THE LEPTOCEPHALUS OF THE AMERICAN EEL AND OTHER AMERICAN LEPTOCEPHALI.

By CARL H. EIGENMANN and CLARENCE HAMILTON KENNEDY.

It is an anachronism to describe "species" of *Leptocephali*, since Gill, Delage, Gilbert, and Grassi have definitely traced various "species" to their adult forms. Nevertheless this is what we have done. Our excuse is that with but two exceptions we have not been able to connect any of the forms examined with their adult stage. It may take many years to complete the series demonstrating the life history to which each of the species described belongs, and in the meanwhile it will be advantageous to have definite forms placed on record for the benefit of all who may secure *Leptocephali* and may not be within reach of the specimens examined.

In preparing this account we have found Strömman's "Leptocephalids in the University Museum at Upsala" of great value. It is unfortunate that Strömman neglected to count the segments, since Grassi has demonstrated that this is one of the characters in which a *Leptocephalus* agrees with its adult form.

Several of the species to be described here are of great interest. One of these is the *Leptocephalus* of the American eel, *Anguilla chrysypa*. We have taken pleasure in associating the name of Grassi with this species in recognition of his identification of *Leptocephalus breviceps* with the European eel. Incidental to the identification of the *Leptocephalus* of the American eel, we have found that the American eel has but 105 to 110 segments, several less than the European eel possesses. Another interesting species is *Leptocephalus diptychus*, in which the color of each side is asymmetrically arranged as to the distance between successive spots, but the blending of the color of the two sides of the transparent creature gives the effect of symmetrically arranged markings.

Most of the species described here are new and belong unquestionably to different adult forms. Concerning others we are not at all certain whether the species belong to different adult eels or are different stages of the same eel. Thus we are not certain whether *L. amphioxus* and *L. rex* are different stages of the same form or not. The same is true of *L. gillii* and *L. latus*.

The name *Leptocephalus* was originally proposed in 1777 for *L. morrisii*, the larva of the conger eel. Since this name is older than any other that has been applied to the adult conger, it has recently been appropriated by Jordan & Evermann (Fishes of North and Middle America, p. 353) for the conger eel. This leaves us without a distinct appellation for larval eels of the *Leptocephalus* type. It might be advantageous to use the second name proposed for a larval eel, if the possibility of losing it as soon

as the adult form was determined did not stare us in the face. We have, therefore, retained the name *Leptocephalus* for the larvæ.

The specimens forming the basis for this paper belong to the U. S. National Museum. We wish to express our thanks to the authorities for the privilege of examining them. Most of them were collected by the Fish Commission steamer *Albatross* at the following stations:

Date.	Station No.	Lat. N.	Long. W.	Approximate location.
1883.		° ′ ″	° ′ ″	
Nov. 5	2103	38 47 20	72 37 00	100 miles SE. Atlantic City, N. J.
1885.				
Aug. 29	2566	37 23 00	68 08 00	250 miles SE. Nantucket.
Sept. 3	2575	41 07 00	65 26 30	160 miles S. Cape Sable, Nova Scotia.
Sept. 20	2588	39 02 00	72 36 00	95 miles E. by S. Long Branch, N. J.
Oct. 17	2596	35 08 30	75 10 00	20 miles SE. Cape Hatteras.
Oct. 18	2597	34 57 00	75 43 30	20 miles S. Cape Hatteras.
Oct. 18	2600	34 39 30	75 35 30	40 miles S. Cape Hatteras.
Oct. 19	2611	34 15 00	76 11 30	55 miles SSE. Cape Lookout.

Other localities will be given with different specimens.

Grassi has demonstrated that the *Leptocephali* possess as many segments as the adult and we have found that the number of segments in the different specimens of a given *Leptocephalus* varies but little. The following table of the *Leptocephali*, arranged according to the number of segments, may therefore assist in referring these species to their other larval phases and adult forms. It will also serve as a key to the species described and permit other species that may be discovered to be readily interpolated:

Species.	Length.	Protovertebræ.		Total.
		Abdominal.	Caudal.	
	mm.			
Leptocephalus grassii	47	65	40	105
	49	68	40	108
Leptocephalus diptychus	38	76	38	114
	51	73	43	116
Leptocephalus rex	87	59	60	119
	100	.....	.....	123
Leptocephalus amphioxus	65	102	20	122
Leptocephalus caudomaculatus	42	71	57	128
	54	70	58	128
	57	71	56	127
	59	72	58	130
Leptocephalus latus	70	98	35	133
Leptocephalus gillii	50	96	41	137
Leptocephalus strommani	61	70	71	141
Leptocephalus morrisii	74	54	88	142
	86*	69	73	142
Leptocephalus mucronatus	75	65	79	144
	80	66	80	146
	82	67	80	147
Leptocephalus discus	69	72	83	155
	71	75	84	159
Leptocephalus humilis	75	68	91	159
	76	69	93	162
	78	71	90	161
Leptocephalus gilberti	85	68	89	187
	73	100	80	180

*The larger specimen is the younger.

Several characters used in the following key have proved of but transient value. The approximation or separation of the nares we have found in one case to depend on the age of the specimen. The presence or absence of the pectorals we have also found to depend at times on the age of the specimen. Whether these two characters are ever of permanent value we are unable to say.

