Rev. Biol. Trop. 38 (2A): 259-266, 1990

Eunice orensanzi n.sp. from the western coast of Baja California Sur, México and key to the Mexican *Eunice* (Polychaeta: Eunicidae)

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(Rec I-IX-1989. Acep. 9-III-1990)

Abstract: *Eunice orensanzi* n.sp., is described based on 20 specimens collected along the western coast of Baja California Sur, México, during three oceanographic cruises. Branchiae possess numerous filaments, along a short portion of the body, and has composite bidentate falcigers with a blunt hood. *E. orensanzi* is closely related to *E. semisegregata,* but differs in several morphological characters, including the number of branchial filaments, the start of the subacicular hooks, and the maxilary formula. A key for the 29 species of *Eunice* reported for Mexican waters is included.

Key words: New species, Polychaeta, taxonomy, Mexico.

The genus *Eunice* includes twenty nine valid species for the mexican coast (Salazar-Vallejo et al. 1988), and is the richest polychaete genus known from Mexico.

A new species of *Eunice* for the western coast of Baja California Sur, Mexico, is described. Material was collected during three oceanographic cruises, in July and October, 1987, and February, 1988, aboard the B/O "El Puma", using a modified Agassiz dredge and a shrimp trawl. The specimens were obtained from within sandstone rocks. The type material is deposited in the National Museum of Natural History, Smithsonian Institution (USNM), and non-type specimens are in the author's collection (JAL-EUNI).

A key to the species of *Eunice* previously recorded from Mexico (including the Geothermal Vent Site 21º LN and the Revillagigedo Islands) is included.

Eunice orensanzi n. sp.
(Figs. 1,2)

Material examined: Holotype (USNM 129203) and 8 specimens (USNM 129204) collected with Agassiz modified dredge type, 13 July 1987 (26º06' N, 112º34' W), 65 m. Three specimens (USNM 129205) and 2 specimens (JAL-EUNI 12), collected with the same dredge, 8 October 1987 (25º50.04'N, 113º 2.6'W), 200 m. Six specimens (USNM 129206) collected with a shrimp trawl, 28 February 1989 (25º 55.329' N, 112º 59.157' W), 123 m.

Description. The holotype is a complete specimen, with 139 setigers, 96 mm long, and 2.5 mm wide including the setae. Dorsal region yellowish; anterior portion with light spots; the ventral region paler than the dorsum.

Prostomium wider than long, with a pair of globose and subtriangular palpi. Occipital antennae articulated, reaching the distal part of the prostomium; middle and inner lateral antennae, when extended backwards, reach setiger 6; each measures 2.5 mm. Occipital ceratophores rise above the surface of the prostomium. A pair of black eyespots are located between the inner lateral and outer lateral antennae. Peristomium and the first body segment are apodous. Peristomium bearing a pair of long and slender tentacular cirri that reach the anterior border of the prostomium, each measuring 2,2 mm (Fig. 1a).

