

Supplement to *Journal of Paleontology*  
(ISSN 0022-3360)  
JPALAZ 59(5) II 1-58, SEPTEMBER 1985

Volume 59

SEPTEMBER 1985

Supplement to No. 5

Part II of II

# JOURNAL OF PALEONTOLOGY

---

THE PALEONTOLOGICAL SOCIETY  
MEMOIR 16

---

Solitary Rugose Corals of the  
Upper Ordovician Montoya Group,  
Southern New Mexico and  
Westernmost Texas

ROBERT J. ELIAS



---

Memoirs of the Paleontological Society are occasional publications consisting of monographs and symposia that are too extensive for publication in the *Journal of Paleontology* as part of the regular issues. Ordinarily, memoirs are published as supplements to a regular issue of the *Journal*. Inquiries concerning submittal of manuscripts for inclusion in the Memoir Series may be made to the Editors of the *Journal* for the Paleontological Society.

Communications concerning the cost and availability of back numbers of the Memoir Series should be addressed to the Society of Economic Paleontologists and Mineralogists, P.O. Box 979, Tulsa, Oklahoma 74101.

---

#### OFFICERS OF THE PALEONTOLOGICAL SOCIETY

*For the year ending November 1985*

*President*

HELEN TAPPAN-LOEBLICH,  
Los Angeles, California

*President-Elect*

NORMAN SOHL Washington, D.C.

*Past-President*

WALTER C. SWEET, Columbus, Ohio

*Secretary*

JOHN POJETA, JR.,  
U.S. Geological Survey  
E-501 U.S. National Museum  
Smithsonian Institution  
Washington, D.C. 20560

*Treasurer*

ROGER L. KAESLER, Lawrence, Kansas

*Program Coordinator*

ROGER D. K. THOMAS,  
Lancaster, Pennsylvania

*Journal Co-Editors*

J. KEITH RIGBY and  
LEHI F. HINTZE, Provo, Utah

*Paleobiology Editor*

J. JACK SEPKOSKI, JR.,  
Chicago, Illinois

*Special Publications Co-Editors*

THOMAS W. BROADHEAD and  
KENNETH R. WALKER  
Knoxville, Tennessee

*Councilors*

JUNE P. ROSS, Bellingham, Washington  
JENNIFER KITCHELL, Madison, Wisconsin

*Section Chairpersons*

North-Central: ROBERT J. ELIAS  
Winnipeg, Manitoba, Canada  
Northeastern: ROBERT LINSLEY  
Hamilton, New York  
Pacific Coast: DAVID J. BOTTJER  
Los Angeles, California  
Southeastern: PATRICIA H. KELLEY  
University, Mississippi

---

The Paleontological Society

MEMOIR 16

**SOLITARY RUGOSE CORALS OF THE  
UPPER ORDOVICIAN MONTOYA GROUP,  
SOUTHERN NEW MEXICO AND  
WESTERNMOST TEXAS**

**ROBERT J. ELIAS**

Department of Earth Sciences, University of Manitoba,  
Winnipeg, Manitoba R3T 2N2, Canada