Key to the species of Leptocephali described in the present paper.

a. A series of three or four large conspicuous black spots on each side. Segments 114 to 116. Other characters differing greatly with age ..... *diptychus*

aa. Sides without large conspicuous black spots.

b. Pectorals none; nostrils remote.

c. Head depressed between the eyes; 96 abdominal, 40 caudal segments ..... *gillii*

cc. Head swollen between the eyes; a series of black dots along back and belly.

d. Anus near middle of length; eye large, 1.6 in snout; gradually tapering from snout to anus, thence decreasing gradually to the tail; no pigment about head, except in gular region; segments 70 + 71 ..... *strömmani*

dd. Anus much nearer tip of caudal than snout; eye small, 2.5 in snout; rapidly widening from nape to about the twenty-fifth segment, then of nearly uniform width to anus at ninety-eighth segment, thence tapering to tip of tail; pigment dots on top of head; segments 98 + 35 ..... *latus*

bb. Pectoral fins present.

e. Caudal suddenly contracted; head conical; eye small, 2.66 in snout; nostrils remote; segments 66 + 80 ..... *mucronatus*

ee. Caudal not contracted, the vertical fins continuous with it.

f. Nostrils remote.

g. Snout obtuse, lower jaw the shorter.

h. No color along the middle of the sides. Segments about 60 + 60 ..... *rex*

hh. A series of spots along the middle of the side; another along the ventral margin; segments 54 + 88 (see also *n*) ..... *morrisii*

gg. Snout pointed, jaws equal.

i. Body short, elliptical; no pigment; tongue free in front; segments 68 + 40 ..... *grassii*

ii. Body elongate, band-shaped.

j. Eye 1.5 in snout; nostrils above the level of the middle of the eye; a series of rounded spots along the middle of the sides, one to each 2 to 3 segments; segments 72 + 83 ..... *discus*

jj. Eye 1.5 in snout; nostrils on level with middle of eye; tongue not free in front; a series of elongate spots along the middle of the sides, one to each segment; segments about 160 ..... *humilis*

ff. Nostrils approximated; body elongate, nearly band-shaped; a series of spots below the middle of the sides.

k. Vent near the posterior end of the body; color along sides consisting of a series of round chromatophores on the somites ..... *amphioxus*

kk. Vent near the middle of the body.

l. A series of spots in the tail just beneath the notochord; segments 127 to 130 ..... *caudomaculatus*

ll. No spots in the tail.

m. A series of chromatophores along the base of the dorsal rays; segments about 159 to 162 ..... *humilis*

mm. No chromatophores along the base of the dorsal rays.

n. Segments 142 ..... *morrisii*

nn. Segments 180 ..... *gilberti*

All drawings illustrating this paper were prepared by Mr. Clarence Hamilton Kennedy.

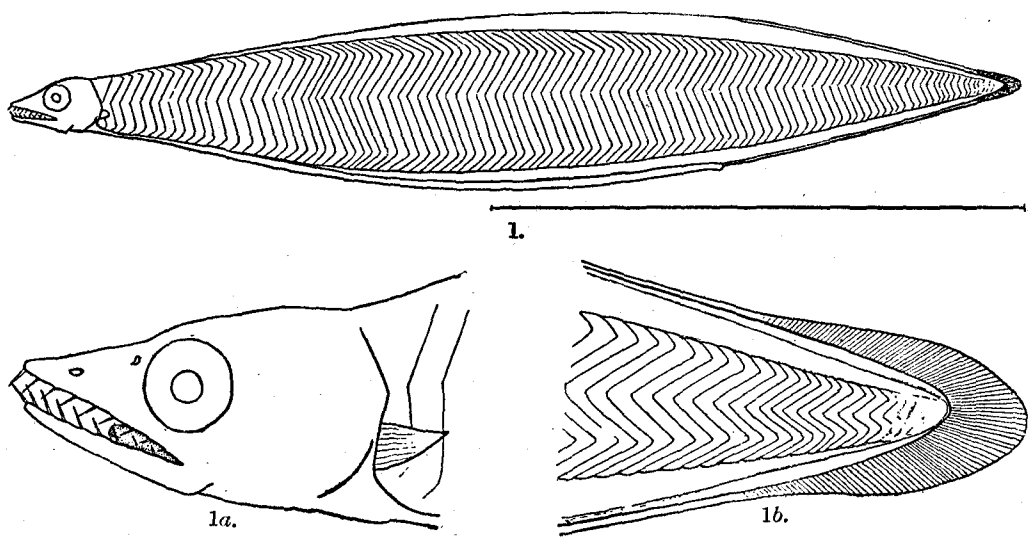
DESCRIPTIONS OF SPECIES.

Leptocephalus grassii, sp. nov. = **Anguilla chrysypa.** Figs. 1, 1*a*, 1*b*.

One specimen 47 mm. long, *Albatross* station 2103. One 49 mm. long, *Albatross*, lat. 38° 25′ N., 72° 40′ W.

This species is distinguished by its broad, well-developed vertical fins, deep and robust body, and absence of all pigment. Body lanceolate, sharp at both ends, deepest at the middle; its depth 5.66 in the length; dorsal beginning about 8 segments in front of anus, its rays becoming gradually longer to the caudal, whose rays are about 1 m. long; anal similar to the dorsal; pectoral well developed; head sharply conical, upper and lower profile equally slanting; eye large, 1.33 in snout, 4 in head; no pigment cells; segments 65 + 40 and 68 + 40.

This species very closely resembles *Leptocephalus breviceps*, which Grassi has shown to be the young of the European eel. The segments of the European eel are given as 116. The vertebræ of seven young eels taken at Woods Hole during the summer of 1900 range from 106 to 110, as follows: 35 + 71, 35 + 72, 36 + 71, 36 + 71, 36 + 73, 36 + 74, 42 + 65. This number agrees with the number of segments in *L. grassii.*



Leptocephalus grassii.

The close similarity of this species to *Leptocephalus breviceps*, the absence of color, the structure of the caudal, and the difference of this species from *breviceps* in just that character, viz, number of vertebræ, in which the American eel differs from the European eel, make it quite certain that the present species is the larva of the American eel.

We take pleasure in associating the name of Professor Grassi with the larva of the American eel.

Leptocephalus diptychus E. & K. Figs. 2, 2*a*, 2*b*, 2*c*, 2*d*, 2*e*.

