

Part III of III

# JOURNAL OF PALEONTOLOGY

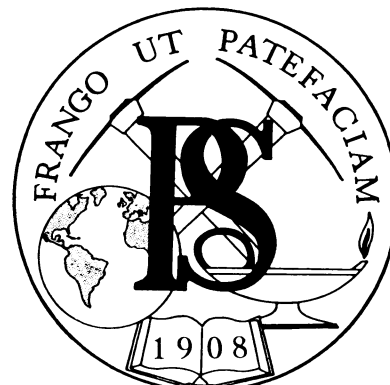
---

THE PALEONTOLOGICAL SOCIETY  
MEMOIR 35

---

Danian Mollusks from the Prince Creek Formation,  
Northern Alaska, and Implications for  
Arctic Ocean Paleogeography

LOUIE MARINCOVICH, JR.



---

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 Managing Editor of the *Journal of Paleontology*.

For information on cost and availability of back numbers of the Memoir Series, please contact: SEPM Business Office, P.O. Box 4756, Tulsa, OK 74159, for numbers 1 (1968) through 16 (1985) or *Journal of Paleontology*, P.O. Box 1897, Lawrence, KS 66044-8897, for number 17 (1986) and following.

---

## OFFICERS OF THE SOCIETY

*For the year ending November, 1993*

### *President*

RODNEY M. FELDMANN, Kent, OH

### *President-Elect*

STEVEN M. STANLEY, Baltimore, MD

### *Past-President*

ROGER L. KAESLER, Lawrence, KS

### *Secretary*

DONALD L. WOLBERG  
New Mexico Bureau of Mines  
Socorro, NM 87801

### *Treasurer*

JUNE R. P. ROSS  
Dept. of Biology  
Western Washington University  
Bellingham, WA 98225

### *Program Coordinator*

PETER M. SHEEHAN, Milwaukee, WI

### *Managing Editor*

DON C. STEINKER, Bowling Green, OH

### *Technical Editors*

RICHARD D. HOARE, Bowling Green, OH  
DAVID K. ELLIOTT, Flagstaff, AZ  
PATRICIA H. KELLEY, Grand Forks, ND  
DANIEL B. BLAKE, Urbana, IL  
ELLEN COMPTON-GOODING, Martinsville, VA  
CARL W. STOCK, Tuscaloosa, AL  
MICHAEL R. SANDY, Dayton, OH  
DONALD R. PROTHERO, Los Angeles, CA

### *Paleobiology Co-Editors*

DAVID L. MEYER and ARNOLD I. MILLER  
Cincinnati, OH

### *Special Publications Co-Editors*

S. J. CULVER, R. S. SPENCER, and C. F. KOCH  
Norfolk, VA

### *Councilors*

DAVID JABLONSKI, Chicago, IL  
FRANK M. MCKINNEY, Boone, NC

### *Section Chairpersons*

North-Central: ROY E. PLOTNICK  
Chicago, IL  
Northeastern: CATHRYN R. NEWTON  
Syracuse, NY  
Pacific Coast: MARY L. DROSER  
Riverside, CA  
Rocky Mountain: CLAUDE SPINOSA  
Boise, ID  
Southeastern: THOMAS W. BROADHEAD  
Knoxville, TN  
South-Central: ARTHUR B. BUSBEY  
Fort Worth, TX

The Paleontological Society

MEMOIR 35

**DANIAN MOLLUSKS FROM THE PRINCE CREEK FORMATION,  
NORTHERN ALASKA, AND IMPLICATIONS FOR  
ARCTIC OCEAN PALEOGEOGRAPHY**

**LOUIE MARINCOVICH, JR.**

Branch of Paleontology and Stratigraphy  
United States Geological Survey  
Menlo Park, California 94025

