Jaws present; fewer than seven pairs of gill openings
Con mandíbulas; menos de siete pares de aberturas branquiales

.....**2**

- 2A One restricted gill opening (Fig. 2) located medially on throat

Abertura branquial restringida, única y ventral (Fig. 2)

.....**Synbranchidae**

Fig 3

Dist 1,2,3,4,5,6

Ref 133

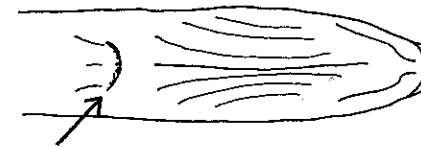


Figure 2

110 cm

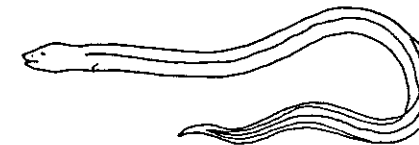


Figure 3

- 2B Gill openings paired or extending upward
Aberturas branquiales en pares o se extienden hacia arriba

.....**3**

3A One pair of gill openings
Un par de aberturas branquiales9

3B More than one pair of gill openings
Más de un par de aberturas branquiales4

4A Gill openings lateral
Aberturas branquiales laterales**Carcharinidae**
 Fig 4
 Dist 1M,2M,3M,4M,5M,9M
 Ref 108,145

310 cm

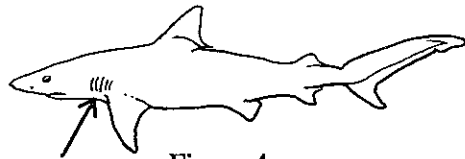


Figure 4

4B Gill openings ventral
Aberturas branquiales ventrales5

5A Snout produced, blade-like, with lateral teeth
Hocico con forma de cuchillo con dientes laterales**Pristidae**
 Fig 5
 Dist 1M,2M,3M,4M
 Ref 108

600 cm

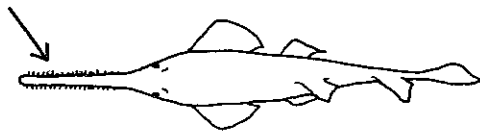


Figure 5

5B Snout not so produced
Hocico no tan desarrollado6

6A Head elevated and distinct from body disk
Cabeza elevada y distinta del disco**Myliobatidae**

Fig 6
 Dist 1M,2M,3M,4M,9M

250 cm

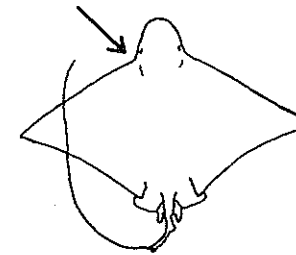


Figure 6

6B Head not elevated and distinct from body disk
Cabeza no elevada y distinta del disco7

7A Spine on dorsal surface of tail
Espina en el dorso de la cola8

7B No spine on dorsum of tail
Sin espina en el dorso de la cola**Rajidae**

Fig 7
 Dist 1M,2M,3M,4M,5M,6M,7M,8M,9M
 Ref 30

100 cm

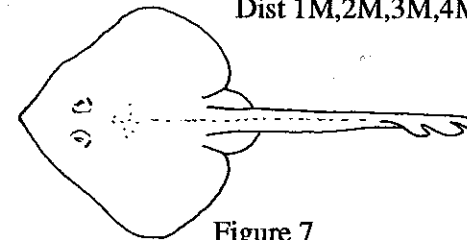


Figure 7

8A Body disk rounded; pelvis with long median anteriorly-directed process (palpable)
Disco redondeado; pelvis con proyección larga por delante (palpable)**Potamotrygonidae**

Fig 8
 Dist 1,2,3,4,6
 Ref 130,131

10A Adult form not bilaterally symmetrical
De cuerpo asimétrico11

10B Adult form bilaterally symmetrical
De cuerpo simétrico13

11A Eyes and color on right side of body
Ojos y color en el lado derecho del cuerpoSoleidae
Fig 11
Dist 1,1M,2,2M,3,3M,4,4M,9,9M
Ref 23,81

11B Eyes and color on left side of body
Ojos y color en el lado izquierdo del cuerpo12

12A Pectoral fin vestigial to absent; dorsal and anal fins confluent with caudal fin
Aletas pectorales vestigiales o ausentes; aletas dorsal, caudal, y anal confluentesCynoglossidae
Fig 12
Dist 1M,2M,3M,4M,5M,6M,9M
Ref 30

100 cm

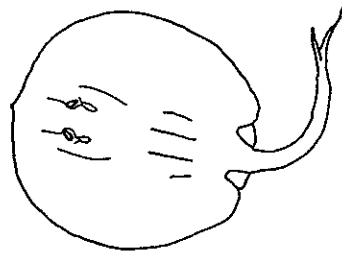


Figure 8

8B Body disk angular; pelvis lacking such a process
Disco angular; pelvis sin proyección por delante
.....Dasyatidae
Fig 9
Dist 1M,2M,3M,4M,5M,9M
Ref 30

120 cm

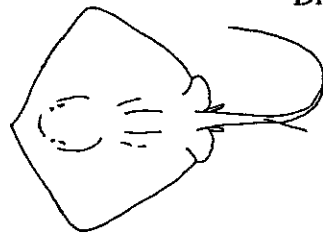


Figure 9

9A Paired fins filamentous; caudal fin diphycercal
Aletas pares filiformes; aleta caudal dificerca
.....Lepidosirenidae
Fig 10
Dist 4,6

120 cm

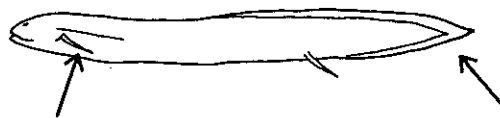


Figure 10

9B Paired fins absent or present but not filamentous;
caudal not diphycercal
*Aletas pares ausentes o presentes y del tipo corriente
pero no filiformes; aleta caudal no dificerca*
.....10

15 cm

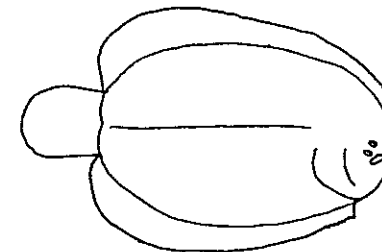


Figure 11

20 cm

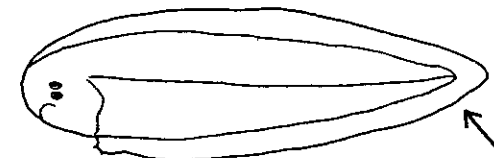


Figure 12

12B Pectoral fin well developed, at least on eyed side;
dorsal and anal fins separate from caudal fin
*Aletas pectorales bien desarrolladas, por lo menos
en el lado izquierdo; aletas dorsal, caudal, y anal
separadas*

.....Bothidae
Fig 13
Dist 1M,2M,3M,4M,5M,6M,7M,8M,9M
Ref 30

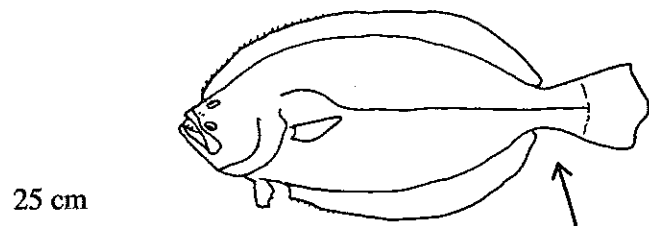


Figure 13

13A Caudal fin heterocercal
Aleta caudal heterocerca

.....Acipenseridae
Fig 14
Dist 3

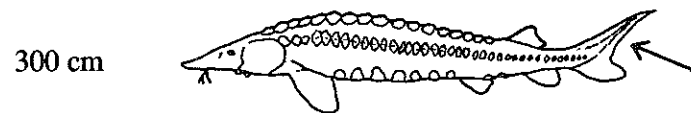


Figure 14

13B Caudal fin absent or present but not heterocercal
*Aleta caudal ausente o presente, pero nunca
heterocerca*

.....14

14A A pair of maxillary barbels (Fig. 15) present
(may be reduced as in Ageneiosidae)
*Un par de barbillas maxilares (Fig. 15) (posiblemente
reducidas como en Ageneiosidae)*

.....15

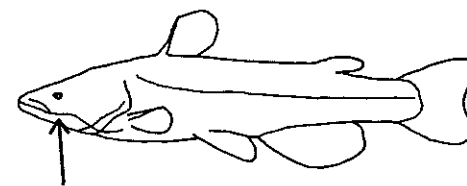


Figure 15

14B No maxillary barbels
Sin barbillas maxilares

.....31

15A Teeth never present on jaws; no adipose fin;
scales always present
*Dientes nunca presentes en las quijadas; aleta
adiposa nunca presente; escamas siempre presentes*

.....Cyprinidae
Fig 16
Dist I

4-60 cm

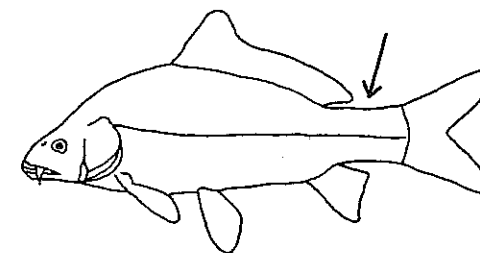


Figure 16

15B Teeth usually present on jaws; adipose fin commonly
present; scales often absent
*Dientes generalmente presentes en las quijadas;
aleta adiposa presente, por lo común; escamas
presentes o no*

.....16

16A Mouth inferior and disk-like (Fig. 17)
Boca inferior y con forma de disco (Fig. 17)

.....17

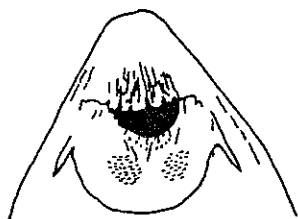


Figure 17

16B Mouth superior, terminal or inferior but not disk-like
Boca superior, terminal, o inferior pero no con forma de disco
18

17A Body naked
Cuerpo desnudo
Astroblepidae
 Fig 18
 Dist 1,9
 Ref 25,45,68,136

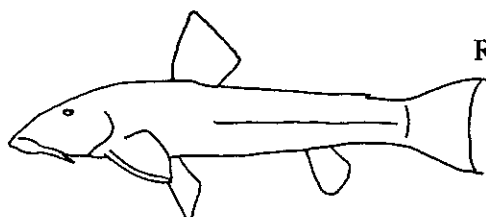


Figure 18

10 cm

17B Body armored
Cuerpo con placas
Loricariidae
 Fig 19
 Dist 1,2,3,4,5,6,9
 Ref 12,45,61,68,69,72,78,
 79,80,86,117,136