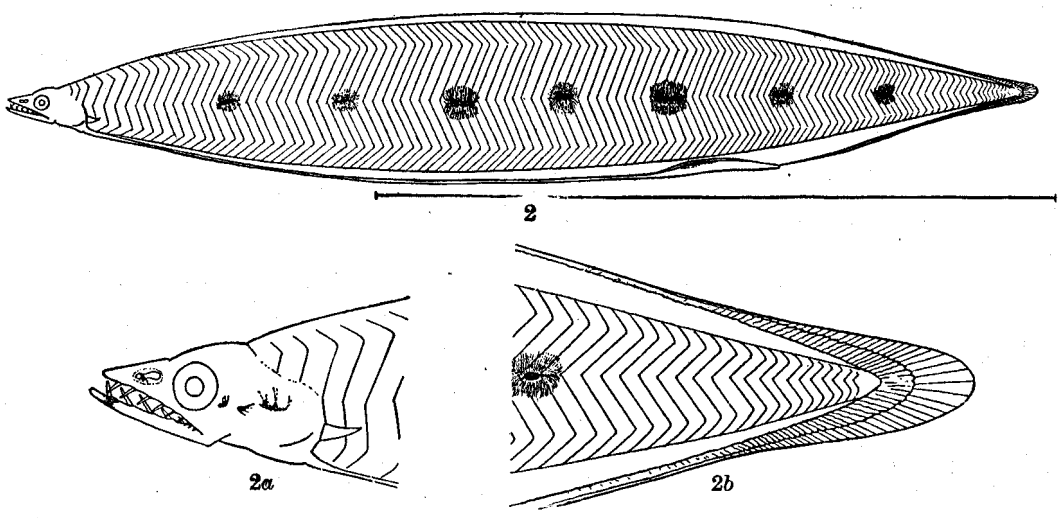
Leptocephalus diptychus, Eigenmann & Kennedy, Science, XII, p. 401. 1900.

Type, one specimen 38 mm. long, *Albatross* station 2566; surface, evening. Cotype, one specimen 51 mm. long, *Albatross*, New Providence; surface, electric light.

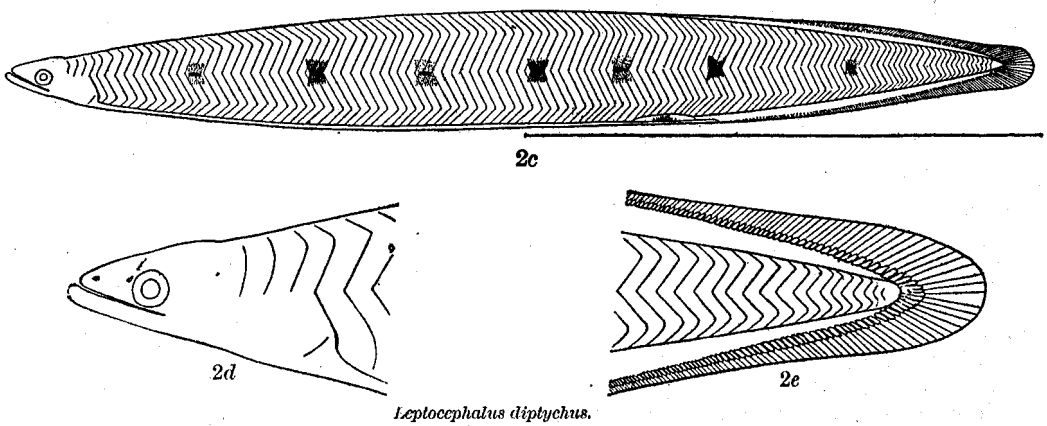
This species differs from all other species of *Leptocephalus* in the presence of eight large chromatophores, one in the alimentary canal a short distance in front of the anus, and seven along the middle line of the body, three of which are on the left side and four are on the right. Those of opposite sides alternate with each other, so that they appear in the translucent fish as a series of seven spots placed at more or less regular intervals along the side. Each one of the spots of the side consists of a large

chromatophore extending over three to four somites. At the margin of these larger chromatophores there are rarely minute chromatophores.

The two specimens differ from each other very greatly in the shape of the head, the nostrils, the development of the pectoral, and the shape of the body. The fact that the large one has lost its teeth and its head has assumed a distinct eel shape, together with the similarity of the structure of the caudal, the unique coloration, and the similarity in the number of myotomes, make it very probable that the two specimens are different stages of the same species.



Leptocephalus diptychus, small specimen.



Leptocephalus diptychus.

The two specimens differ as follows:

a. Body more elongate; pectorals a mere ridge; nostrils remote from each other for a distance nearly equal to the diameter of the eye; leptocephalous teeth wanting; lower jaw projecting, its tip rounded and entering the profile; no pigment spots about the head; depth 8.6; head distinctly more than half the depth of the body, nearly 11 in the length; eye 7 in head, 1.5 in snout; segments 73 + 43 ..... *type*

aa. Body elliptical; pectorals well developed; nostrils not yet separated; leptocephalous teeth; jaws nearly equal; a pigment spot near the end of the lower jaw, another within the anterior nares, two succeeding each other between the lower margin of the pupil and the lower margin of the auditory capsule; depth 6; head less than half greatest depth; eye 5 in head; segments 76 + 38 ..... *cotype*

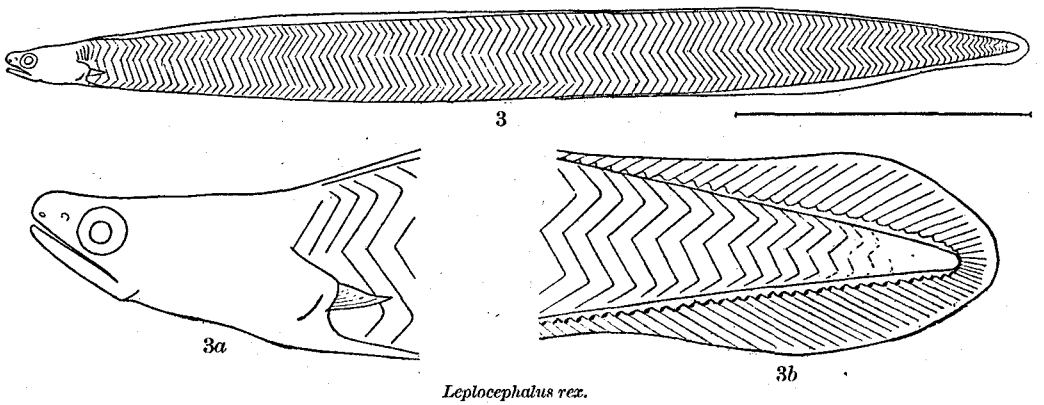
Details of the distribution of spots on the two sides of L. diptychus.