Copyright © 1985 *by*  
THE PALEONTOLOGICAL SOCIETY, INC.  
SEPTEMBER 1985

# CONTENTS

ABSTRACT .....	1
INTRODUCTION .....	1
ABBREVIATIONS .....	2
EXPLANATION OF FIGURES .....	3
MONTOYA GENERAL GEOLOGY .....	3
DISTRIBUTION .....	3
STRATIGRAPHY .....	3
DEPOSITIONAL ENVIRONMENTS .....	6
AGE AND CORRELATION .....	7
STRATIGRAPHIC SECTIONS AND INTERVALS BEARING SOLITARY RUGOSA .....	10
MONTOYA SOLITARY RUGOSA .....	11
PREVIOUS WORK .....	11
PRESENT COLLECTIONS .....	12
PRESERVATION .....	12
IDENTIFICATION AND DISTRIBUTION OF SPECIES AND ASSEMBLAGES .....	12
CORAL GROWTH, ABRASION, AND PALEOECOLOGY .....	13
ASSOCIATED EPIZOANS AND BORINGS .....	14
PALEOBATHYMETRY, PALEO GEOGRAPHY, AND PALEOENVIRONMENTS .....	14
PALEOBIOGEOGRAPHY AND EVOLUTION OF MONTOYA AND RELATED SOLITARY RUGOSA .....	16
GENERAL .....	16
<i>Streptelasma</i> .....	17
<i>Grewingkia</i> .....	17
<i>Bighornia</i> .....	18
<i>Salvadorea</i> .....	19
<i>Neotryplasma</i> .....	19
BIOSTRATIGRAPHIC IMPLICATIONS .....	20
SYSTEMATIC PALEONTOLOGY .....	23
GENUS <i>Grewingkia</i> Dybowski, 1873 .....	23
<i>G. robusta</i> (Whiteaves, 1896) .....	23
<i>G. haysii haysii</i> (Meek, 1865) .....	28
<i>G. haysii selkirkensis</i> n. subsp. ....	31
<i>G. franklinensis</i> n. sp. ....	31
<i>G. crassa alemanensis</i> n. subsp. ....	33
GENUS <i>Streptelasma</i> Hall, 1847 .....	37
<i>S. divaricans</i> (Nicholson, 1875) .....	37
GENUS <i>Bighornia</i> Duncan, 1957 .....	40
<i>B. sp. cf. B. patella</i> (Wilson, 1926) .....	40
GENUS <i>Salvadorea</i> Nelson, 1981 .....	43
<i>S. kingae kingae</i> Nelson, 1981 .....	45
<i>S. kingae cutterensis</i> n. subsp. ....	48
<i>S.?</i> sp. A .....	51
<i>S.?</i> sp. B .....	53
ACKNOWLEDGMENTS .....	54
REFERENCES .....	54

## ILLUSTRATIONS

FIGURES	1—Index map of southern New Mexico and westernmost Texas . . .	2
	2—Montoya Group stratigraphic sections and distribution of solitary Rugosa . . . . .	4
	3—North American paleobiogeographic provinces and paleogeographic features . . . . .	16
	4—Montoya Group composite section and distribution of solitary Rugosa . . . . .	20
	5, 6— <i>Grewingkia robusta</i> . . . . .	21, 22
	7—Cross-sectional dimensions in <i>Grewingkia robusta</i> . . . . .	24
	8—Number of septa in species of <i>Grewingkia</i> . . . . .	26
	9—Number of septa in species of <i>Grewingkia</i> and <i>Lobocorallium</i> . .	28
	10—Cross-sectional dimensions in species of <i>Grewingkia</i> and <i>Lobocorallium</i> . . . . .	29
	11— <i>Grewingkia franklinensis</i> . . . . .	30
	12— <i>Grewingkia crassa alemanensis</i> . . . . .	34
	13—Number of septa in <i>Grewingkia crassa</i> . . . . .	35
	14— <i>Streptelasma divaricans</i> . . . . .	36
	15—Number of septa in <i>Streptelasma divaricans</i> . . . . .	37
	16, 17— <i>Bighornia</i> sp. cf. <i>B. patella</i> . . . . .	39, 40
	18—Number of septa in <i>Bighornia</i> . . . . .	42
	19— <i>Salvadorea kingae kingae</i> . . . . .	44
	20—Number of septa in <i>Salvadorea kingae</i> . . . . .	47
	21— <i>Salvadorea kingae cutterensis</i> . . . . .	49
	22— <i>Salvadorea?</i> spp. A and B . . . . .	51
	23—Number of septa in six taxa . . . . .	52
TABLES	1—Distribution and frequency of Montoya solitary Rugosa . . . . .	8
	2—Features of Montoya solitary Rugosa . . . . .	13
	3—Length of cardinal septum in <i>Salvadorea</i> . . . . .	48