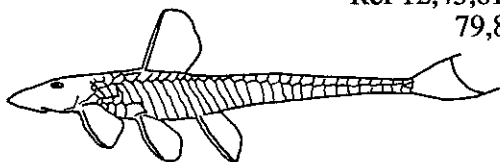


Figure 19

5-110 cm

18A Lateral series of bony plates, each with a recurved spine
Hilera de placas laterales espinosas
Doradidae
 Fig 20
 Dist 1,2,3,4,5,6
 Ref 42,45,50,65,68,136

4-100 cm

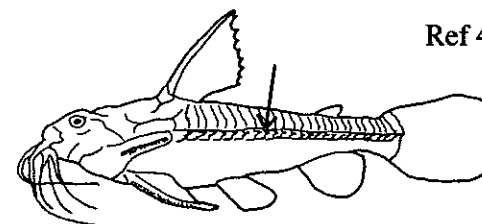


Figure 20

18B Squamation absent or present but not as above
Escamas ausentes o presentes pero sin hilera de placas laterales espinosas
19

19A Body with some squamation
Cuerpo con escamas
20

19B Body without squamation
Cuerpo sin escamas
22

20A Adipose fin present, preceded by a spine
Aleta adiposa presente con una espina
Callichthyidae
 Fig 21
 Dist 1,2,3,4,5,6,9
 Ref 45,68,114,115,116,136

3.5-25 cm

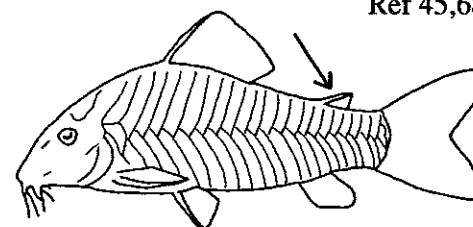


Figure 21

20B Adipose fin absent
Aleta adiposa ausente21

21A Large toothed rostral plate present (Fig. 22)
Una placa rostral con espinas (Fig. 22)**Scoloplacidae**
Fig 22
Dist 4
Ref 7

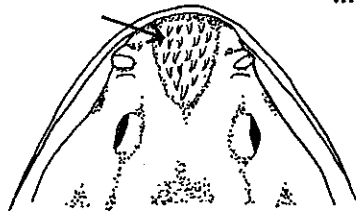


Figure 22

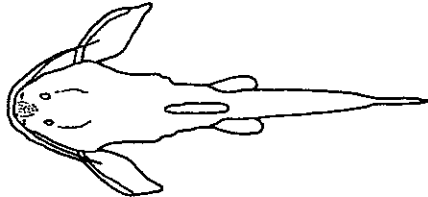


Figure 23

2 cm

21B No such plate present
Sin placa rostral**Aspredinidae**
Fig 24
Dist 1,2,3,4,5,6
Ref 45,68,110,136

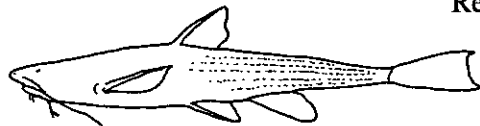


Figure 24

50 cm

22A No mental barbels
Sin barbillas mentonianas23

22B Mental barbels present (Fig. 25)
Con barbillas mentonianas (Fig. 25)25

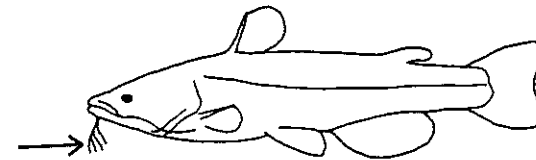


Figure 25

23A Adipose fin absent
Aleta adiposa ausente**Trichomycteridae**
Fig 26
Dist 1,2,3,4,5,6,7,8,9
Ref 3,4,40,45,68,109,136

22 cm

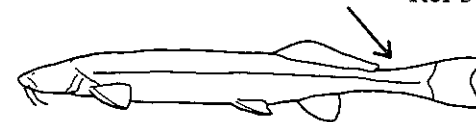


Figure 26

23B Adipose fin present
Aleta adiposa presente24

24A Lateral line branched
Línea lateral con ramas**Ageneiosidae**
Fig 27
Dist 1,2,3,4,5,6
Ref 15,45,68,136

55 cm

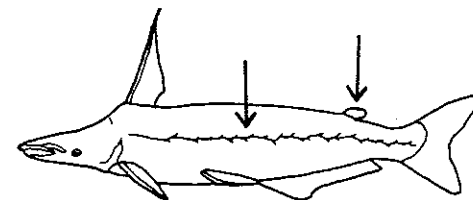


Figure 27

24B Lateral line not branched
Línea lateral sin ramas**Diplomystidae**
Fig 28
Dist 7,8
Ref 2,68

Ref 2,68

24 cm

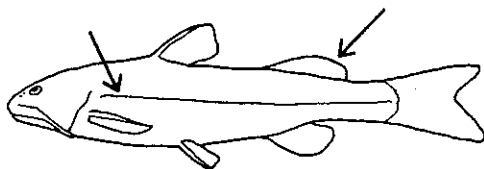


Figure 28

- 25A Anal fin base elongate with origin anterior to dorsal fin; spine absent from dorsal fin
Aleta anal con base alargada y con origen anterior al origen de la aleta dorsal; aleta dorsal sin espina

.....**Helogenidae**
 Fig 29
 Dist 2,3,4
 Ref 45,68,136,157

10 cm

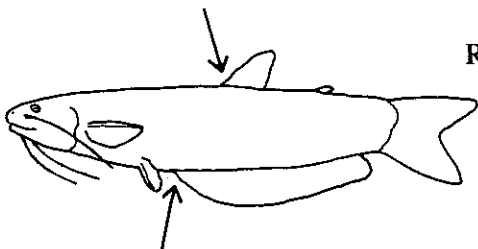


Figure 29

- 25B Origin of anal fin posterior to origin of dorsal fin; spine usually present in dorsal fin
Origen de la aleta anal posterior al origen de la aleta dorsal; aleta dorsal generalmente con espina

.....26

- 26A Adipose fin absent
Aleta adiposa ausente

.....**Cetopsidae**
 Fig 30
 Dist 1,2,3,4,5,6,9
 Ref 45,68,136

18 cm

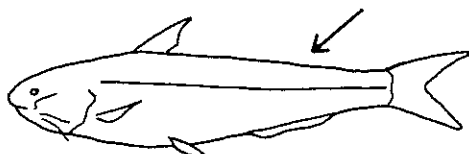


Figure 30

- 26B Adipose fin present
Aleta adiposa presente

.....27

- 27A Pelvic fin bases anterior to dorsal fin origin; eyes low on head, visible from venter; no teeth
Bases de las aletas pélvicas anteriores al origen de la aleta dorsal; se pueden ver los ojos ventralmente; sin dientes

.....**Hypophthalmidae**
 Fig 31
 Dist 1,2,3,4
 Ref 45,68

50 cm

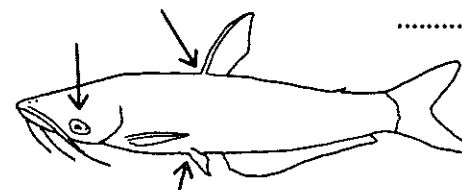


Figure 31

- 27B Pelvic fins posterior to dorsal fin origin; eyes usually positioned otherwise; teeth usually present
Bases de las aletas pélvicas posteriores al origen de la aleta dorsal; ojos superiores o laterales en posición; dientes presentes generalmente

.....28

- 28A Branchiostegal membranes united to isthmus (Fig. 32)
Membranas branquiales unidas al istmo (Fig. 32)

.....**Auchenipteridae**
 Fig 33,34
 Dist 1,2,3,4,5,6
 Ref 15,45,51,68,104,
 105,136,156

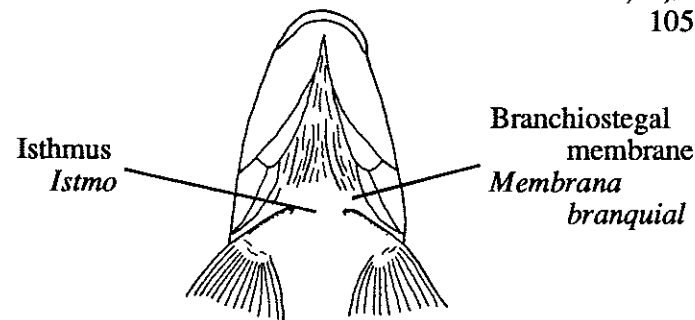


Figure 32

55 cm

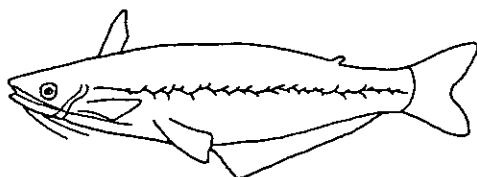


Figure 33

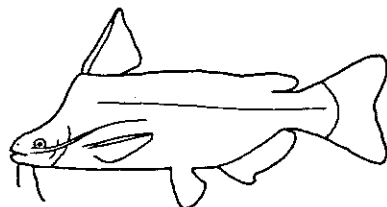


Figure 34

28B Branchiostegal membranes not united to isthmus (Fig. 35)
Membranas branquiales libres del istmo (Fig. 35)
29

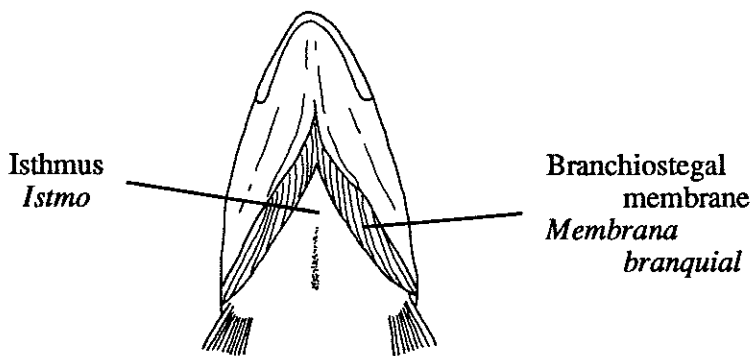


Figure 35

29A Nasal barbels well developed; snout never flattened and elongate
Barbillas nasales bien desarrolladas; hocico nunca deprimido y alargado
Ictaluridae
 Fig 36
 Dist I