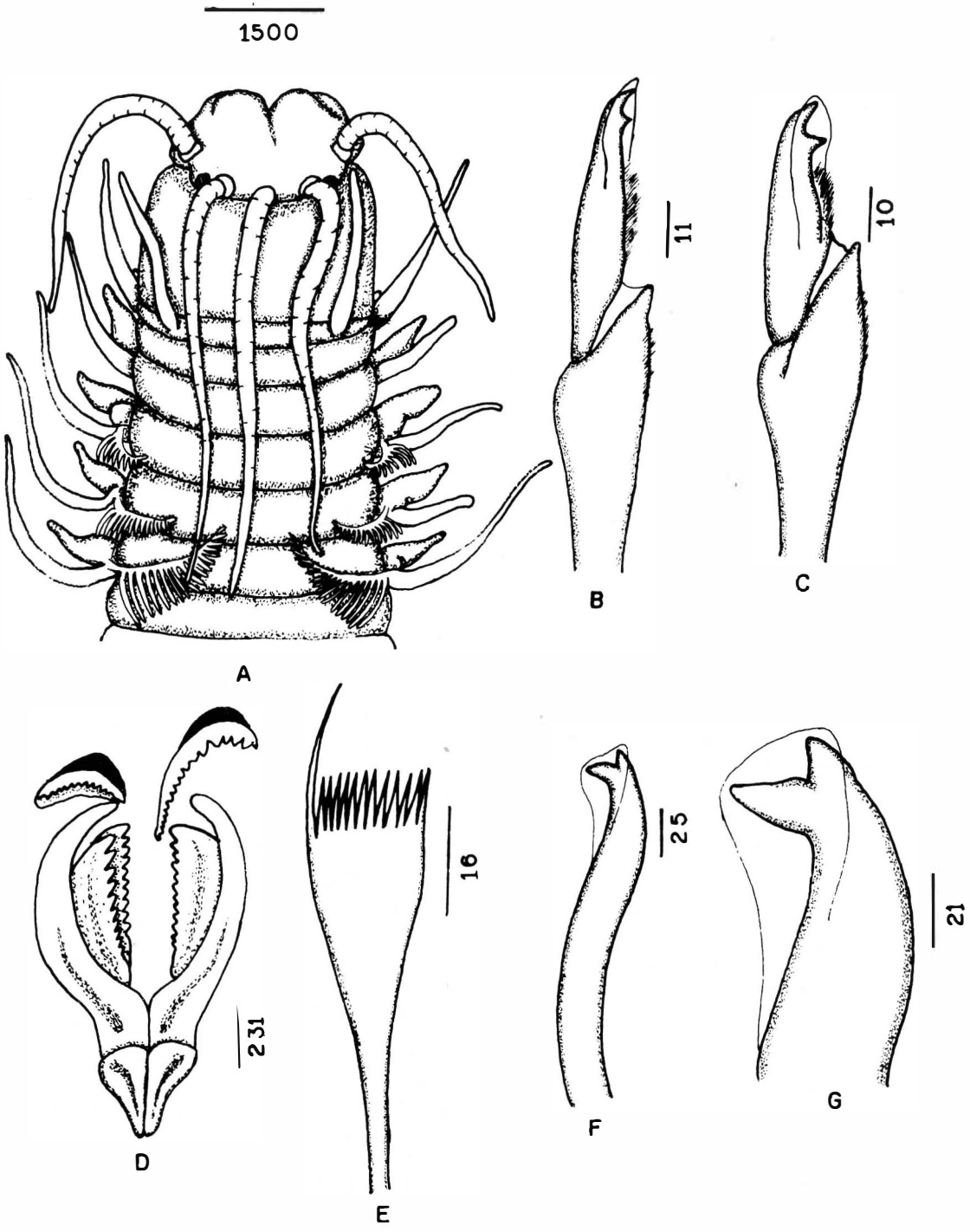

Fig. 1. *Eunice orensanzi* n.sp. a) Distal end of the body; b) Composite falciger of the first setiger; c) Composite falciger of posterior setiger; d) Maxillae; e) Pectinate setae; f) Subacicular hook; g) Distal end of a subacicular hook (measurements in micrometers).

