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CRETACEOUS AND JURASSIC MEGAFOSSIL COLLECTIONS, 1994-1996, TINGMERKPUK PROJECT, NORTHWEST DELONG MOUNTAINS, WESTERN ARCTIC SLOPE, ALASKA

by

William P. Elder
Consulting Paleontologist

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CRETACEOUS AND JURASSIC MEGAFOSSIL COLLECTIONS, 1995-1997, TINGMERKPUK PROJECT, NORTHWESTERN DELONG MOUNTAINS, WESTERN BROOKS RANGE, ALASKA

This report contains data on the paleontology of collections of Cretaceous and Jurassic megafossils collected at a number of localities in the foothills of the northwestern DeLong Mountains of the western Brooks Range. This study is one of a series in a project investigating the geology of the western DeLong Mountains in the western Brooks Range and Arctic Slope of northern Alaska. The objective of the project is to expand the data base for evaluation of potential hydrocarbon exploration objectives of the future on the western part of the Colville basin, including the western part of the National Petroleum Reserve, Alaska (NPRA). The project includes geologic mapping and acquisition of data concerning the stratigraphy, paleontology, organic geochemistry, and tectonic evolution of the foothills of the western DeLong Mountains .

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Additional DGGS reports in this series include:

Crowder, R. K., Adams, K.E., and Mull, C.G., 1994, Measured stratigraphic section of the Tingmerkpuk Sandstone (Neocomian), western Brooks Range, Alaska: Alaska Division of Geological and Geophysical Surveys Public-data file report 94-29, 5 p, 1 sheet.

Dow, W.G., and Talukdar, S.C., 1995, Geochemical analysis of outcrop samples, western DeLong Mountains, Brooks Range, Alaska: Alaska Division of Geological and Geophysical Surveys Public-data file report, 95-29, 40 p.

Dow, Wallace G., DGSI, Inc., 1998, Organic Geochemistry of Cretaceous, Jurassic, and Triassic Shales from the Northwestern DeLong Mountains, western Brooks Range, Alaska, 1994-1997, Alaska Division of Geological and Geophysical Surveys Public-data file report 98-35, 181 p.

Elder, William P., 1998, Cretaceous and Jurassic megafossil collections, 1995-1997, Tingmerkpuk Project, northwestern DeLong Mountains, western Brooks Range, Alaska: Alaska Div. of Geological and Geophysical Surveys Public-data file report PDF 98-38, 9 p.

Elder, William P., 1998, Report on coquinoid limestone beds of the western Arctic Slope, Alaska: Alaska Div. of Geological and Geophysical Surveys Public-data file report PDF 98-37, 16 p.

Elder, William P., and Mickey, Michael B, 1998, Tingmerkpuk River stratigraphic section, western Brooks Range, Alaska: Alaska Div. of Geological and Geophysical Surveys Public-data file report PDF 98-32, 4 p., 1 sheet.

Mickey, M.B., Haga, Hideyo, and Mull, C.G., 1995, Paleontologic data: Tingmerkpuk Sandstone and related units, northwestern DeLong Mountains, Brooks Range, Alaska: Alaska Division of Geological and Geophysical Surveys Public-data file report 95-31, 42 p.

Mickey, M.B. and Hideyo Haga, Micropaleo Consultants, Inc., 1998, Micropaleontology of Cretaceous and Jurassic shales from the northwestern DeLong Mountains, western Brooks Range, Alaska, 1996-1997, Alaska Division of Geological and Geophysical Surveys Public-data file report PDF 98-34, 193 p.

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Reifenstuhl, R.R., Wilson, M.D., and Mull, C.G., 1998, Petrography of the Tingmerkpuk Sandstone (Neocomian), northwestern Brooks Range, Alaska: A preliminary study, in Clough, J.G., (editor), Short Notes on Alaska Geology, 1997, Alaska Division of Geological and Geophysical Surveys Professional Report PR 118 (in press).

Wartes, Marwan A., 1998, Stratigraphy, organic geochemistry, and structural implications of Upper Jurassic to Lower Cretaceous rocks at Surprise Creek, northwestern DeLong Mountains, Brooks Range, Alaska: Alaska Division of Geological and Geophysical Surveys Public-data file report PDF 98-__, 17 p. and 35 p. appendices, (in press).

Wartes, M.A., and Reifenstuhl, R.R.,1998, Preliminary petrography and provenance of six Lower Cretaceous sandstones, northwestern Brooks Range, Alaska, in Clough, J.G., (editor), Short Notes on Alaska Geology, 1997, Alaska Division of Geological and Geophysical Surveys Professional Report PR 118 (in press).

Additional background information concerning this project has been presented by:

Crowder, R. K., Mull, Charles G. (Gil), and Adams. Karen E., 1995, Lowstand depositional systems related to Early Cretaceous rifting of the Arctic Alaska plate: A new stratigraphic play on Alaska's North Slope (abstract): 1995 Abstracts with Program, Pacific Section AAPG/SEPM meeting, San Francisco, May 3-5, 1995, p. 29.