Younger specimen.		Older specimen.	
No. of segments between centers of successive spots.	Serial number of protovertebræ over which a spot extends. (R=right side; L=left.)	No. of segments between centers of successive spots.	Serial number of protovertebræ over which a spot extends. (R=right side; L=left.)
12	15, 16, 17 R	12	12, 13, 14 R.
	27, 28, 29 R		24, 25, 26 L.
13	40, 41, 42 L	12	36, 37, 38 R.
11	51, 52, 53 R	12	48, 49, 50 L.
11	62, 63, 64, 65 L	10	58, 59, 60 R.
14	76, 77, 78 R	13	71, 72, 73 L.
15	91, 92, 93 L	17	87, 88, 89, 90 R.

Leptocephalus rex, sp. nov. Figs. 3, 3*a*, 3*b*.

One specimen, 87 mm. long, *Albatross*, San Salvador, 1886. One 105 mm. long, *Albatross*, New Providence. The first specimen may represent a later phase of the species called *amphioxus*.

The head has taken on its adult form, the snout is rounded, the lower jaw is shorter than the upper, and the larval teeth have dropped out. The body is not as compressed as in true larval forms.



Leptocephalus rex.

The tail is long and pointed. The greatest depth is 11.5 in the length. The head is nearly 13 in the length. The dorsal begins a few segments in front of anus. The caudal is rounded, continuous with the high dorsal and anal. A series of color cells along base of anal and caudal rays; a few cells in deeper parts of tip of tail; no color elsewhere about body or head; segments 59 + 60.

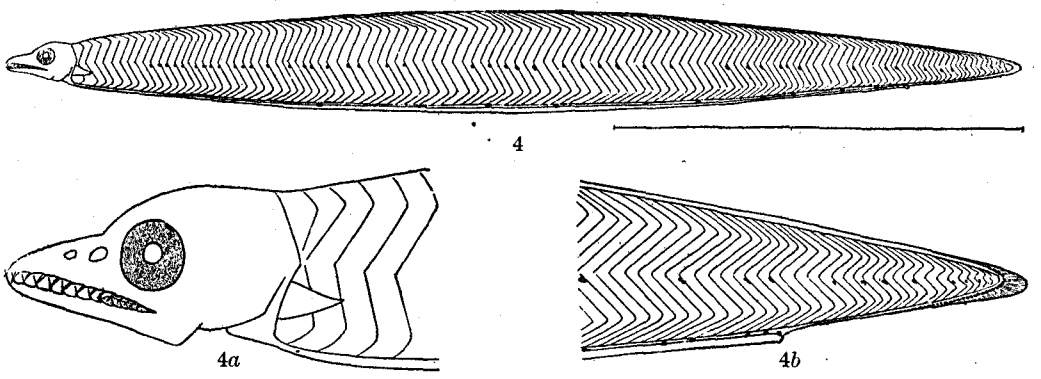
The second specimen differs from the one above described in having a series of spots along the base of the dorsal as well as the anal, and in having 123 segments. The difference in color may be due to difference in age. This specimen is much shriveled by alcohol.

Leptocephalus amphioxus, sp. nov. Figs. 4, 4*a*, 4*b*.

Type, one specimen, 65 mm. long, *Albatross*, lat. 38° 25′ N., long. 72° 40′ W.

This species is evidently very closely related to *Leptocephalus immaculatus* Strömman, from which it differs in the more pointed snout and tail and the presence of a series of chromatophores along the middle of the side. Body tapering nearly equally from both ends to the middle; depth about 9.5 in the length; head depressed in front of the eyes, snout pointed, jaws equal; eye 1.66 in snout, 4.4 in head; nostrils near together; head 14.5 in the length; pectorals well developed; alimentary canal extending to near the tip of the tail; caudal well developed, not separated from the dorsal and anal;

head without pigment, an irregular series of small round chromatophores on the somites near the middle of the body; a series of chromatophores at the base of the vertical fins, a series of chromatophores above the alimentary canal. Segments 102 + 20.

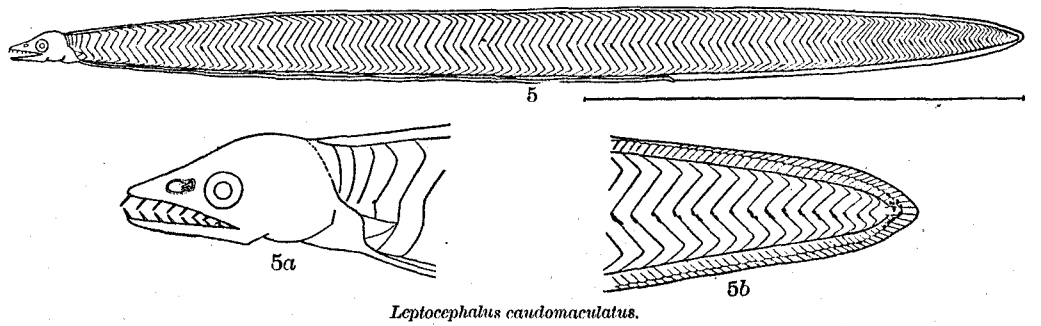


Leptocephalus amphioxus.

Leptocephalus caudomaculatus, sp. nov. Figs. 5, 5*a*, 5*b*.

Four specimens 42, 54, 57, and 59 mm. long. *Albatross* station 2597.