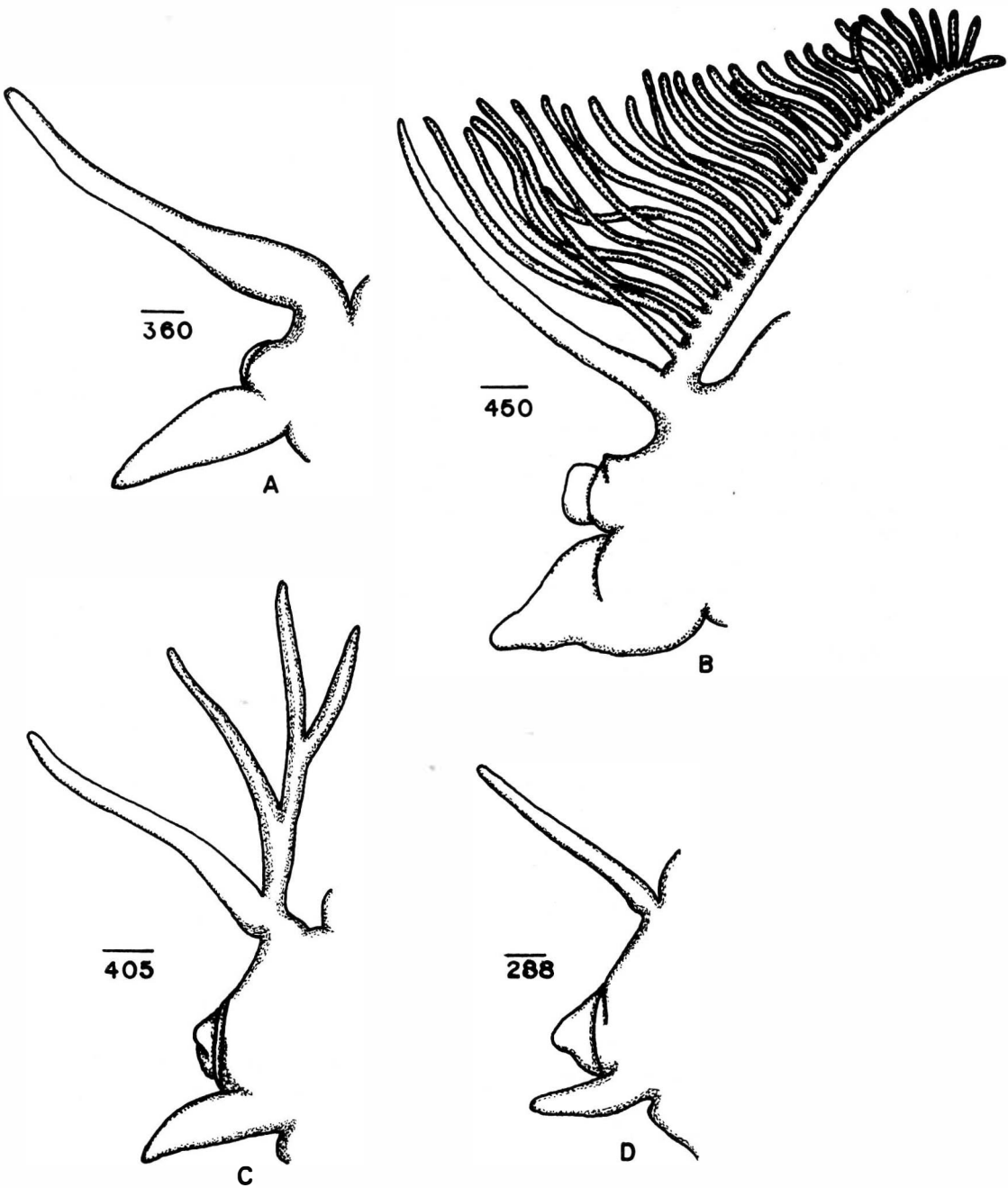

Fig. 2. *Eunice orensanzi* n.sp. a) First parapodium; b) 21st parapodium; c) 58th parapodium; d) 100th parapodium (measurements in micrometers).

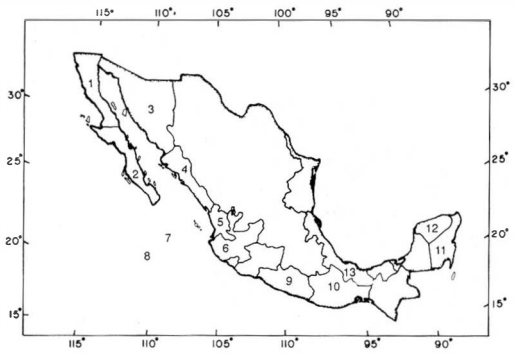

Fig. 3. Mexican Republic: states from which *Eunice* species have been reported.

First parapodium (Fig. 2a) with long, slender dorsal cirri, setal lobe truncate with the ventral cirri shorter and wider thant the dorsal cirri. Ventral cirri from setigers 6 to 42 with a swollen base (Fig. 2b). This swelling disappears beginning at setiger 43 (Fig. 2c, d). Middle and posterior parapoda pigmented at the basal part of the dorsal cirri.

Branchiae pectinate, restricted to setigers 3-64. Setiger 3 with 9 filaments in each branchia, 4th with 15, 5th with 18, filaments. Dorsal cirri with a slender yellowish acicula. Parapodial lobe with a pair of thick yellowish aciculae. Dorsal setal fascicle with slender limbate serrated setae. with 12 to 13 teeth (Fig. 1e). Ventral fascicles with yellow, bidentate subacicular hooks (Fig. 1f,g), distally hooded; lateral tooth more developed than the superior tooth. Anterior setigers with composite falcigers; these are bidentate and hooded (Fig. 1b), blade long and slender, lateral tooth small and acuminate. Falcigers from middle and posterior setigers with a less developed blade; lateral tooth well developed. Setal shafts finely spinulated.