60 cm

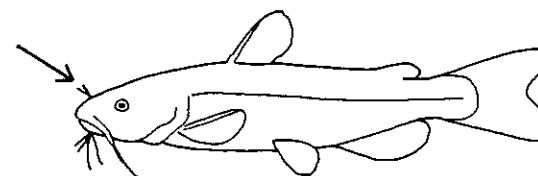


Figure 36

29B Nasal barbels absent; snout variable
Barbillas nasales ausentes; hocico variable
30

30A Anterior and posterior nostrils separated by a thin membrane
Narinas anteriores y posteriores separadas solamente por una membrana
Ariidae
 Fig 37
 Dist 1M,2M,3M,4M,5M,9M
 Ref 30

60 cm

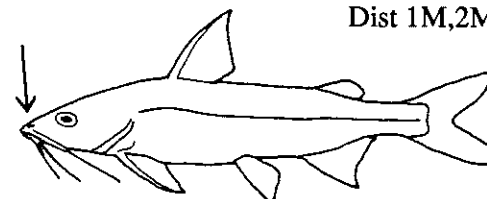


Figure 37

30B Anterior and posterior nostrils well separated
Narinas anteriores y posteriores bien separadas
Pimelodidae
 Fig 38,39
 Dist 1,2,3,4,5,6,9
 Ref 6,17,45,68,104,
 105,136,139,140

10-130 cm

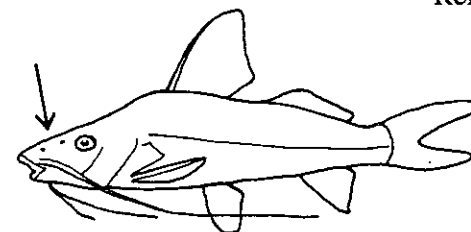


Figure 38

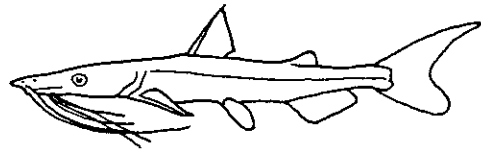


Figure 39

31A Body armored with bony plates or rings
Cuerpo con placas o anillos oseos
.....32

31B Body naked or scaled but not armored
Cuerpo desnudo o escamado pero sin armadura
.....33

32A Mouth small at end of tubular snout
Boca pequeña; hocico con forma de tubo
.....**Syngnathidae**
Fig 40
Dist 1M,2M,3M,4,4M,5M,6M,9M
Ref 31



Figure 40

32B Mouth ventral and disk-like (Fig. 41)
Boca ventral y con forma de disco (Fig. 41)
.....**Loricariidae**
Fig 42
Dist 1,2,3,4,5,6,9
Ref 12,45,61,68,69,72,
78,79,80,86,117,136

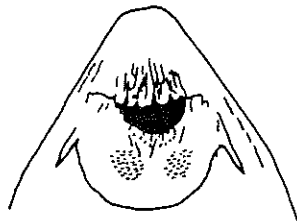


Figure 41

5-110 cm

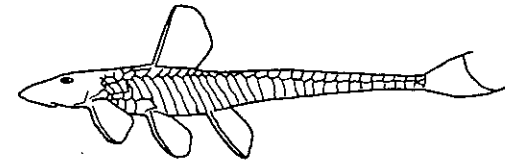


Figure 42

33A Teeth fused with only median sutures present;
pelvic fins absent
*Dientes fundidos solo con suturas medianas;
sin aletas pélvicas*
.....**Tetraodontidae**
Fig 43
Dist 1,1M,2,2M,3,3M,4,4M,5,5M,9M
Ref 149

5-60 cm

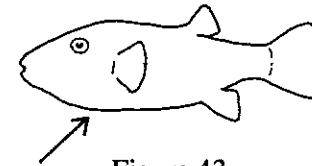


Figure 43

33B Teeth absent or present with different arrangement;
pelvic fins generally present
*Dientes ausentes o presentes con otro arreglo;
aletas pélvicas generalmente presentes*
.....34

34A Sucker present on venter (Fig. 44, 45)
Un disco chupante ventral presente (Fig. 44, 45)
.....35

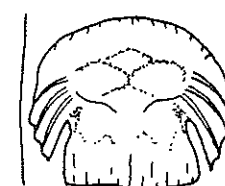


Figure 44

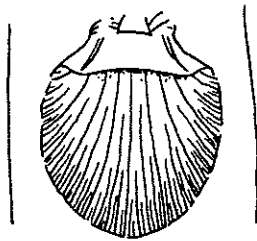


Figure 45

34B No sucker on venter
Sin un disco chupante ventral36

35A Body unscaled; dorsal fin continuous; ventral sucker composed of pectoral fins, pelvic fins, and part of the chest (Fig. 44)
Cuerpo desnudo; aleta dorsal continua; disco chupante ventral incluye aletas pectorales, pélvicas, y parte del pecho (Fig. 44)**Gobiesocidae**

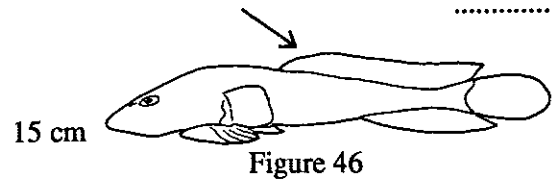


Fig 46
 Dist 1M,2M,3M,4M,5M,9M
 Ref 14

35B Body usually scaled, dorsal fin usually discontinuous; ventral sucker composed of only pelvic fins (Fig. 45)
Cuerpo con escamas, por lo común; aleta dorsal generalmente no continua; disco chupante ventral incluye solamente las aletas pélvicas (Fig. 45)**Gobiidae**

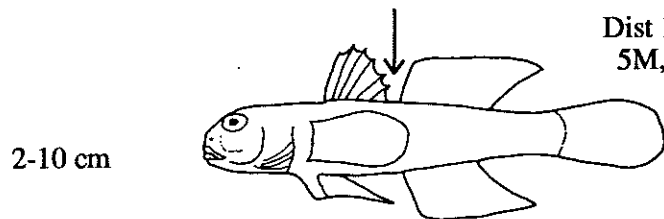


Fig 47
 Dist 1M,2M,3M,4M,5M,6M,7M,8M,9M
 Ref 30

Figure 47

36A Modified spine forming illicium (Fig. 48), positioned under snout; body depressed dorso-ventrally
Una espina modificada abajo del hocico (Fig. 48); cuerpo deprimido

.....**Ogcocephalidae**

Fig 49

Dist 1M,2M,3M,4M,5M,9M

Ref 30

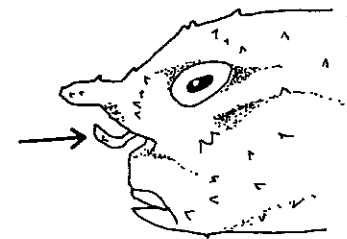


Figure 48

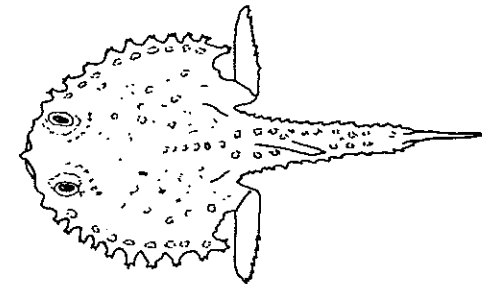


Figure 49

36B No modified spine present under snout; body form variable
Falta una espina abajo del hocico; forma del cuerpo variable37

37A Pectoral fin consisting of upper and lower parts, the lower part with free rays
Aleta pectoral con partes superiores e inferiores, la parte inferior con radios libres y separados

.....**Polynemidae**

Fig 50

Dist 1M,2M,3M,4M,9M

Ref 30

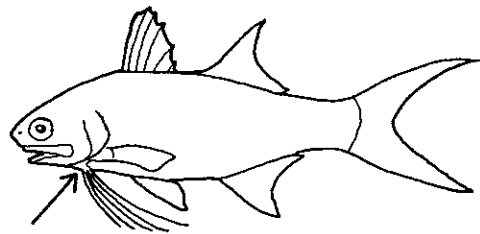


Figure 50

37B Pectoral fin not consisting of separate upper and lower parts
Aleta pectoral no se separa de esta forma38

38A Unequal caniniform teeth, length of some anterior mandibular teeth greater than diameter of pupil (Fig. 51)
Dientes caniniformes y desiguales, longitud de unos dientes mandibulares anteriores mayor que diámetro de la pupila (Fig. 51)
Cynodontidae

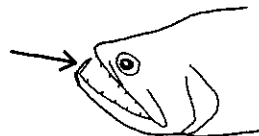


Figure 51

Fig 52
 Dist 2,3,4,5,6
 Ref 62,63

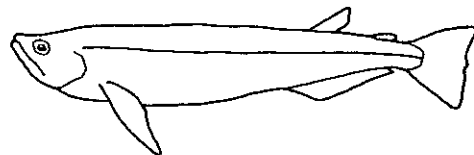


Figure 52

38B Teeth arrangement otherwise
Dientes con otro arreglo39

39A Pelvic fins absent
Aletas pélvicas ausentes40

39B Pelvic fins present (may be highly reduced as in Gasteropelecidae)
Aletas pélvicas presentes (posiblemente vestigiales como en Gasteropelecidae)51

40A Eel-like forms (body may be compressed)
Cuerpo con forma de anguila (posiblemente comprimido)41

40B Other forms
Otras formas50

41A Dorsal fin present with elongate base
Aleta dorsal presente con base alargada42

41B Dorsal fin absent or present with short base
Aleta dorsal ausente o presente con base corta45

42A Posterior nostril within or piercing upper lip (Fig. 53)
Narina posterior dentro de o atravesando el labio superior (Fig. 53)
Ophichthidae

Fig 54
 Dist 1M,2M,3M,4,4M,5M,6M,9M
 Ref 13

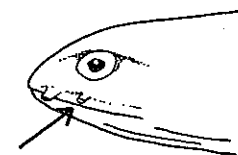
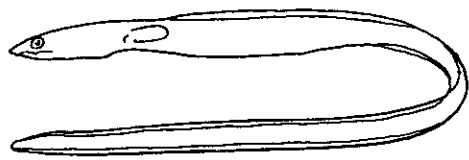


Figure 53



36 cm

Figure 54

42B Posterior nostril higher on head (Fig. 55)
Narina posterior más arriba (Fig. 55)