This species resembles *L. humilis* in most characters. It is most readily distinguished from that species by the absence of chromatophores along all but two or three of the dorsal rays. The rayed dorsal begins about the fourth segment in front of the anus. Greatest height 13 in the length. The body is nearly of uniform height from the head to beyond the alimentary canal. Head about 1.25 in the greatest height; eye 2 in snout, 5.5 in head; snout pointed; profile straight or slightly depressed over eyes; pectorals well developed; nostrils close together, anterior about half way between eye and tip of snout; one or two chromatophores at the margin of the upper jaw; no other chromatophores about



Leptocephalus caudomaculatus.

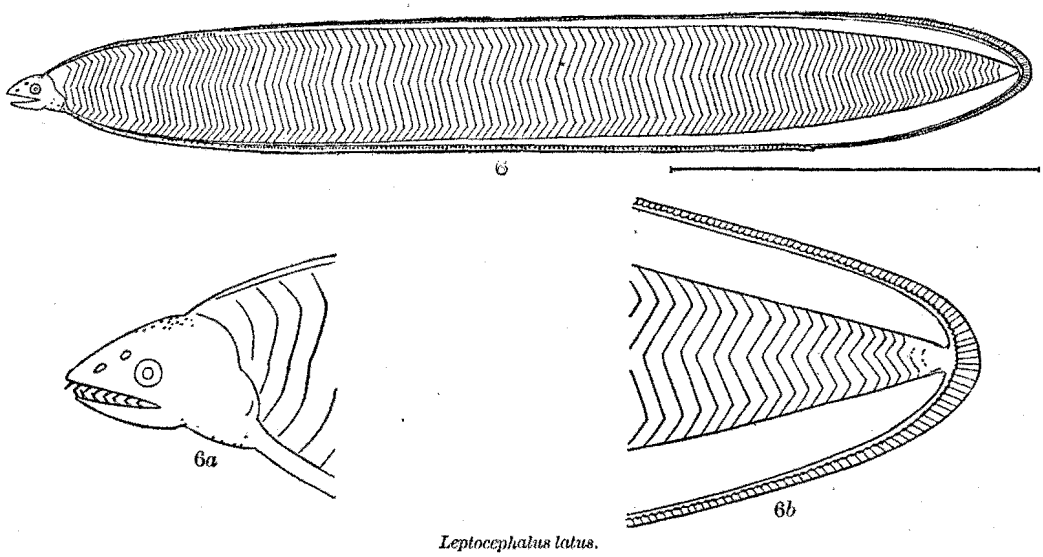
the head; a series of 9 pigment spots above the alimentary canal; no pigment spots at base of anal or dorsal; a few chromatophores at base of tail; a spot at the upper surface of the spinal cord at its end; a series of about four spots in the tail just beneath the notochord; the myocomma with 1 to 3 insignificant chromatophores below the median line; myotomes 70–72+56–58.

Leptocephalus latus, sp. nov. Figs. 6, 6*a*, 6*b*.

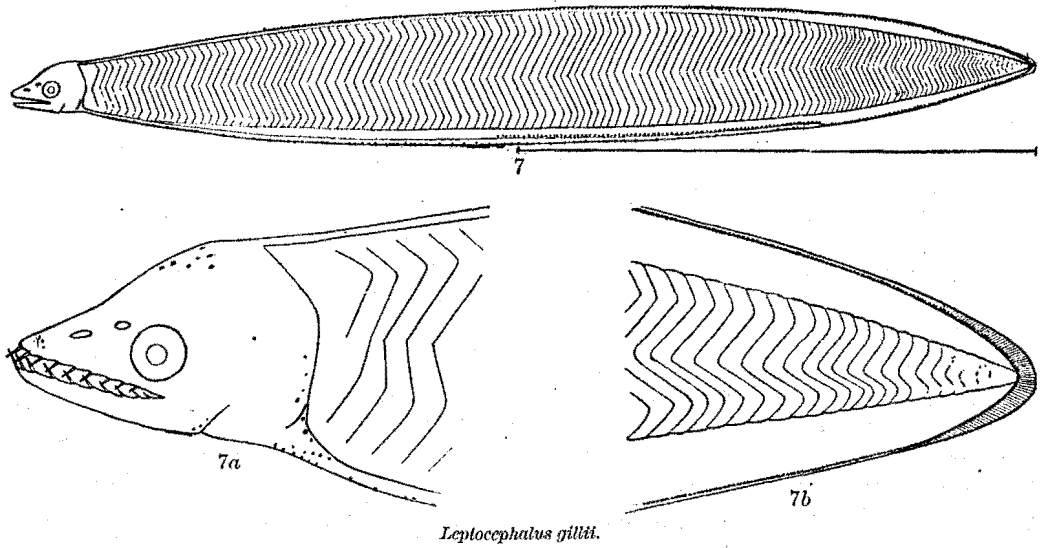
Type, one specimen 70 mm. long. *Albatross* station 2611; surface.

This species is evidently very closely related to *L. fulginosus* Strömman. It differs from the latter principally in the size of the eye and in pigmentation. Since his specimen was larger (78 mm.), the difference in the size of the eye is not attributable to age. Body very thin and elevated, rather suddenly widened at the nape and reaching its maximum height near the middle of the body, where it remains the same to near the anus, the tail broadly rounded; greatest height 7.4; head small, about 17

in the length; lower jaw distinctly shorter, leptocephalous dentition persisting; eye small, 2.5 in snout, 7 in head; nostrils remote; pectorals not developed; a few scattered pigment cells in the opercular region, a few cells on top of the head, a series of pigment cells along the base of the dorsal, anal, and ventral line, those along the bases of the fins forming a nearly complete line, those along the lower surface of the abdomen more widely separated; segments 98+35.



Leptocephalus latus.



Leptocephalus gillii.

Leptocephalus gillii, sp. nov. Figs. 7, 7*a*, 7*b*.