Pygidium with terminal anus, surrounded by a papillar rim; two pairs of ventral anal cirri, superior pair large and slender, inferior pair small.

Maxillary apparatus dark and calcified, Maxillary formula: Mx I= 1+', MxII= 10+11, MxIII= 12+0, MxIV= 10+16 (Fig. 1D). proboscidial musculature with a dense group of globose papillae on the dorsal region.

All specimens were taken from galleries or cavities in sandstone rock, these galleries sometimes covered by a fibrous membrane. Analysis of gut contents revealed sediment, harpacticoid copepods, and foraminifera.

In a specimen collected in October, the first left parapodium has a single long branchial filament, the second segment lacked branchiae. The maxillary dentition is quite variable: MxII= (8-12)+(8-14), MxIII= (10+13)+0, MxIV= (7+11)+(11+16). Variability of other selected morphological characters of *E. ore nsanzi* n.sp. is shown in Table 1.

TABLE 1

Statistic summary of the Eunice orensanzi *n.sp. specimens. a) Maximal number of branchial flaments; b) Start of the subacicular hooks; c) Length of the outer lateral left antennae; d) Length of the inner lateral left antennae; e) Length of the middle antennae; f) Length of the inner lateral right antennae; g) Length of the outer lateral right antennae; h) Length of the tentacular cirri; i) Number of branchial filaments in the first right branchia; j) Number of branchial filaments in the first left branchia; k) Start of the ventral cirri with swollen base; l) End of the swelling of the ventral cirri; m) End of the branchiae.*

	Mean	Range	Variance	Standard Deviation
a	27.84	22-41	36.3	6.02
b	33.16	26-42	17.24	4.15
c	2.94	1.9-4.2 mm	0.47	0.69
d	5.1	3.4-7.1 mm	1.62	1.27
e	6.03	3.8-7.8 mm	2.35	1.53
f	5.1	3.4-7.1 mm	0.97	0.98
g	2.4	1.6-4.0 mm	0.38	0.61
h	3.26	2.0-5.0 mm	0.9	0.95
i	11.69	8-19	11.73	3.42
j	11.84	8-20	14.64	3.82
k	6.15	6-7	0.14	0.37
l	40.36	35-46	15.25	3.9
m	59.12	52-64	18.98	4.35

TABLE 2

Codes for Mexican states and localities from where Eunice *have been recorded (in parenthesis: number of reported species for each locality).*

1. BCN: Baja California Norte (10)
2. BCS: Baja California Sur (22)
3. SON: Sonora (9)
4. SIN: Sinaloa (13)
5. NAY: Nayarit (2)
6. JAL: Jalisco (2)
7. H21: Geothermal Vents 21° N (20°50'N, 109°06'W) (1)
8. IRE: Islas Revillagigedo (4)
9. GRO: Guerrero (7)
10. OAX: Oaxaca (2)
11. QIR: Quintana Roo (1)
12. YUC: Yucatán (3)

Etymology. The specific name is a modest hommage to the work of the Argentine polychaetologist Dr. José María Orensanz.

Type locality: Baja California Sur, Western Mexico (26°06'N, 112°34'W) in 65 m depth.

Distribution. *Eunice orensanzi* n.sp. was collected from three localities off Baja California Sur, Mexico, in 65-200 m depth.

DISCUSION

Eunice orensanzi n.sp. belongs to the species group with yellow, bidentate subacicular hooks, and branchiae limited to a short region of the body. Six species belonging to this group have been previously reported from mexican waters: *E. biannulata* Moore (1904: 487), *E . biannulata mexicana* Fauchald (1970: 27), *E . megabranchia* Fauchald (1970:33), *E. norvegica* (Linnaeus 1767), *E. segregata* (Chamberlin 1919: 237) and *E. semisegregata* Fauchald (1969: 8). The only species possessing many branchial filaments (as in *E. orensanzi* n.sp.) are *E. megabranchia, E. semisegregata* and *E. validobranchiata* Monro (1937) (the latter is a deep water species known only from South Arabian coasts).