.....43

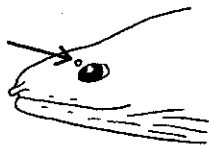


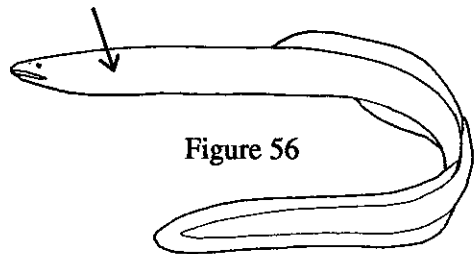
Figure 55

43A Pectoral fins absent
Aletas pectorales ausentes

.....Muraenidae

Fig 56

Dist 1M,2M,3M,4M,5M,6,6M,9M



60 cm

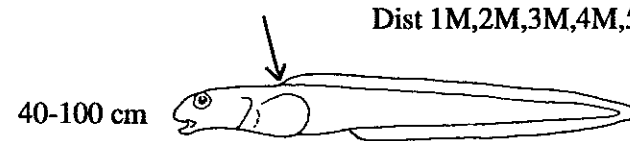
Figure 56

43B Pectoral fins present
Aletas pectorales presentes

.....44

44A Dorsal fin extends far forward, at least to the end of the pectoral fins
Aleta dorsal se extiende anteriormente, por lo menos al extremo de las aletas pectorales

.....Zoarcidae



40-100 cm

Figure 57

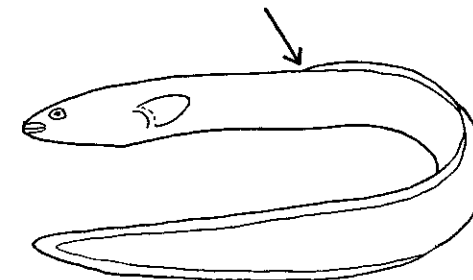
Fig 57
Dist 1M,2M,3M,4M,5M,6M,7M,8M,9M
Ref 127

44B Dorsal fin not extending forward to the end of the pectoral fins
Aleta dorsal no se extiende anteriormente al extremo de las aletas pectorales

.....Anguillidae

Fig 58

Dist 1,2,3,4
Ref 30,97



150 cm

Figure 58

45A Body round in cross section; unscaled
Cuerpo redondeado en sección transversal; escamas ausentes

.....Electrophoridae

Fig 59

Dist 2,3,4,5,6
Ref 46,76,146

270 cm

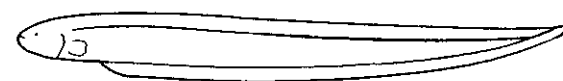


Figure 59

45B Body more compressed; usually scaled
Cuerpo más comprimido; escamas generalmente presentes

.....46

46A Caudal fin present
Aleta caudal presente

.....Apteronotidae

Fig 60
Dist 1,2,3,4,5,6,9
Ref 46,76,99,146

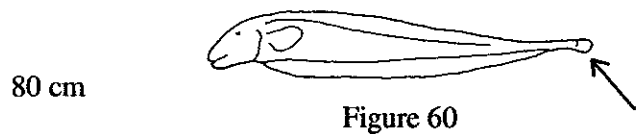


Figure 60

46B Caudal fin absent
Aleta caudal ausente
.....47

47A Mandible prominent; snout not produced; head somewhat depressed
Mandíbula prominente; hocico no producido; cabeza más o menos deprimida
.....Gymnotidae

Fig 61
Dist 1,2,3,4,5,6
Ref 44,46,76,100, 113,146

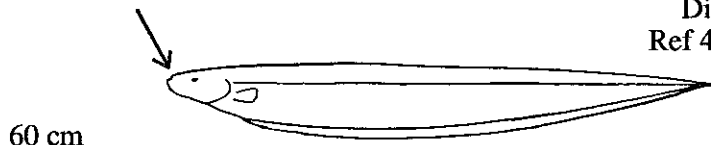


Figure 61

47B Mandible usually not prominent; snout variable; head not depressed
Mandíbula generalmente no prominente; hocico variable; cabeza no deprimida
.....48

48A Teeth present on both jaws
Dientes presentes en ambas quijadas
.....Sternopygidae

Fig 62
Dist 1,2,3,4,5,6
Ref 46,76,98,100,146

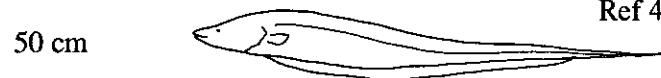


Figure 62

48B Teeth present only on upper jaw
Dientes solamente en la quijada superior
.....49

49A Nostrils relatively close together; snout produced
Narinas anteriores y posteriores cercanas; hocico alargado
.....Rhamphichthyidae

Fig 63
Dist 1,2,3,4,5,6
Ref 46,76,146



Figure 63

49B Nostrils well separated; snout usually short
Narinas anteriores y posteriores bien separadas; hocico generalmente corto
.....Hypopomidae

Fig 64
Dist 1,2,3,4,5,6
Ref 46,76,146



Figure 64

50A Dorsal and anal fin bases elongate; caudal deeply forked
Bases de aletas dorsal y anal alargadas; aleta caudal bien bifurcada
.....Stromateidae

Fig 65
Dist 1M,2M,3M,4M,5M,6M,7M,9M
Ref 30

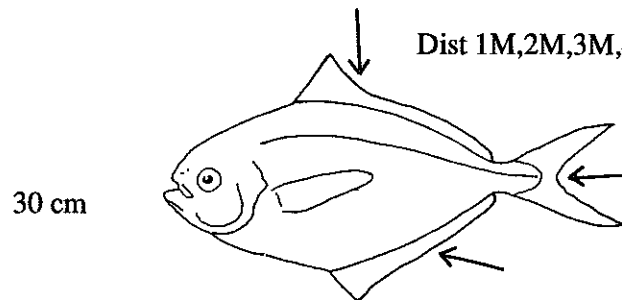


Figure 65

50B Dorsal and anal fin bases not so elongate; caudal fin variable
Bases de ambas aletas, dorsal y anal, no alargadas; aleta caudal variable
.....Galaxiidae

Fig 66
Dist 7,8
Ref 102

4-58 cm

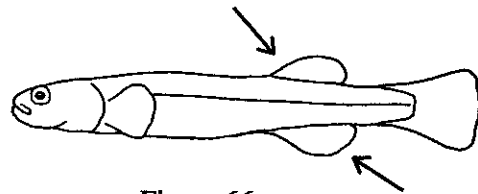


Figure 66

- 51A Pelvic insertion about even with or posterior to pectoral fin base; body usually scaled
Base de la aleta pélvica al mismo nivel, o posterior a la aleta pectoral; cuerpo generalmente con escamas
.....52
- 51B Pelvic insertion clearly anterior to pectoral fin base; body usually naked
Base de la aleta pélvica claramente anterior a la aleta pectoral; cuerpo generalmente desnudo
.....86
- 52A Pelvic fins with a spine
Aleta pélvica con espina
.....90
- 52B Pelvic fins without a spine
Aleta pélvica sin espina
.....53
- 53A Two dorsal fins present; adipose fin absent
Dos aletas dorsales presentes; aleta adiposa ausente
.....54
- 53B One dorsal fin present; adipose fin present or absent
Una aleta dorsal presente; aleta adiposa presente o ausente
.....56
- 54A Pelvic fin origin posterior to pectoral fin origin
Origen de la aleta pélvica posterior al origen de la aleta pectoral
.....55

- 54B Pelvic fin origin about even with pectoral fin origin
Origen de aleta pélvica y pectoral casi al mismo nivel

.....**Eleotrididae**
Fig 67
Dist 1,2,3,4,5,6,7,9
Ref 30

3-45 cm

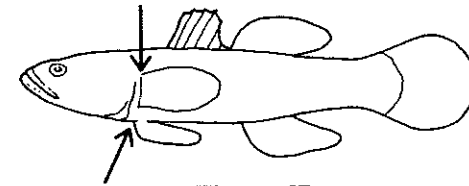


Figure 67

- 55A Anal fin base short; adipose eyelid usually present
Base de la aleta anal corta; párpado adiposo generalmente presente

.....**Mugilidae**
Fig 68
Dist 1M,2M,3M,4M,5M,6M,9M
Ref 30

75 cm

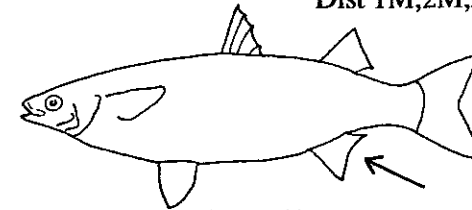


Figure 68

- 55B Anal fin base usually longer than soft dorsal fin base; adipose eyelid absent
Base de la aleta anal más larga que la base de la aleta dorsal blanda; párpado adiposo ausente

.....**Atherinidae**
Fig 69
Dist 1M,2M,3M,4,4M,5,5M,6M,7M,8,8M,9I,9M
Ref 21

5-70 cm



Figure 69

- 56A Well-developed median gular plate (Fig. 70)
Una placa gular bien desarrollada (Fig. 70)

.....57

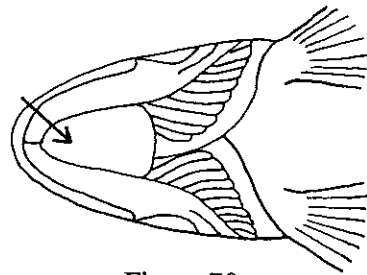


Figure 70

56B Gular plate absent
Placa gular ausente58

57A Last dorsal ray elongate; scales large
Último radio de la aleta dorsal alargado; escamas grandes
.....Megalopidae
Fig 71
Dist 1M,2M,3M,4M,5M
Ref 30

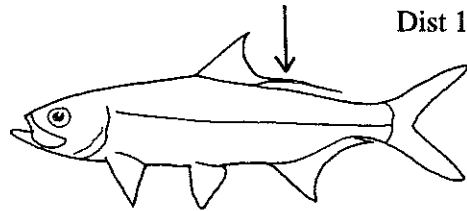


Figure 71

250 cm

57B Last dorsal ray not elongate; scales small
Último radio de la aleta dorsal no alargado; escamas pequeñas
.....Elopidae
Fig 72
Dist 1M,2M,3M,4M,5M,9M
Ref 30

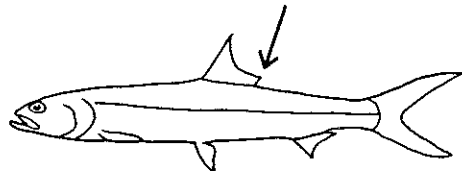


Figure 72

90 cm

58A One pair of nostril openings
Un par de narinas59

58B Two pairs of nostril openings
Dos pares de narinas60

59A Scales large, not more than 60 in lateral line; teeth small; mandible often prominent
Escamas grandes, no más de 60 en la línea lateral; dientes pequeños; mandíbula frecuentemente prominente
.....Exocoetidae
Fig 73
Dist 1M,2,2M,3,3M,4,4M,5M,6M,7M,9M
Ref 120