Type, one specimen 50 mm. long. *Albatross*, lat. 38° 25′ north, long. 72° 40′ west.

This species differ from *L. latus* in the shape of the head and body. The specimen is, however, somewhat shriveled, and the differences may be due to age and to preservation.

The body tapers gradually to the middle of the body; the tail is rather pointed; greatest height 7.5 in the length; eye 13.5 in the length; profile depressed between nostrils; jaws equal; distance

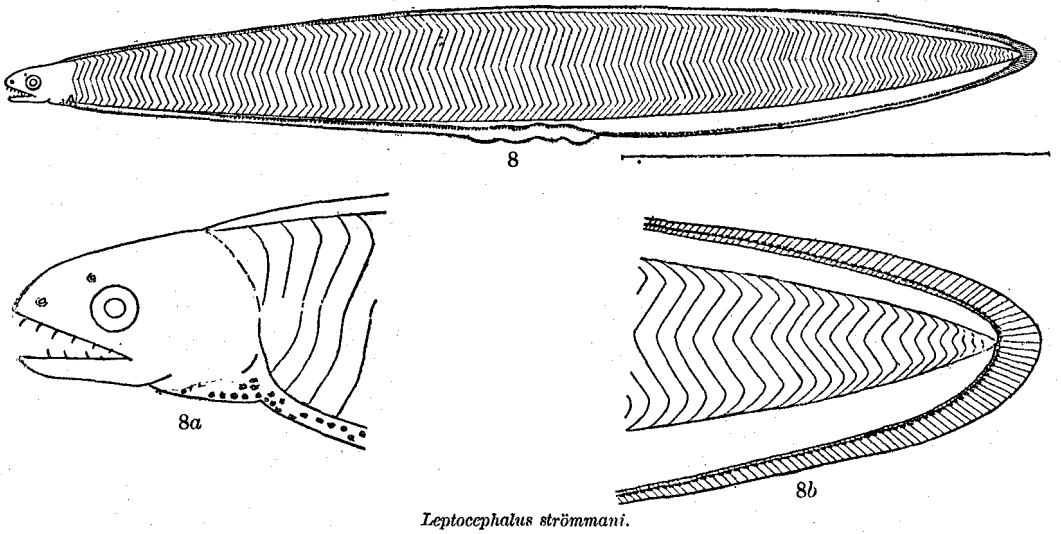
between nostrils about equal to pupil; eye 5.33 in head; pectorals none; a group of pigment cells on top of head and a similar group below gill opening, an irregular row of spots along ventral side of abdomen, a more regular row of smaller spots along base of dorsal and anal fins. Segments 96 + 41.

We take pleasure in associating with this species the name of Dr. Theo. Gill, the first to express the conviction (Proceedings Philadelphia Academy of Natural Sciences, 1864) that a *Leptocephalus* is the larva of an eel.

Leptocephalus strömmani, sp. nov. Figs. 8, 8*a*, 8*b*.

Type, one specimen 61 mm. long. *Albatross* station 2596.

This species is evidently closely related to *L. latus*. It differs from that species chiefly in the position of the anus and the folding of the posterior section of the alimentary canal. The body is not so deep nor so suddenly expanded behind the nape, tapering instead rather evenly in front and behind. Its greatest depth is near the anus and is 7.5 in the length, and the tail is rounded, without a distinct caudal, but with the middle rays longer than in *L. latus*. The head is about 15.5 in length. The lower jaw is distinctly shorter than the upper, the profile rounded; eye medium, about 5.5 in head, 1.6 in snout; nostrils remote by a distance about equal to the diameter of the eye; pectorals not developed;



Leptocephalus strömmani.

a group of pigment cells in the gular region; no other pigment cells about the head; a series of pigment cells around the edge of the body, those in the abdominal region above the alimentary canal, except along its anterior third, where they are along the ventral surface; no color on body. Segments 70 + 71.

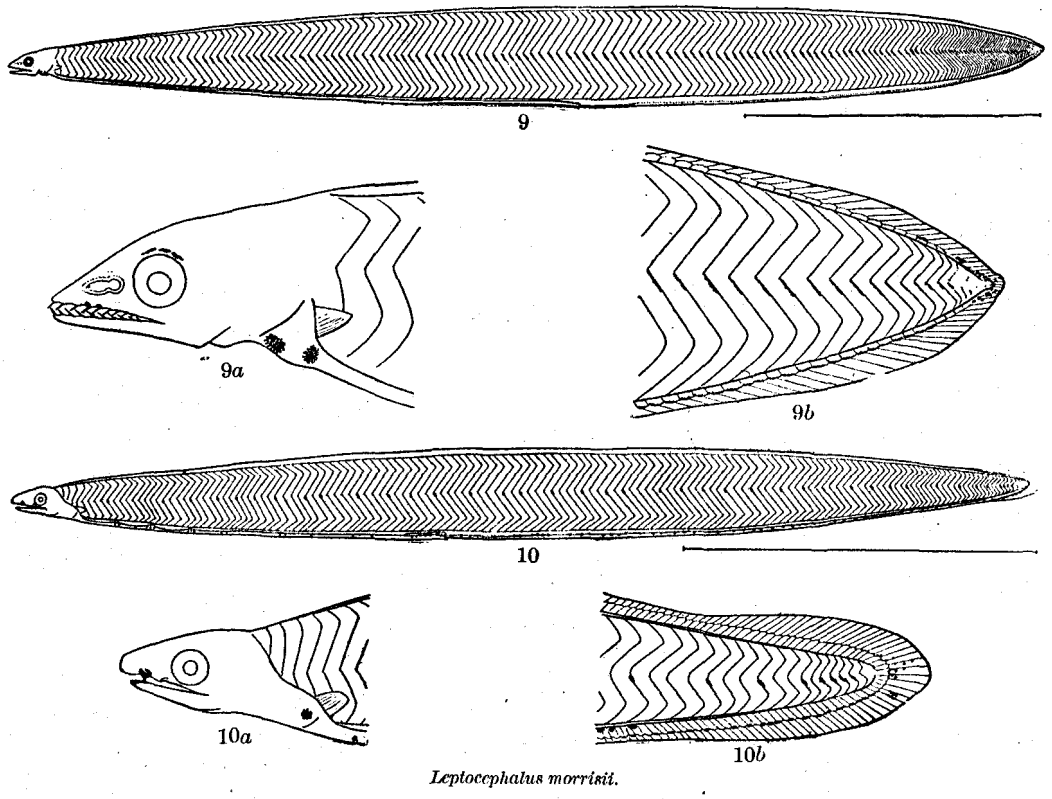
We take pleasure in dedicating this species to the author of "Leptocephalids in the University Zoological Museum at Upsala," Dr. Strömman.