Grow, J.A., Miller, J.J., Mull, C.G. and Bird, K.J., 1995, Seismic stratigraphy near the Tunalik well, North Slope, Alaska (abstract): 1995 Abstracts with Program, Pacific Section AAPG/SEPM meeting, San Francisco, May 3-5, 1995, p. 33.

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Mull, C. G., Reifenstuhl, R.R., Harris, E.E,, and Crowder, R.K, 1995, Neocomian source and reservoir rocks in the western Brooks Range and Arctic Slope, Alaska (abstract): 1995 Abstracts with Programs, Pacific Section AAPG/SEPM meeting, San Francisco, May 3-5, 1995, p. 41.

Mull, C. G., Crowder, R.K, and Reifenstuhl, R.R., 1995, Exploration frontiers in Neocomian sandstones in northwest Alaska (abstract): 1995 Abstracts with Programs, Cordilleran Section, Geological Society of America meeting, Fairbanks, Alaska, May 24-26, 1995, p. 66.

Mull, C.G., 1997, Exploration Frontiers In Neocomian to Upper Jurassic sandstones, National Petroleum Reserve in Alaska (NPRA) (abstract): Alaska Geological Society newsletter, vol. 26, no. 10, May 1997

Wartes, Marwan A., 1997, Mesozoic stratigraphy at Surprise Creek: Preliminary evidence for anomalous Brookian tectonism and burial history, northwestern Brooks Range, Alaska (abstract): 1997 Abstracts with Programs, Geological Society of America annual meeting, Salt Lake City, can be viewed on World Wide Web atwww.geosociety.org/cgi-bin/config/doc.pl?beginqry.htm~7777777,search for Surprise Creek.

Additional reports in preparation include:

Murphy, John, 1998, Apatite fission-track data, 1994 and 1996 samples, Tingmerkpuk project: Alaska Division of Geological and Geophysical Surveys Public-data file report, PDF 98-__.

Nilsen, T.N., Myers, Mark, and Moore, T.N., 1998, Re-evaluation of the depositional environment of the Tingmerkpuk Sandstone (Neocomian), northwestern DeLong Mountains: Alaska Division of Geological and Geophysical Surveys Public-data file report, PDF 98- __.

C.G. Mull
Project leader
April 6, 1998

DGGS SAMPLE NO.	COLLECTOR	FORMATION	LOCATION	QUADRANGLE	FOSSILS	AGE	COMMENTS	LAT	LONG
94 MU 44	C.G. Mull	Tingmerkpuk Sandstone	Kukpowruk River	DeLong Mountains B2	*Buchia sublaevis* Keyserling	Early Valanginian	Base of Tingmerkpuk Ss	68 485	-162 857
94 Mu 53	C.G. Mull	Tingmerkpuk Sandstone	Ilingnorak Ridge	Misheguk Mountain C5	*Buchia sublaevis* Keyserling	Early Valanginian	Shell beds in sandstone matrix contain almost exclusively juvenile shells 3-6mm diam., rare adults present to 20 mm diam., may indicate hydraulic size sorting. Shells may be predominantly oriented concave up.	68.727	-161.338
94 Mu 54	C.G. Mull	Lower Brookian	Iligluruk Creek	Misheguk Mountain C5	Inoceramid ?, plant ?	Unknown		68 689	-161 549
94 Mu 57	C.G. Mull	Kingak Shale	Kukpowruk River, near VABM Redwul	DeLong Mountains C2	*Buchia rugosa* (Fischer) *Buchia sublaevis* Keyserling	Kimmeridgian Early Valanginian	Concretions, float	68 722	-163 210
94 Mu 59	C.G. Mull	Kingak Shale	Pitmegea River tributary	DeLong Mountains C3	*Buchia sublaevis* Keyserling	Early Valanginian		68 611	-163 847
94 Mu 64	C.G. Mull	Tingmerkpuk Sandstone	Tingmerkpuk Mountain	DeLong Mountains C1	*Buchia sublaevis* Keyserling	Early Valanginian	Float	68 566	-162 473
94 Mu 65-12	C.G. Mull	Kingak Shale, coquinoid limestone	Thetis Creek	DeLong Mountains C5	*Buchia sublaevis* Keyserling	Early Valanginian	Unit 12 of 1996 Thetis Creek measured section Specimens from red shale bed Mostly juveniles ? 5 mm diameter, rare specimens to 10 mm diam No preferred orientation of specimens	68 634	-164 751
94 Mu 65-12	C.G. Mull	Kingak Shale, coquinoid limestone	Thetis Creek	DeLong Mountains C5	*Buchia sublaevis* Keyserling Belemnite (*Cylindroteuthis ? sp.*)	Early Valanginian	Belemnite is only macrofossil other than Buchias found in the coquinoid limestone interval	68 634	-164.751
94 Mu 72	C.G. Mull	Pebble Shale	Ipewik River	DeLong Mountains C5	Ammonite, indeterminate.	Indeterminate	Does not show bifurcating ribs that are typical of most ammonites of Oxfordian to Tithonian (U Jur.) age in Alaska. Contains probable Neocomian foraminifera and Hauterivian to Albian palynomorphs. Contains floating quartz grains.	68 577	-164.429
96 Mu 28	C.G. Mull	Kingak Shale	Upper Ipewik River	DeLong Mountains C3	*Buchia sublaevis* Keyserling	Early Valanginian	Specimens in coquinoid limestone. Mostly adult specimens, most appear to be concave up. Shells appear to have been nestled and then compacted and deformed to form distorted fabric	68.551	-163 652
96 Mu 52	C.G. Mull	Kingak Shale	Ipewik River, Horseshoe Bend	DeLong Mountains C4	*Lima* sp. *Buchia* cf. *rugosa* (Fischer)	Kimmeridgian	Buchia is worn and broken in umbonal region Contains Oxfordian palynomorphs.	68.613	-164 176
96 FC 15	Fran Cole	Okpikruak Formation	Chevron Hill, north side	DeLong Mountains B2	*Buchia* sp., probably *Buchia sublaevis* Keyserling	Oxfordian to Valanginian	Poorly preserved	68.460	-162 660
96 FC 17-D	Fran Cole	Okpikruak Formation	Chevron Hill, south side	DeLong Mountains B2	*Buchia sublaevis* Keyserling	Early Valanginian		68 455	-162.623
96 MAW 3	M. A. Wartes	Tingmerkpuk Sandstone	Tingmerkpuk Mountain	DeLong Mountains B2	*Buchia sublaevis* Keyserling	Early Valanginian	Multiple specimens preserved on single bedding plane with hummocky cross stratification. Specimens are not size sorted and show no preferred orientation	68 570	-162.660
96 TM 66-D	Tom Moore	Mt. Kelly Graywacke	Eagle Creek anticlinal nose	DeLong Mountains D2	*Paleodictyon* sp.		Trace fossil, indicative of bathyal to abyssal environments, typical of flysch facies. Not present in neritic environments (Seilacher, 1967).	68.769	-162.637