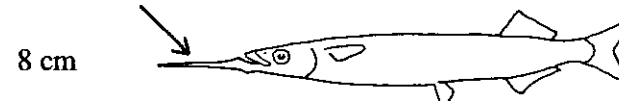


Figure 73

8 cm

59B Scales small, at least 130 in lateral line; numerous needle-like teeth; both jaws produced
Escamas pequeñas, por lo menos 130 en línea lateral; dientes numerosos y como agujas; ambas quijadas alargadas
.....Belonidae
Fig 74
Dist 1,1M,2,2M,3,3M,4,4M,5,5M,6,9M
Ref 27,28,29,120

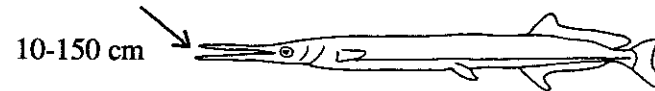


Figure 74

10-150 cm

60A Dorsal and anal fins posterior in position, both with elongate bases
Aletas dorsal y anal posteriores en posición, ambas con bases alargadas
.....Osteoglossidae
Fig 75,76
Dist 2,3,4,5
Ref 82

50-450 cm



Figure 75



Figure 76

60B Dorsal and anal fins with different arrangement, never both with elongate bases
Aletas dorsal y anal con otro arreglo; nunca con ambas bases alargadas
.....61

61A Scales extending onto dorsal aspect of head (Fig. 77)
Escamas presentes por encima de la cabeza (Fig. 77)
.....62

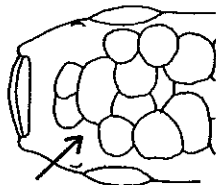


Figure 77

61B Scales absent on head, not extending forward beyond occiput (Fig. 78)
Escamas ausentes por encima de la cabeza (Fig. 78)
.....65

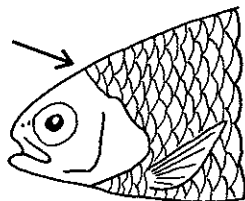


Figure 78

62A Eye divided horizontally into upper and lower parts
Ojo dividido horizontalmente formando secciones superiores e inferiores
.....Anablepidae

12 cm

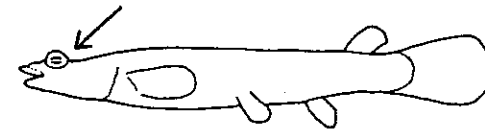


Figure 79

Fig 79
Dist 3
Ref 120

62B Eye not divided in such a manner
Ojo no dividido así
.....63

63A Adult males with anal fin modified to form a gonopodium (Fig. 83, 84); third anal fin ray in females usually not branched (Fig. 80)
Adultos machos con la aleta anal modificada para formar un órgano copulador (Fig. 83, 84); tercer radio anal generalmente sin ramas en hembras (Fig. 80)
.....64

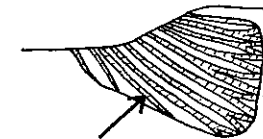


Figure 80

63B Anal fin not modified; third anal fin ray usually branched (Fig. 81)
Aleta anal no modificada; tercer radio de la aleta anal generalmente con ramas (Fig. 81)
.....Cyprinodontidae

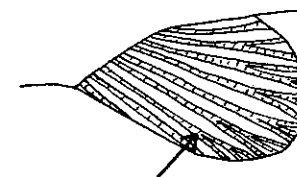
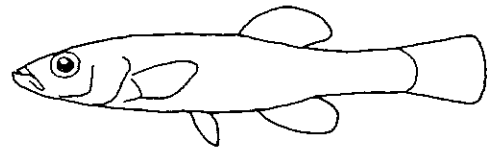


Figure 81

Fig 82
Dist 1,2,3,4,5,6,8,9
Ref 44,48,75,120,
121,138,142,
143,159,160



10 cm

Figure 82

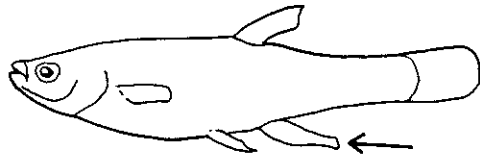
- 64A Gonopodium tubular and fleshy
Órgano copulador carnoso y con forma de tubo

.....Jenynsiidae

Fig 83

Dist 6

Ref 120



6 cm

Figure 83

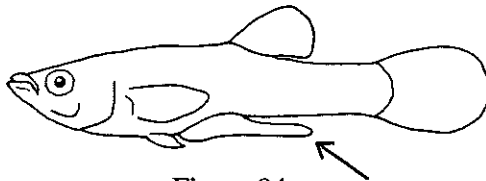
- 64B Gonopodium not tubular and fleshy but more closely resembles other fin rays except in length
Órgano copulador sin forma de tubo y no carnoso, se parece a los otros radios sino en longitud

.....Poeciliidae

Fig 84

Dist 1,2,3,4,5,6,7I,8I,9

Ref 120,132



8 cm

Figure 84

- 65A Gill rakers long and numerous; teeth small or absent; upper jaw not protrusible; adipose fin always absent; lateral line pores usually not present on trunk
Branquiespinas largas y numerosas; dientes pequeños o ausentes; boca no protráctil; aleta adiposa ausente y sin línea lateral en cuerpo

.....66

- 65B Gill rakers not so well developed; teeth variable; upper jaw protrusible or not; adipose fin present or absent; lateral line pores present on trunk or not
Branquiespinas no tan desarrolladas; dientes variables; quijada superior protráctil o no; aleta adiposa presente o ausente; línea lateral presente en cuerpo o no

.....67

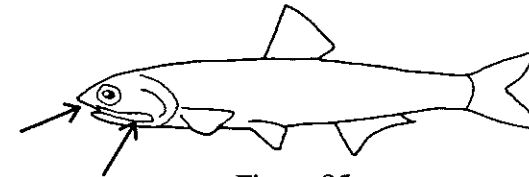
- 66A Tip of snout overhanging inferior mouth; maxillary process extending well beyond eye; abdominal scutes usually absent
Boca inferior; hocico cuelga por encima de la boca; maxila se extiende detrás del ojo; generalmente sin quilla ventral

.....Engraulidae

Fig 85

Dist 1M,2,2M,3,3M,4,4M,5,5M,6,6M,8M,9M

Ref 73,74



20 cm

Figure 85

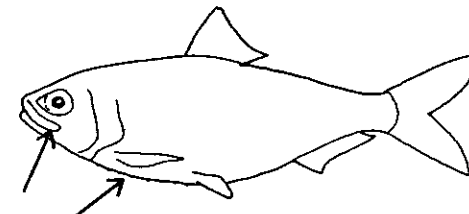
- 66B Tip of snout not overhanging mouth even when subterminal; maxillary process not extending well beyond eye; abdominal scutes usually present
Hocico nunca cuelga por encima de la boca aun cuando subterminal; maxila no se extiende detrás del ojo; generalmente con quilla ventral

.....Clupeidae

Fig 86

Dist 1M,2M,3,3M,4,4M,5M,6M,7M,8M,9M

Ref 164



30 cm

Figure 86

67A Teeth vestigial to absent from jaws and lips
Dientes vestigiales o ausentes en quijadas y labios
68

67B Teeth with better development present on jaws or lips
Dientes con mejor desarrollo presentes en quijadas o labios
70

68A Adipose fin absent
Aleta adiposa ausente

.....Cyprinidae
 Fig 87
 Dist I

4-60 cm

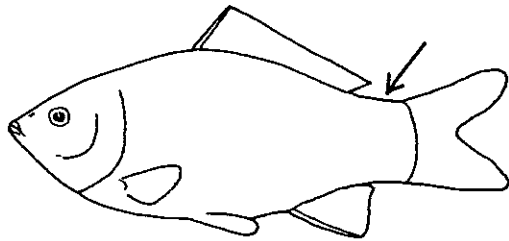


Figure 87

68B Adipose fin present
Aleta adiposa presente
69

69A Two flaps between anterior and posterior nostrils
 (Fig. 88)
*Dos membranas libres entre las narinas anteriores y
 posteriores (Fig. 88)*

.....Salmonidae
 Fig 89
 Dist 8I,9I



Figure 88

65 cm

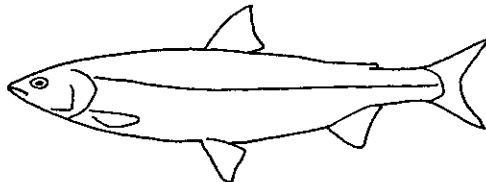


Figure 89

69B One flap between anterior and posterior nostrils (Fig. 90)
*Una membrana libre entre las narinas anteriores y
 posteriores (Fig. 90)*

.....Curimatidae
 Fig 91
 Dist 1,2,3,4,5,6,7
 Ref 49,62,63,151,
 152,153,155



Figure 90

3-27 cm

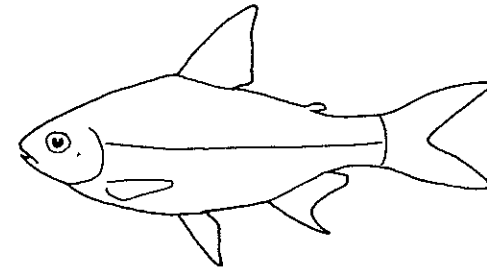


Figure 91

70A Scales absent
Escamas ausentes
71

70B Scales present
Escamas presentes
73

71A Adipose fin present
Aleta adiposa presente

.....Aplochitonidae
 Fig 92
 Dist 7,8
 Ref 103

7.7 cm



Figure 92

71B Adipose fin absent
Aleta adiposa ausente
72

72A Dorsal fin position at about same level as pelvic fins
Aleta dorsal y aletas pélvicas al mismo nivel

.....Characidae
Fig 93
Dist 1,2,3,4,5,6,7,9
Ref 39,62,77,94,
96,106,107,150,
154,161,162

2-120 cm

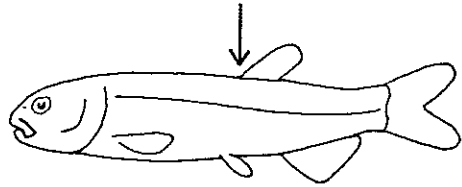


Figure 93

72B Dorsal fin more posterior in position, at about same level as anal fin
Aleta dorsal y aleta anal al mismo nivel