Leptocephalus morrisii Scopoli = **Leptocephalus conger.** Figs. 9, 9*a*, 9*b*; 10, 10*a*, 10*b*.

One specimen 86 mm. long. *Albatross* station 2588.

Body gradually tapering from the head to behind the anus, where the depth is 10.33 in the length; fins very low; rayed dorsal beginning four segments in front of the anus; tail pointed; head pointed; jaws equal; profile nearly straight; eye 1.6 in snout, about 5 in head; nostrils approximated; pectoral well developed; three or four pigment cells over the eye; two chromatophores below the pectoral; a series of eight pigment spots above the alimentary canal; a pigment spot beneath the alimentary canal opposite the second one above; a row of pigment cells along the base of the anal, beginning about two segments behind anus and extending to caudal; several chromatophores at base of caudal and two at base of dorsal near tail; none at base of any other dorsal rays or along the back; sides with a series of linear spots on the myocomma beneath median line; segments 69 + 73.

A specimen 74 mm. long from New Providence (*Albatross*, surface), which has undergone a partial metamorphosis, seems to be referable to this species. The leptocephalous teeth have been lost, the snout has become rounded, and the alimentary canal shorter. Body long and band-shaped, tapering gradually from head to midway between caudal and anus; depth about 11 in length; head small, about 16 in length of body; snout rounded; lower jaw shorter than upper; mouth extending beyond eye; pectorals well developed; eye 1.5 in snout, about 5 in head; dorsal beginning in posterior fourth of alimentary canal, increasing in height to caudal; anal similar to dorsal; one or two chromatophores below pectoral; a series of six spots along alimentary canal, a few cells scattered between them; a series of spots along base of anal and caudal; a few spots on caudal and a few along the bases of last dorsal



Leptocephalus morrisii.

rays; sides with an irregular series of spots on the myocomma, each spot composed of from one to three chromatophores, which are expanded on surface over the myocomma rather than in them, as in the younger specimens; two minute chromatophores on one side of head.

Leptocephalus mucronatus, sp. nov. Figs. 11, 11*a*, 11*b*.

Specimen No. 1, 75 mm. long; No. 2, 80 mm. long; No. 3, 82 mm. long. *Albatross* station 2575, lat. 38° 25′ north, long. 72° 40′ west.

This species differs from all others in our collections, or in descriptions accessible to us, in its suddenly contracted or mucronate tail, the fin folds being imperfectly continued around it, and by the greater pigmentation. The specimens appear to have reached the point of metamorphosis, the head being well round and conical, but the leptocephalous dentition persists. Elongate band-shaped, the body tapering gradually to about midway between anus and tip of caudal; depth, 11.5; head, 14.33; eye small, 2.66 in snout, 9 to base of pectoral; nostrils remote from each other by a distance equal to diameter of eye; pectorals well developed; gill slit nearly vertical; somites 66+80; tongue not free in front.

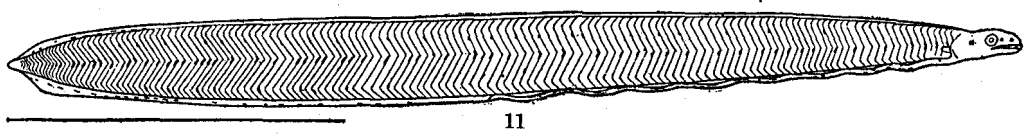
Coloration all formed by minute chromatophores, a spot near ends of jaws, a spot behind eye, another above it at nape, a series of lines of irregular length and irregularly placed at bend of the myocomma along middle of sides, a few spots near upper bend of the myocommas; a similar series of spots along lower bend of myocommas of the tail, a series of spots along dorsal, a series of spots along anal, a series of double spots above and below the alimentary canal.

Leptocephalus discus, sp. nov. Figs. 12, 12*a*, 12*b*.

Two specimens, 71 and 69 mm. long. *Albatross*, San Salvador.

This specimen differs from all others in the collection except *L. amphioxus* in possessing along the middle of the side a series of circular chromatophores placed on every second to fourth somite.

Body of nearly uniform width, tapering for a short distance in front and behind; depth about 10 in the length; head 15.5 in the length; head short and conical, the upper and lower profiles with similar slopes; pectorals well developed; dorsal beginning about the twentieth segment; caudal



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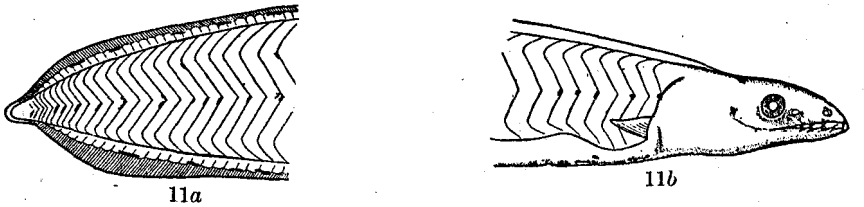
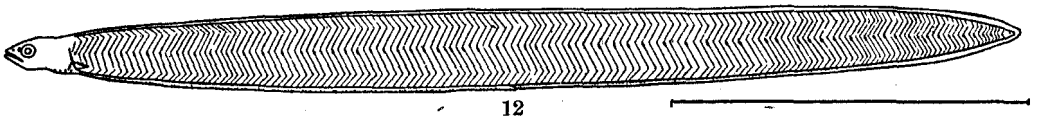


11*a* 11*b*

Leptocephalus mucronatus.