E. orensanzi n.sp., and *E. semisegregata*, both are separated from *E. megabranchia* and *E. validorbranchiata* by having blunt, rather than pointed, falcigerous hoods. The first pair of branchiae in *E. orensanzi* n. sp. is provided with 9 to 19 branchial filaments, while that of *E. semisegregata* has only 6 branchial filaments. The branchiae extended posteriorly to setigers 52-64 in *E. orensanzi* n.sp. and to setiger 69 in *E. semisegregata.* Subacicular hooks start from setiger 26 to 42 in E. orensanzi n.sp., and the distal tooth is bent while the lateral tooth straight, both teeth possess a transparent hood. The subacicular hooks do not beg in until setiger 51 in *E. semisegregata,* both the lateral and distal teeth are straight, and lach hoods.

E. orensanzi n.sp. differs from *E. megabranchia* and *E. validobranchiata* in both the distribution of the branchiae and the maximal number of branchial filaments. The branchiae are present from setiger 54 in *E. megabranchia* and from setiger 45-50 in *E. validobranchiata;* the maximal number of branchial filaments in *E. megabranchia* is 47, and in *E. validobranchiata* is 45. Also of these 3 species, only *E. megabranchia* lacks swollen ventral cirri in the branchial segments.

Key to the Eunice species reported from Mexico (Modified from Fauchald 1970)

1. Subacicular hooks black or dark brown 2
   Subacicular hooks yellowish 14

2. Subacicular hooks unidentate 3
   Subacicular hooks bidentate 6

3. Branchiae appear before setiger 10 4
   Branchiae appear after setiger 10 5

4. Branchiae with uo to 15 filaments, from setiger 7; dorsal cirri with a basal swelling; subacicular hooks from setiger 28; composite falcigers with long and thin blades; Maxillary formula: MxII = 8+7, MXIII = 8+0, MXIV = 7+13. (YUC)..... *E. riojai* de León-González 1988.
   Branchiae with up to 8 filaments, from setiger 5; dorsal cirri cirriform; subacicular hooks from setiger 40; composite falcigers with short and thick blades; Maxillary formula: MxII = 4+4, MxIII = 6+0, MxIV = 4+7 (YUC).... *E. schemacephala* Shmarda 1861.

5. Branchiae with up to 4-5 filaments, from setiger 28: subacicular hooks from setiger 20-25; composite falcigers with short and thick blades; Maxillary formula unknown. (BCS).. *E. unidentata* Rioja 1962.
   Branchiae with up to 6 filaments, from setiger 19-42; subacicular hooks from setiger 36-54; composite falcigers with long and thin blades; Maxillary formula: MxII=3+4, MxIII= (5-6)+0m MxIV= 3+(6-8). (BCS, SON,.....SIN) *E. sonorae* Fauchald 1970.

6. Branchiae with a single filament or absent; subacicular hooks from setiger 25; Maxillary formula: MxII= 5+6, MxIII= 7+0, MxIV= 5+8. (BCS, SON, SIN, GRO, VER).....*E. (Nicidion) cariboea* Grube 1856.
Branchiae well developed.....7

7. Branchiae start before setiger 10.....8
Branchiae start after setiger 10.....13

8. With more than 20 branchial filaments.....9
With up to 15 branchial filaments.....10

9. Subacicular hooks from setiger 68, lateral and distal teeth well developed; Maxillary formula: MxII= 17+17, MxIII=18+0, MxIV= 12+12. (H21).....*E. pulvinopalpata* Fauchald 1982.
Subacicular hooks from setigers 15-54, lateral and distal teeth weakly developed; Maxillary formula: MxII= (4-6)+(4-7), MxIII= (5-6)+0, MxIV= 4+(6-13). (BCN, BCS, SON, SIN, VER).....*E. aphroditois* (Pallas 1788)

10. With more than 10 branchial filaments.....11
With up to 8 branchial filaments, from setiger 6; subacicular hooks from setiger 27, lateral tooth thicker than the distal tooth; Maxillary formula: MxII=3+3, MxIII= 5+0, MxIV= 5+6. (NAY, JAL, IRE, QIR).....
E. mutilata Webster 1884.

11. Antennae and tentacular cirri articulate.....12
Antennae and tentacular cirri smooth; branchiae from setiger 9, with up to 15 filaments; subacicular hooks from setiger 35; composite falcigers with long blades; Maxillary formula: MxII= 6+4, MxIII= 6+0, MxIV= 6+9 (GRO).....
E. longisetis Webster 1884.