.....Galaxiidae
Fig 94
Dist 7,8
Ref 102

4-58 cm

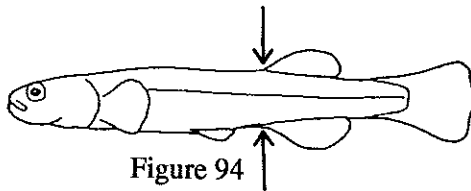


Figure 94

73A Teeth set into lips
Dientes presentes en labios

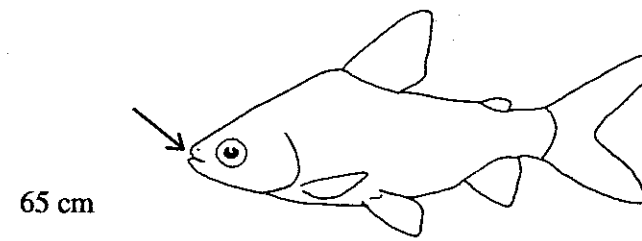
.....74

73B Teeth present on jaws (Lips may be absent as in Parodontidae)
Dientes presentes en quijadas (Labios posiblemente ausentes como en Parodontidae)

.....75

74A Lips thick and highly protrusible; mouth usually terminal or subterminal and sucker-like
Labios gruesos y protráctiles; boca generalmente chupante y terminal o subterminal

.....Prochilodidae
Fig 95
Dist 1,2,3,4,5,6,9
Ref 62,63,152



65 cm

Figure 95

74B Lips thinner; mouth usually superior, never sucker-like
Labios no tan gruesos; boca generalmente superior, nunca chupante

.....Chilodontidae
Fig 96
Dist 2,3,4
Ref 62,63,152

15 cm

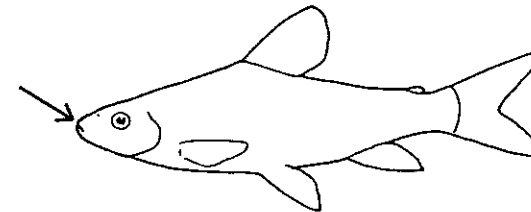


Figure 96

75A Pectoral fins elongate, extending beyond origin of anal fin; body deep and highly compressed
Aletas pectorales alargadas, se extienden detrás del origen de la aleta anal; cuerpo profundo y bien comprimido

.....Gasteropelecidae
Fig 97
Dist 1,2,3,4,5,6
Ref 62,63

8 cm

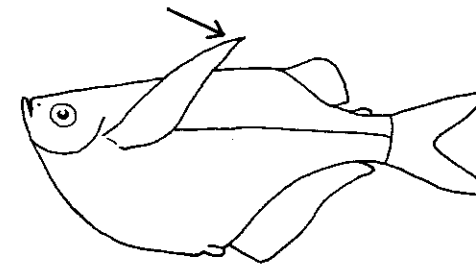


Figure 97

75B Pectoral fins not so elongate; body form variable
Aletas pectorales no tan alargadas; cuerpo variable

.....76

76A Both jaws elongate; fleshy lobe on snout or chin
Ambas quijadas alargadas; lóbulo carnoso en hocico o mandíbula

.....Ctenoluciidae
 Fig 98
 Dist 1,2,3,4
 Ref 62,63

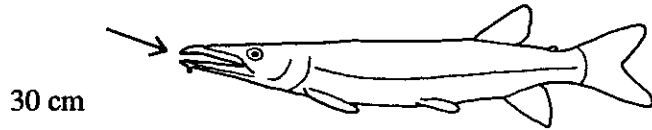


Figure 98

76B Jaw development otherwise, no fleshy lobe on snout or chin
Quijadas con otro desarrollo, ninguna con lóbulo carnoso

.....77

77A Caudal fin rounded; adipose fin absent
Aleta caudal redondeada; aleta adiposa ausente

.....Erythrinidae
 Fig 99
 Dist 1,2,3,4,5,6,9
 Ref 62,63

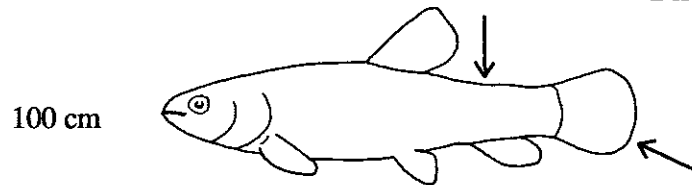


Figure 99

77B Caudal fin forked, emarginate or with a median lobe; adipose fin usually present
Aleta caudal diferente; aleta adiposa generalmente presente

.....78

78A Teeth incisiform, multicuspid or not, uniserial; six or eight teeth on each jaw (Fig. 100)
Dientes incisiformes, multi- o uni- cuspidos, en una serie; seis u ocho dientes por quijada (Fig. 100)

.....79



Figure 100

78B Teeth development and arrangement otherwise
Desarrollo y arreglo de dientes diferentes

.....80

79A Branchiostegal membranes at least narrowly united with isthmus (Fig. 101)
Membranas branquiales unidas al istmo, por lo menos estrechamente (Fig. 101)

.....Anostomidae
 Fig 102
 Dist 1,2,3,4,5,6,9
 Ref 62,63,152,163,165

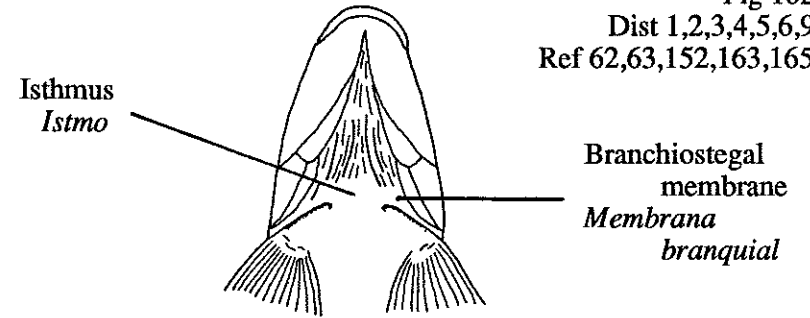


Figure 101

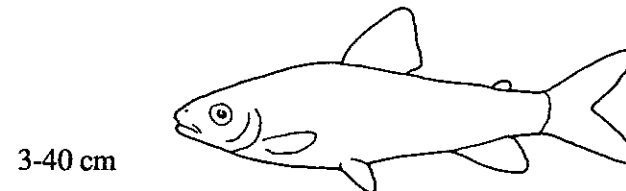


Figure 102

79B Branchiostegal membranes not united to isthmus (Fig. 103)
Membranas branquiales libres del istmo (Fig. 103)

.....Parodontidae
 Fig 104
 Dist 1,2,3,4,5,6,9
 Ref 62,63,129

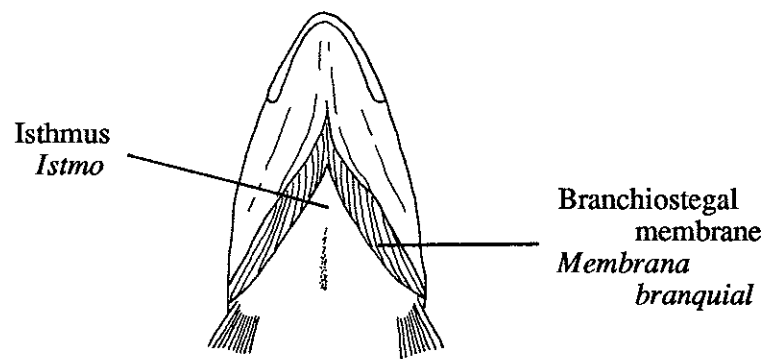
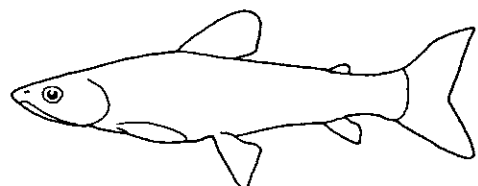


Figure 103



15 cm

Figure 104

80A Adipose eyelid present, complete or incomplete (Fig. 105)
Párpado adiposo presente, completo o no (Fig. 105)

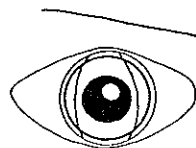
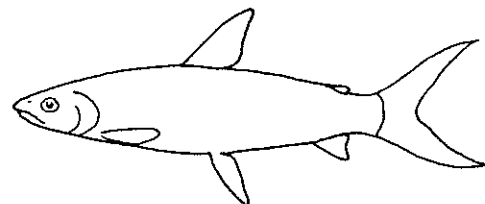


Figure 105

.....**Hemiodidae**
 Fig 106
 Dist 1,2,3,4,5,6
 Ref 62,63,129



20 cm

Figure 106

80B Adipose eyelid absent
Párpado adiposo ausente

.....**.81**

81A Maxilla extending beyond eye (Fig. 107)
Maxila se extiende detrás del ojo (Fig. 107)

.....**.82**

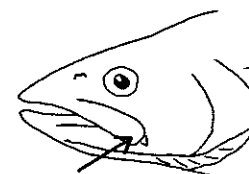


Figure 107

81B Maxilla not extending beyond eye (Fig. 108)
Maxila no se extiende detrás del ojo (Fig. 108)

.....**.83**



Figure 108

82A Anal fin base longer than dorsal fin base
Base de la aleta anal más larga que la base de la aleta dorsal

.....**Characidae**
 Fig 109
 Dist 1,2,3,4,5,6,7,9
 Ref 39,62,77,94,
 96,106,107,150,
 154,161,162

2-120 cm

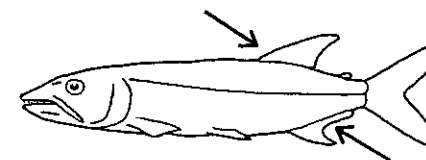
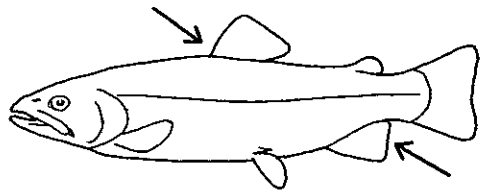


Figure 109

82B Anal fin base not longer than dorsal fin base, usually bases are about equal
Bases de aletas anal y dorsal casi iguales

.....**Salmonidae**
 Fig 110
 Dist 8I,9I



65 cm

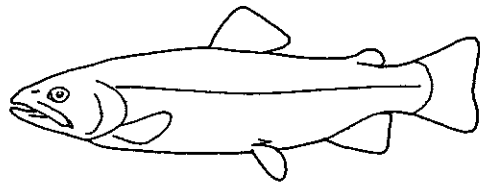
Figure 110

83A Two flaps between anterior and posterior nostrils (Fig. 111)
Dos membranas libres entre las narinas anteriores y posteriores (Fig. 111)