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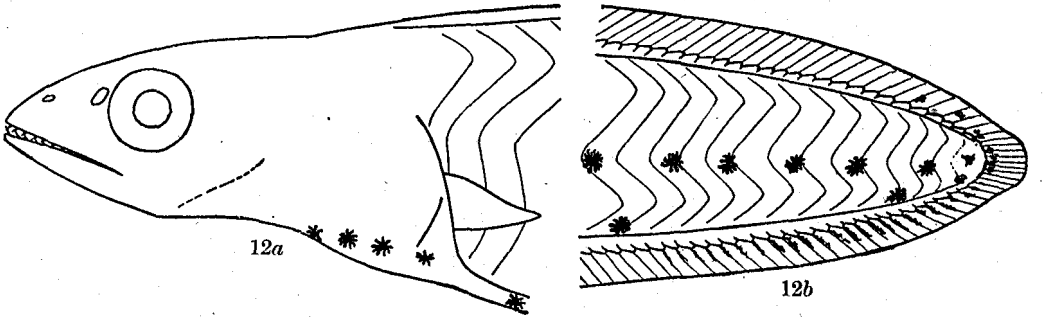


12*a* 12*b*

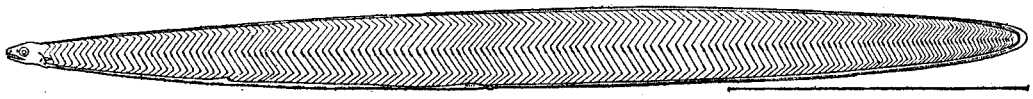
Leptocephalus discus.

pointed, rays little developed; tail lanceolate; no pigment about head, except a series of three or four chromatophores on each side of throat; a few chromatophores above alimentary canal near its posterior end, another series on sides near base of anal; pigment between anal rays in its posterior half; a few pigment cells about base of caudal and two or three at base of some of posterior dorsal rays; middle of sides with a series of round chromatophores more numerous toward caudal; two or three chromatophores above or below this series on tip of tail.

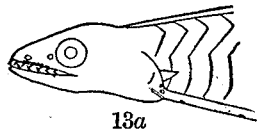
Leptocephalus humilis Strömman. Figs. 13, 13*a*, 13*b*.

Two specimens 75 and 76 mm. long. New Providence. One 85 mm. long. *Albatross* station 2600. One 78 mm. long. *Albatross* station 2596.

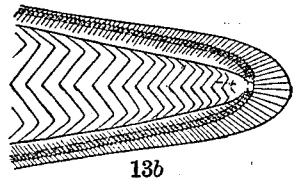
This species agrees closely in most respects with Strömman's description. It differs in having a series of spots above the alimentary canal. There is a series of three or four chromatophores along the edge of the upper jaw half way between its tip and the eye; a chromatophore near the base of the pectorals; mid-dorsal line in front of the dorsal fin with a series of widely separated chromatophores; dorsal, caudal and anal with a series of chromatophores; a few chromatophores on the caudal rays; a series of spots above the spinal cord at its posterior part, these sometimes aggregated into two spots; myocommas below the median line, each with a series of from one to four chromatophores except near the head. The body is long and slender, tapering from the very slender head to behind the alimentary canal; tail pointed; segments 71 + 90; 68 + 89; 68 + 91; 69 + 93.



13

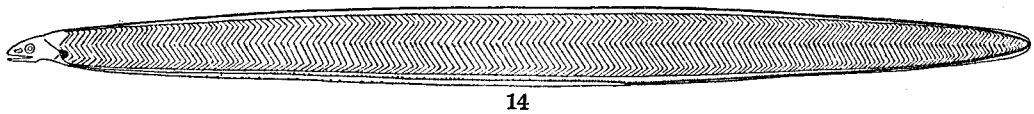


13*a*

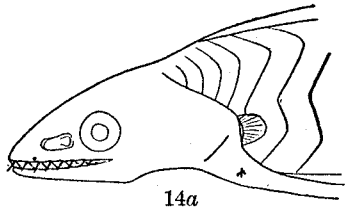


13*b*

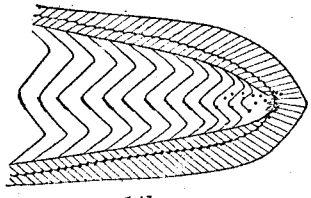
Leptocephalus humilis.



14



14*a*



Leptocephalus gilberti. 14*b*

Leptocephalus gilberti, sp. nov. Fig. 14, 14*a*, 14*b*.

Type, one specimen 73 mm. long. *Albatross* station 2597.

This species resembles *Leptocephalus humilis, morrisii,* and *caudomaculatus* in shape of the head, the nostrils, the shape of tail. It differs in number of segments, distribution of spots along alimentary canal, and length of rayed dorsal. Body tapering equally to both ends from middle; depth about 12 times in length; head about half the greatest depth; snout pointed; upper and lower profiles nearly equally slanting; dorsal beginning on seventh segment behind pectoral; a chromatophore on margin of upper jaw; no other pigment about head; a chromatophore below pectoral, a series of chromatophores along upper margin of alimentary canal, congregated in places to form more or less distinct spots; a few chromatophores along ventral margin of alimentary canal; base of anal with a series of chromatophores to near caudal; a few chromatophores at base of caudal; none at base of the dorsal; a few chromatophores on tip of tail; the usual series of linear spots on myocomma beneath lateral line; segments 100 + 80.

We take pleasure in dedicating this species to Dr. Charles H. Gilbert, in recognition of his demonstration of the metamorphosis of the *Leptocephalus* of *Albula vulpes* into its adult form.