Copyright © 1993 by  
THE PALEONTOLOGICAL SOCIETY, INC.  
SEPTEMBER 1993

## CONTENTS

ABSTRACT .....	1	SUPERFAMILY Anomiacea Rafinesque, 1815 .....	18
INTRODUCTION .....	1	FAMILY Anomiidae Rafinesque, 1815 .....	18
GEOLOGIC SETTING .....	1	GENUS <i>Anomia</i> Linnaeus, 1758 .....	18
FAUNAL COMPOSITION .....	2	<i>Anomia?</i> sp. indet. ....	18
AGE OF THE OCEAN POINT BEDS .....	4	SUPERFAMILY Cardiacea Lamarck, 1809 .....	18
PALEONTOLOGICAL AGE ESTIMATES .....	4	FAMILY Cardiidae Lamarck, 1809 .....	18
ISOTOPIC AGE ESTIMATES .....	6	GENUS <i>Integricardium</i> Rollier, 1912 .....	18
DANIAN MOLLUSCAN PALEOBIOGEOGRAPHY AND ARCTIC OCEAN		SUBGENUS <i>Integricardium</i> Rollier, 1912 s.s. ....	18
PALEOGEOGRAPHY .....	6	<i>Integricardium (Integricardium) keenae</i> n. sp. ...	18
NORTH PACIFIC CONNECTION .....	6	GENUS <i>Protocardia</i> Beyrich, 1845 .....	18
TURGAI STRAIT, WESTERN SIBERIA .....	6	<i>Protocardia?</i> sp. indet. ....	18
NORTH AMERICAN WESTERN INTERIOR SEAWAY .....	6	SUPERFAMILY Arcticea Newton, 1891 .....	20
NORTH ATLANTIC CONNECTION .....	7	FAMILY Arcticiidae Newton, 1891 .....	20
SYSTEMATIC PALEONTOLOGY .....	8	GENUS <i>Arctica</i> Schumacher, 1817 .....	20
PHYLUM Mollusca .....	8	<i>Arctica ovata</i> (Meek and Hayden, 1857) .....	20
CLASS Bivalvia Linnaeus, 1758 .....	8	SUPERFAMILY Tellinacea Blainville, 1814 .....	20
SUPERFAMILY Nuculacea Gray, 1824 .....	8	FAMILY Tellinidae Blainville, 1814 .....	20
FAMILY Nuculidae Gray, 1824 .....	8	GENUS <i>Tellinimera</i> Conrad, 1860 .....	20
GENUS <i>Nucula</i> Lamarck, 1799 .....	8	<i>Tellinimera kauffmani</i> n. sp. ....	20
SUBGENUS Lamarck, 1799 .....	8	FAMILY Tancrediidae Meek, 1864 .....	22
<i>Nucula (Nucula) micheleae</i> n. sp. ....	8	GENUS <i>Tancredia</i> Lycett, 1850 .....	22
SUPERFAMILY Nuculanacea H. and A. Adams, 1858 .....	10	SUBGENUS <i>Tancredia</i> Lycett, 1850 s.s. ....	22
FAMILY Nuculanidae H. and A. Adams, 1858 .....	10	<i>Tancredia (Tancredia) slavichi</i> n. sp. ....	22
GENUS <i>Nuculana</i> Link, 1807 .....	10	FAMILY Psammobiidae Fleming, 1828 .....	22
SUBGENUS <i>Jupiteria</i> Bellardi, 1875 .....	10	GENUS <i>Gari</i> Schumacher, 1817 .....	22
<i>Nuculana (Jupiteria) moriyai</i> n. sp. ....	10	SUBGENUS <i>Garum</i> Dall, 1898b .....	22
GENUS <i>Yoldia</i> Möller, 1842 .....	10	<i>Gari (Garum) brouwersae</i> n. sp. ....	22
SUBGENUS <i>Cnesterium</i> Dall, 1898a .....	10	SUPERFAMILY Myacea Lamarck, 1809 .....	23
<i>Yoldia (Cnesterium) gladenkovi</i> n. sp. ....	10	FAMILY Corbulidae Lamarck, 1818 .....	23
FAMILY Mallettiidae H. and A. Adams, 1858 .....	11	GENUS <i>Corbula</i> Lamarck, 1799 .....	23
GENUS <i>Neilo</i> Adams, 1854 .....	11	SUBGENUS <i>Caryocorbula</i> Gardner, 1926 .....	23
<i>Neilo gryci</i> n. sp. ....	11	<i>Corbula (Caryocorbula) betsyae</i> n. sp. ....	23
SUPERFAMILY Mytilacea Rafinesque, 1815 .....	11	SUPERFAMILY Hiatellacea Gray, 1824 .....	26
FAMILY Mytilidae Rafinesque, 1815 .....	11	FAMILY Hiatellidae Gray, 1824 .....	26
GENUS <i>Mytilon</i> n. gen. ....	11	GENUS <i>Cyrtodaria</i> Reuss, 1801 .....	26
<i>Mytilon theresae</i> n. sp. ....	11	<i>Cyrtodaria rutupiensis</i> (Morris, 1852) .....	26
GENUS <i>Crenella</i> Brown, 1827 .....	11	<i>Cyrtodaria katieae</i> n. sp. ....	28
<i>Crenella kannoi</i> n. sp. ....	11	SUPERFAMILY Pholadomyacea Gray, 1847 .....	28
SUPERFAMILY Pectinacea Rafinesque, 1815 [emend.		FAMILY Pholadomyidae Gray, 1847 .....	28
Waller, 1978] .....	12	GENUS <i>Arcticlaim</i> n. gen. ....	28
FAMILY Pectinidae Rafinesque, 1815 .....	12	<i>Arcticlaim nanseni</i> n. sp. ....	28
GENUS <i>Camptochlamys</i> Arkell, 1930 .....	12	CLASS Gastropoda Cuvier, 1797 .....	28
<i>Camptochlamys alaskensis</i> Waller and		SUPERFAMILY Cerithiacea Férussac, 1819 .....	28
Marincovich, 1992 .....	12	FAMILY Mathildidae Cossmann, 1912 .....	28
GENUS <i>Chlamys</i> Röding, 1798 .....	13	GENUS <i>Mathilda</i> Semper, 1865 .....	28
<i>Chlamys aquilonia</i> Waller and Marincovich,		SUBGENUS <i>Fimbriatella</i> Sacco, 1895 .....	28
1992 .....	13	<i>Mathilda (Fimbriatella) amundseni</i> n. sp. ....	28
FAMILY Oxytomidae Ichikawa, 1958 .....	13	SUPERFAMILY Naticacea Forbes, 1838 .....	29
GENUS <i>Oxytoma</i> Meek, 1864 .....	13	FAMILY Naticidae Forbes, 1838 .....	29
SUBGENUS <i>Hypoxytoma</i> Ichikawa, 1958 .....	13	GENUS <i>Amauropsis</i> Mörch in Rink, 1857 .....	29
<i>Oxytoma (Hypoxytoma) hargrovei</i> n. sp. ....	13	<i>Amauropsis fetteri</i> n. sp. ....	29
FAMILY Terquemidae Cox, 1964 .....	16	GENUS <i>Polinices</i> Montfort, 1810 .....	30
GENUS <i>Placunopsis</i> Morris and Lycett, 1853 .....	16	SUBGENUS <i>Euspira</i> Agassiz in J. Sowerby, 1838 .....	30
<i>Placunopsis rothi</i> n. sp. ....	16	<i>Polinices (Euspira) repenningi</i> n. sp. ....	30
		SUPERFAMILY Philinacea Gray, 1850 .....	30