.....**Salmonidae**
 Fig 112
 Dist 8I,9I



Figure 111



50 cm

Figure 112

83B Less than two flaps between anterior and posterior nostrils (Fig. 113)
Menos de dos membranas libres entre las narinas anteriores y posteriores (Fig. 113)

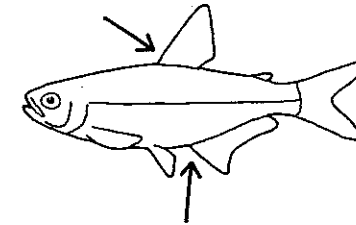
.....**.84**



Figure 113

84A Anal fin base distinctly longer than dorsal fin base
Base de la aleta anal claramente más larga que la base de la aleta dorsal

.....**Characidae**
 Fig 114
 Dist 1,2,3,4,5,6,7,9
 Ref 39,62,77,94,
 96,106,107,150,
 154,161,162



2-120 cm

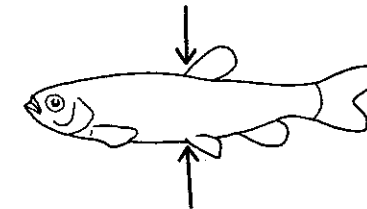
Figure 114

84B Length of dorsal fin base greater than or about equal to length of anal fin base
Base de la aleta dorsal igual a, o más larga que, la base de la aleta anal

.....**.85**

85A Pelvic fin base usually anterior to or at about same level as dorsal fin base; lateral line, when present, lateral in position; dorsal and anal fin bases about equal
Aletas pélvicas generalmente anteriores a la aleta dorsal o casi al mismo nivel; línea lateral, cuando presente, en posición lateral; base de la aleta anal casi igual a la base de la aleta dorsal

.....**Lebiasinidae**
 Fig 115
 Dist 1,2,3,4,5,9
 Ref 62,63



6.5 cm

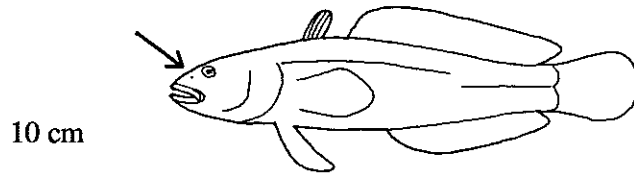
Figure 115

85B Origin of dorsal fin base usually anterior to origin of pelvic fin base; lateral line possibly low on body; dorsal fin base possibly more elongate than anal fin base
Origen de la aleta dorsal generalmente anterior al origen de las aletas pélvicas; línea lateral posiblemente en posición baja; base de la aleta dorsal posiblemente más larga que la base de la aleta anal

.....**Characidae**
 Fig 109,114

86A One pair of nostrils
Un par de narinas

.....**Nototheniidae**
Fig 116
Dist 7M,8M



10 cm

Figure 116

86B Two pairs of nostrils
Dos pares de narinas

.....87

87A Dorsal fin base short
Base de la aleta dorsal corta

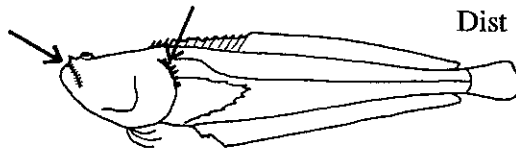
.....66

87B Dorsal fin base elongate
Base de la aleta dorsal alargada

.....88

88A Lips and opercle with a series of finger-like projections
Labios y opérculo con una serie de proyecciones

.....**Dactyloscopidae**
Fig 117
Dist 1M,2M,3M,4M,
5M,8M,9M



6 cm

Figure 117

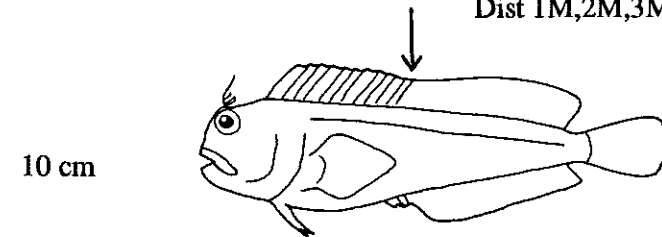
88B Lips and opercle lacking a series of such projections
Labios y opérculo sin una serie de proyecciones

.....89

89A Dorsal fin continuous, spinous and soft portions broadly connected
Aleta dorsal continua, partes espinosa y blanda ampliamente conectadas

.....**Blenniidae**

.....**Fig 118**
Dist 1M,2M,3M,4M,5M,6M,9M

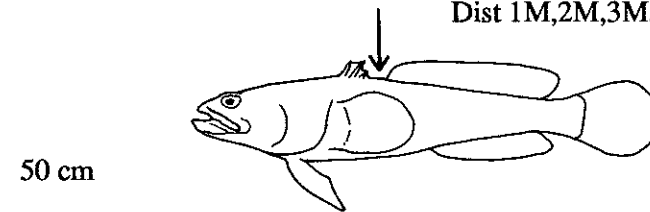


10 cm

Figure 118

89B Dorsal fin usually not continuous, but spinous and soft portions may be narrowly connected
Aleta dorsal generalmente discontinua, pero partes espinosa y blanda pueden ser estrechamente conectadas

.....**Batrachoididae**
Fig 119
Dist 1M,2M,3M,4,4M,5M,6M,9M
Ref 26

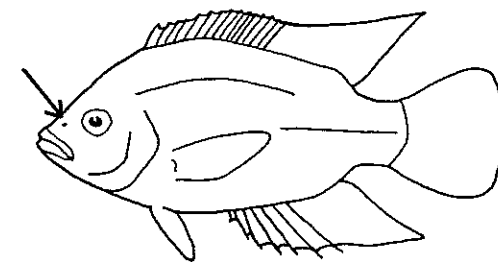


50 cm

Figure 119

90A One pair of nostrils
Un par de narinas

.....**Cichlidae**
Fig 120,121
Dist 1,2,3,4,5,6,8I,9
Ref 22,70,71,83,
84,85,88,92,
95,124,148



3.5-36 cm

Figure 120

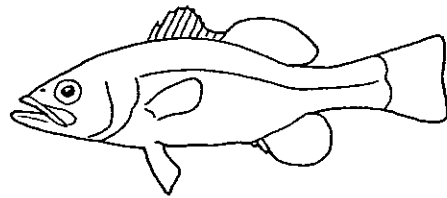


Figure 121

- 90B Two pairs of nostrils
Dos pares de narinas91
- 91A Lateral line extending well onto caudal fin rays
Línea lateral se extiende sobre los radios de la aleta caudal92
- 91B Lateral line not extending onto caudal fin rays
Línea lateral no se encuentra en los radios de la aleta caudal95
- 92A Anal fin with three spines
Aleta anal con tres espinas93
- 92B Anal fin with one or two spines
Aleta anal con una o dos espinas94
- 93A Pelvic axillary process present (Fig. 122)
Escama axilar pélvica presente (Fig. 122)

.....**Centropomidae**
 Fig 123
 Dist 1M,2M,3M,4M,5M,9M
 Ref 128

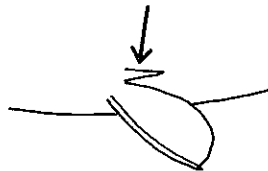


Figure 122

120 cm

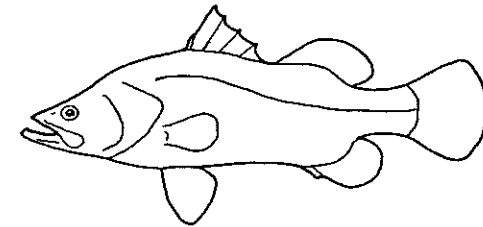


Figure 123

- 93B Pelvic axillary process absent (Fig. 124)
Escama axilar pélvica ausente (Fig. 124)**Serranidae**
 Fig 125
 Dist 1M,2M,3M,4M,5M,9M



Figure 124

200 cm

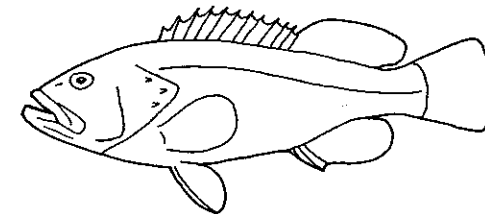


Figure 125

- 94A Caudal fin forked or emarginate; mouth terminal
Aleta caudal bifurcada, por lo menos un poco; boca terminal**Percidae**
 Fig 126
 Dist I

70 cm

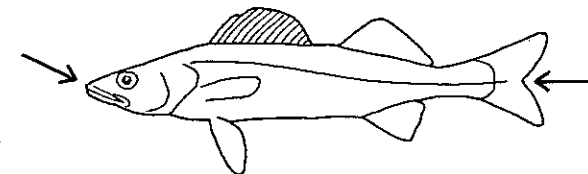


Figure 126

- 94B Caudal fin rounded or truncate; mouth subterminal or inferior
Aleta caudal redondeada o cuadrada; boca subterminal o inferior

.....Sciaenidae
 Fig 127
 Dist 1,1M,2,2M,3,3M,4,4M,
 5,5M,6,6M,7M,8M,9M
 Ref 91

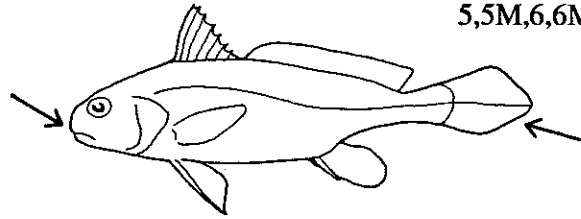


Figure 127

- 95A Lateral line complete and continuous (may be included in bony scutes as in Carangidae)
Línea lateral completa y continua (posiblemente cubierta por una hilera de escamas quilladas como en Carangidae)
96

- 95B Lateral line absent, incomplete, or discontinuous
Línea lateral ausente, incompleta, o discontinua
106

- 96A Dorsal fin continuous (spinous and soft portions may be only narrowly connected)
Aleta dorsal continua (partes espinosas y blandas posiblemente con conexiones estrechas)
97

- 96B Dorsal fin not continuous
Aleta dorsal discontinua
104

- 97A One or two anal fin spines
Una o dos espinas en la aleta anal
Percidae
 Fig 128
 Dist I