12. Branchiae from setiger 4, with 20-21 filaments; subacicular hooks from setiger 34-49; composite falcigers with short and thick blades. Maxillary formula: MxII = 4+4, MxIII = 8+0, MxIV = 4+10. (BCS, SIN).....*E. reducta* Fauchald 1970.
Branchiae from setiger 6-7, with up to 13 filaments; subacicular hooks from setiger 28. Maxillary formula: MxII= 6+6, MxIII=8+0, MxIV= 4+11. (BCN, BCS).....*E. multipectinata* Moore 1911.

13. Branchiae from setiger 11-20, with up to 9 filaments; subacicular hooks from setigers 32-42, with the lateral and distal teeth straight. Maxillary formula: MxII= 4+4, MxIII=5+0, MxIV= (3-7)+7. (BCN, BCS, SON).....*E. afra* Peters 1854.
Branchiae from setiger 21-32, with up to 5 filaments; subacicular hooks from setiger 18-26, lateral and distal teeth bent. Maxillary formula: MxII+ 5+5, MxIII= 7+0, MxIV= 3+9. (BCN, BCS, SON, SIN, OAX) (GRO as *E. spongicola*.....*E. filamentosa* Grube 1856.

14. Subacicular hooks bidentate.....15
Subacicular hooks tridentate.....21

15. Branchiae appear from setiger 3, with more than 10 filaments.....16
Branchiae appear from setiger 6, with up to 7 filaments; subacicular hooks from setiger 21; Maxillary formula: MxII= 5+4, MxIII= 8+0, MxIV= 4+10. (VER, YUC).... *E. norvegica* (Linnaeus 1767).

16. Antennae articulate, tentacular cirri smooth or articulate.....17
Antennae and tentacular cirri smooth; ventral cirri without basal swelling; with up to 47 branchial filaments, subacicular hooks from setiger 35; compound falcigers with pointed hoods. Maxillary formula unknown.....*E. megabranchia* Fauchald 1970.

17. Articles of the antennae moniliform; tentacular cirri smooth; dorsal cirri with 3 articulations; composite falcigers hooded, with the distal tooth bent.....18
Articles of the antennae cylindrical; tentacular and dorsal cirri with or without articulations; compound falcigers hooded, with the distal tooth straigth.....19

18. First branchiae simple, with up to 6-8 filaments; subacicular hooks from setiger 34-48; composite falcigers with the distal tooth larger, Maxilary formula: MxII= (5-6)+(5-6), MxIII= (6-7)+0 MxIV= 6+10, (BCS, SIN, IRE).....*E. biannulata* Moore 1904.
First branchiae pectinate, with up to 15 filaments; subacicular hooks from setiger 20-32; composite falcigers with the lateral tooth larger. Maxillary formula: MxII= (5-7)+(6-8), MxIII= (6-7)+0 MxIV= (5-6)+(10-11), (BCS SIN).....*E. biannulata mexicana* Fauchald 1970.

19. Tentacular and dorsal cirri smooth.....20
Tentacular cirri articulate, dorsal cirri with 2 articles in prebranchial segments, single in the branchial region; with up to 12-15 branchial filaments; subacicular hooks from setiger 36, lateral tooth bent and more developed than the distal.

tooth. Maxillary formula unknown. (BCN, BCS, SIN, GRO, JAL.) ... *E. segregata* ... (Chamberlin 1919).

20. With up to 34-38 branchial filaments; subacicular hooks from setiger 51. Maxillary formula: MxII= 8+9, MxIII= .. (10-11)+0, MxIV=3+6. (BCS GRO) ... *E. semisegregata* Fauchald 1970.
With up to 22-41 branchial filaments; subacicular hooks from setiger 26-42. Maxillary formula: MxII = (8-12)+(8-14), MxIII= (10-13)+0, MxIV= (7-10)+(11-16). (BCS) ... *E.orensanzi* n. sp.

21. Branchias start before setiger 10, and ending before setiger 100 ... 22
Branchiae start before setiger 10, and extend to the end of the body ... 28

22. Antennae and tentacular cirri smooth, composite falcigers with pointed hoods ... 23
Antennae articulate, tentacular cirri articulate or smooth, composite falcigers with pointed or blunt ho ods ... 25

23. Branchiae from setiger 2, with up to 30 branchial filaments; Maxillary formula: MxII= 8+9, BMxIII= 12+0, MxIV= 8+12. (SIN, GRO) ... *E. hawaiiensis* Treadwell 1906.
Branchiae from setiger 3, with less than 20 branchial filaments ... 24

24. Branchiae with up to 17 filaments, first pair of branchiae are pectinate; subacicular hooks from setiger 25, hood of the hook covers the lateral tooth. Maxillary formula: MxII= 8+4, MxIII = 8+0, MxIV = 7+9. (BCN, BCS, SIN) ... *E. americana* Hartman 1944.
Branchiae with 10-15 filaments, first pair of branchiae simple; hood of the subacicular hook do not cover the distal part of the lateral tooth. Maxillary formula: MxII= (9-11)+(8- 11), MxIII= (8-11)+0, MxIV= (7-10)+ 13. (BCS) ... *E. indica* Kinberg 1865.