FAMILY Scaphandridae Pilsbry in Tryon, 1893	30
GENUS <i>Ellipsoscapha</i> Stephenson, 1941	30
<i>Ellipsoscapha sohli</i> n. sp.	30
ACKNOWLEDGMENTS	31
REFERENCES	31

### ILLUSTRATIONS

#### FIGURES

1—Location of major place names used in text	2
2—Location of Ocean Point beds in northern Alaska	3
3—Stratigraphic section of Ocean Point beds showing fossil localities	4
4—Chronostratigraphic ranges and paleobiogeographic affinities of age-diagnostic mollusks from the Ocean Point beds	5
5—Early Paleocene (Danian) paleobiogeography of the Arctic Ocean	7
6—Late Paleocene (Thanetian) paleobiogeography of the Arctic Ocean	7
7— <i>Nucula</i> ( <i>Nucula</i> ) <i>micheleae</i> n. sp., <i>Nuculana</i> ( <i>Jupiteria</i> ) <i>moriyai</i> n. sp., <i>Yoldia</i> ( <i>Cnesterium</i> ) <i>gladenkovi</i> n. sp.	9
8— <i>Neilo gryci</i> n. sp., <i>Mytilon theresae</i> n. sp., <i>Crenella kannoi</i> n. sp., <i>Placunopsis rothi</i> n. sp.	13

9— <i>Anomia?</i> sp. indet., <i>Placunopsis rothi</i> n. sp., <i>Camptochlamys alaskensis</i> Waller and Marincovich	15
10— <i>Chlamys aquilonia</i> Waller and Marincovich, <i>Oxytoma</i> ( <i>Hypoxytoma</i> ) <i>hargrovei</i> n. sp., <i>Integricardium</i> ( <i>Integricardium</i> ) <i>keenae</i> n. sp.	17
11— <i>Protocardia?</i> sp. indet., <i>Arctica ovata</i> (Meek and Hayden), <i>Tancredia</i> ( <i>Tancredia</i> ) <i>slavichi</i> , n. sp.	19
12— <i>Tancredia</i> ( <i>Tancredia</i> ) <i>slavichi</i> n. sp., <i>Tellinimera kauffmani</i> n. sp., <i>Gari</i> ( <i>Garum</i> ) <i>brouwersae</i> n. sp.	21
13— <i>Corbula</i> ( <i>Caryocorbula</i> ) <i>betsyae</i> n. sp.	24
14— <i>Corbula</i> ( <i>Caryocorbula</i> ) <i>betsyae</i> n. sp., <i>Cyrtodaria rutupiensis</i> (Morris)	25
15— <i>Cyrtodaria rutupiensis</i> (Morris), <i>Cyrtodaria katieae</i> n. sp., <i>Arctclam nanseni</i> n. sp.	27
16— <i>Mathilda</i> ( <i>Fimbriatella</i> ) <i>amundseni</i> n. sp., <i>Amauopsis fetteri</i> n. sp., <i>Ellipsoscapha sohli</i> n. sp., <i>Polinices</i> ( <i>Euspira</i> ) <i>repenni</i> n. sp.	29

#### TABLES

1—Marine mollusks from the Ocean Point beds	3
2—Articulated, closed bivalves in the Ocean Point fauna	3
3—Ocean Point mollusks with periostraca preserved	4