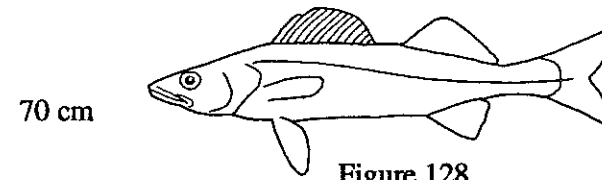


Figure 128

- 97B Three or more anal fin spines
Tres o más espinas en la aleta anal
98

- 98A Caudal fin deeply forked
Aleta caudal bien bifurcada
99

- 98B Caudal fin not deeply forked
Aleta caudal no bien bifurcada
100

- 99A Anal fin continuous in adults
Aleta anal continua en adultos
Gerreidae
 Fig 129
 Dist 1M,2M,3M,4M,5M,9M
 Ref 32

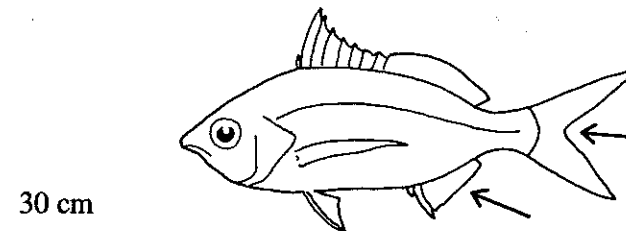


Figure 129

- 99B Anal fin not continuous in adults, the anterior portion consisting of two spines with membranes
Aleta anal discontinua en adultos, la parte anterior consiste en dos espinas con membranas
Carangidae
 Fig 130
 Dist 1M,2M,3M,4M,5M,6M,9M

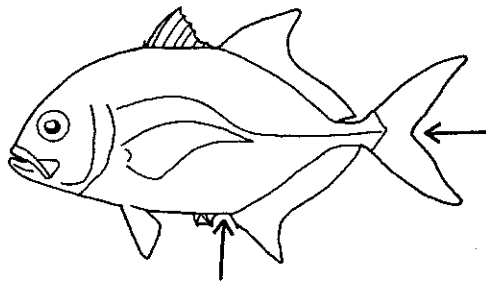


Figure 130

100A Pelvic axillary process absent (Fig. 131)
Escama axilar pélvica ausente (Fig. 131)

.....101



Figure 131

100B Pelvic axillary process present (Fig. 132)
Escama axilar pélvica presente (Fig. 132)

.....103



Figure 132

101A Dorsal fin with a deep notch, spinous and soft portions narrowly connected; longest soft dorsal rays compose the anterior portion of the soft dorsal fin
Aleta dorsal con una muesca profunda, partes espinosa y blanda conectadas estrechamente; radios más largos en la parte anterior de la aleta dorsal blanda

.....Percichthyidae
 Fig 133
 Dist 7,8
 Ref 1

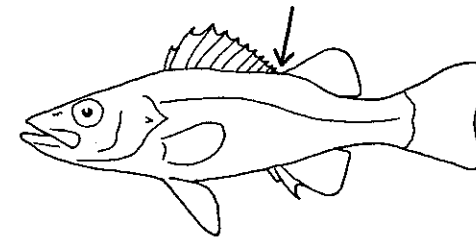


Figure 133

101B Dorsal fin lacking a notch or only with a shallow notch, spinous and soft portions broadly connected; longest soft dorsal rays compose the middle or posterior portion of the soft dorsal fin

Aleta dorsal sin una muesca o solamente con una muesca superficial; radios más largos en la parte mediana o posterior de la aleta dorsal blanda

.....102

102A Spines present on opercle
Espinas operculares presentes

.....Serranidae
 Fig 134
 Dist 1M,2M,3M,4M,5M,9M

200 cm

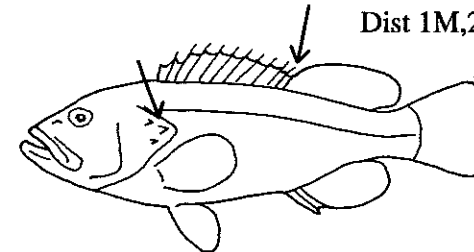


Figure 134

102B Spines absent from opercle
Espinas operculares ausentes

.....Centrarchidae
 Fig 135,136
 Dist I

60 cm

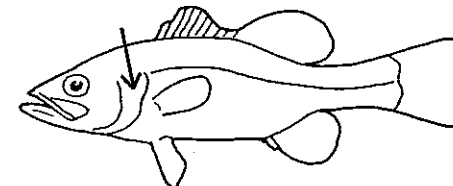


Figure 135

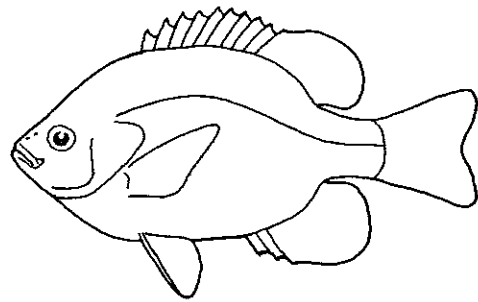


Figure 136

103A Some enlarged canines present
Algunos caninos bien desarrollados

.....Lutjanidae
 Fig 137
 Dist 1M,2M,3M,4M,5M,9M

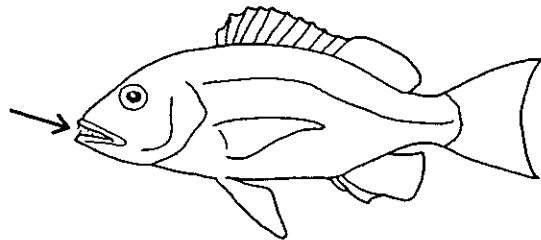


Figure 137

80 cm

103B No well-expressed canines present
Sin caninos bien desarrollados

.....Haemulidae
 Fig 138
 Dist 1M,2M,3M,4M,5M,9M

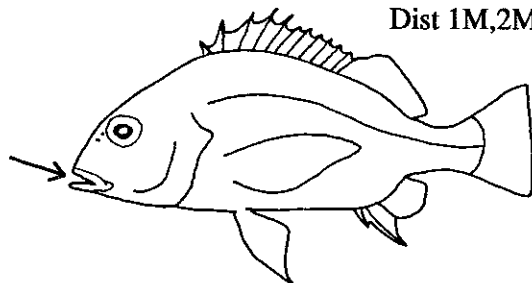


Figure 138

60 cm

104A Caudal fin widely forked; anal fin discontinuous
 in adults, the anterior portion consisting of two
 spines with membranes
*Aleta caudal bien bifurcada; aleta anal discontinua,
 la parte anterior consiste en dos espinas con
 membranas*

.....Carangidae
 Fig 139
 Dist 1M,2M,3M,4M,
 5M,6M,9M

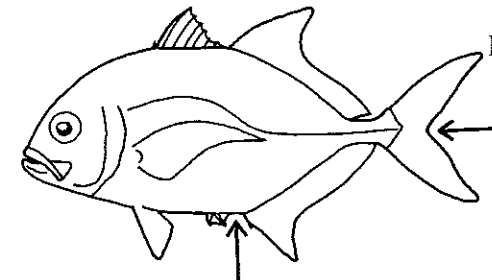


Figure 139

50 cm

104B Caudal fin not widely forked; anal fin continuous
Aleta caudal no tan bifurcada; aleta anal continua

.....105

105A One or two anal fin spines
Una o dos espinas en la aleta anal

.....Percidae
 Fig 140
 Dist I

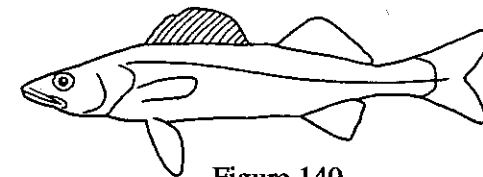


Figure 140

70 cm

105B Three anal fin spines
Tres espinas en la aleta anal

.....Percichthyidae
 Fig 141
 Dist 7,8
 Ref 1

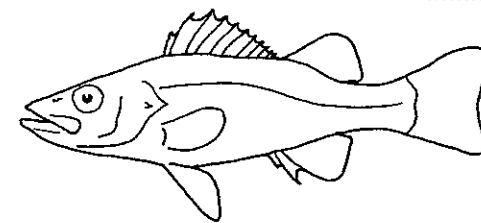


Figure 141

60 cm

106A Dorsal fin continuous
Aleta dorsal continua

.....107

106B Dorsal fin not continuous
Aleta dorsal descontinua

.....**Eleotrididae**
Fig 142
Dist 1,2,3,4,5,6,7,9
Ref 30

3-45 cm

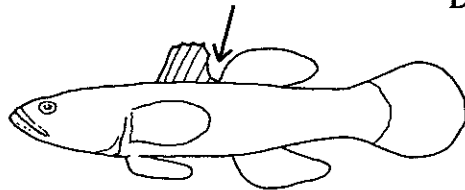


Figure 142

107A Anal fin base longer than dorsal fin base
Base de la aleta anal más larga que la base de la aleta dorsal

.....**Belontiidae**
Fig 143
Dist I

24 cm

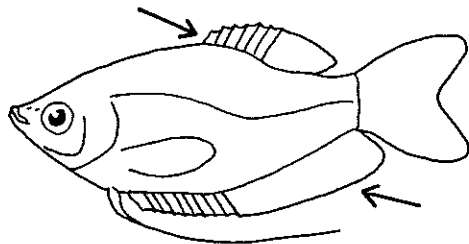


Figure 143

107B Dorsal fin base longer than anal fin base
Base de la aleta dorsal más larga que la base de la aleta anal

.....108

108A Body elongate to eel-like; dorsal and anal fins often confluent with caudal fin
Cuerpo alargado o con forma de anguila, aletas dorsal y anal generalmente continuas con la aleta caudal

.....**Microdesmidae**

Fig 144
Dist 1M,2M,3M,4M,9M

25 cm

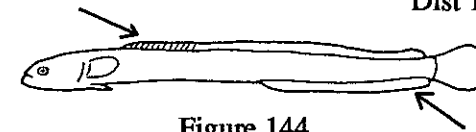


Figure 144

108B Body deep and compressed; dorsal, anal, and caudal fins always separate
Cuerpo profundo y comprimido; aletas dorsal, caudal, y anal siempre separadas

.....**Nandidae**
Fig 145
Dist 2,3,4
Ref 60

25 cm

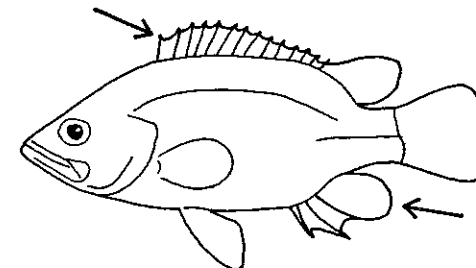


Figure 145

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