25. Tentacular cirri smooth, falcigers with pointed hoods ... 26
Tentacular cirri articulate, falcigers with blunt hoods ... 27

26. Compound falcigers with the lateral tooth reduced and the distal one straight; lateral tooth of the subacicular hook thin and pointed. Maxillary formula: MxII = 7+8, MxIII = 9+0, MxIV = 8+10. (BCN, BCS) ... *E. cedroensis* Fauchald 1970.
Compound falcigers with the lateral tooth straight, distal tooth bent; lateral tooth of the subacicular hook thick and blunt anteriorly. Maxillary formula: MxII= 9+10, MxIII= 9+0, MxIV= 10+13 (BCN, BCS, SON, SIN, GRO, IRE) ... *E. vittata* (delle Chiaje 1878).

27. Dorsal cirri with cylindrical articles; branchiae with up to 10 filaments; compound falcigers bidentate. Maxillary for. mula: MxII= 8+9, MxIII= 9+0, MxIV= 6+13. (SON) ... *E. vittatopsis* Fauchald 1970.
Dorsal cirri with moniliform articles; branchiae with up to 10-12 filaments; compound falcigers bidentate, but in some middle anterior setigers appear tridentate. Maxillary formula: MxII= 4+5, MxIII= 4+0, MxIV= 7+7. (BCS) ... *E. australis* Quatrefages 1856.

28. Tentacular cirri smooth, branchiae from setiger 6-7, first pair with 3 filaments, with up to 15 filaments, posterior segments with only one filament; subacicular hooks from setiger 15-40. Maxillary formula unknown. (BCN, BCS) ... *E. antennata aedificatrix* Monro 1933.
Tentacular cirri articulate ... 29

29. Tentacular cirri with 5 cylindrical articles; branchiae from setiger 4-6, first pair with 9 filaments, with up to 12 fila..... ments, in middle segments the branchiae are reduced to only one filament; subacicular hooks from setiger 15-24; tip of the acicula expanded, hammer-shaped. Maxillary formula: MxII= 4+6, MxII= 6+0, MxIV = 6+8 (BCN, BCS, SON, SIN, NAY, GRO, OAX, IRE, VER) ... *E. antennata* (Savigny 1820).
Tentacular cirri with 3 cylindrical articles; branchiae from setiger 5, first pair with 2 filaments, with up to 11 filaments, reduced in middle segments to 2 filaments; subacicular hooks from setiger 24; acicula distally bilobulate; composite falcigers bidentate and tridentate. Maxillary formula: MxII= 6+8, MxIII= 7+0, MxIV= 7+9. (BCS, SON, SIN, VER) ... *E. rubra* Grube 1856.

ACKNOWLEDGEMENT

I am grateful to J.M. Orensanz (CENPAT), S.I. Salazar-Vallejo (CIGRO) and V. Solís-Weiss (ICML-UNAM) for their comments and suggestions on the manuscript. The manuscript was notably improved by the comments of two anonymous reviewers. Thanks to M. Monteforte (CIB) for his help in the preparation of the English manuscript.

RESUMEN

Se describe *Eunice orensanzi* n.sp., con base en 20 especímenes colectados en la costa

occidental de Baja California Sur, México, en tres cruceros oceanográficos. Estos especímenes poseen branquias a lo largo de una corta región del cuerpo (cada una con numerosos filamentos branquiales), y falcígeros compuestos bidentados, con la cubierta roma. *E. orensanzi* está muy relacionada con *E. semisegregata*, pero difiere en algunos caracteres morfológicos, como son el número de filamentos branquiales, el contenido de los ganchos subaciculares y la fórmula maxilar. Se incluye, además, una clave a las 29 especies de *Eunice* conocidas de aguas mexicanas.

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