NOTE: Table compiled by C.G. Mull, 2/9/98

MEGAFOSSIL IDENTIFICATIONS

Sample: 94 Mu 44 Kukpowruk River Base of Tingmerkpuk Ss

Fossils present: *Buchia sublavis*

Age Early Valanginian

Sample: 94 Mu 53 Ilingnorak Ridge Tingmerkpuk Ss
(94 PD 15-A)
Fossils present: Buchia sublaevis Keyserling

Age: Early Valanginian
Remarks: Shell beds in sandstone matrix contain almost exclusively juvenile shells (3-6 mm diameter). Rare adults present to 20 mm diameter. May indicate hydraulic size-sorting? Shells may be predominantly oriented concave-up.

Samples: 94 Mu 54 Iligluruk Creek Brookian undifferentiated

Fossils present: Inoceramid ? Plant ?

Age: Unknown

Sample: 94 Mu 57 Kukpowruk R., near VABM Redwul Kingak Shale concretions, float

Fossils present: *Buchia rugosa* (Fischer)
Buchia sublaevis Keyserling

Age: Kimmeridgian
Early Valanginian

Sample: 94 Mu 59 Pitmegea River tributary Kingak Shale, coquuinoid limestone

Fossils present: *Buchia sublaevis* Keyserling

Age: Early Valanginian

Sample: 94 Mu 64 Tingmerkpuk Mountain Tingmerkpuk Ss., float
(94 PD 45-C)
Fossils present: *Buchia sublaevis* Keyserling

Age: Early Valanginian

Sample: 94 Mu 65 Unit 12 of Thetis Creek measured section

Fossils present: *Buchia sublaevis* Keyserling

Age: Early Valanginian

Remarks: Specimens from red shale bed. Mostly juveniles 2-5 mm in diameter, rare specimens to 10 mm diameter. No preferred orientation of specimens.

Sample: 94 Mu 65 Unit 17 of Thetis Creek measured section

Fossils present: *Buchia sublaevis* Keyserling
Belemnite (*Cylindroteuthis*? sp.)

Age: Early Valanginian

Remarks: This is the only fossil macrofossil other then *Buchia sublaevis* found in the coquinoid limestone interval.

Sample: 94 Mu 72 Ipewik River, organic shale

Fossils present: Ammonite indeterminate

Age: Unknown

Remarks: This small fragment of an ammonite does not show bifurcating ribs (at least on the portion preserved) that are typical of most ammonites of Oxfordian to Tithonian age in Alaska. Unfortunately the fragment is too small to identify with any certainty.

Sample: 96 Mu 28 Upper Ipewik River

Fossils present: *Buchia sublaevis* Keyserling

Age: Early Valanginian

Remarks: Specimens in coquinoid limestone. Mostly adult specimens, appears to be concave-up. Shells appear to have been nestled and then compacted and deformed to form a distorted frabic.

Sample: 96 Mu 52 Horse Shoe Bend Kingak Shale

Fossils present: *Lima* sp.
Buchia cf. *rugosa* Fischer

Age: Kimmeridgian?

Remarks: The Buchia is worn and broken in umbonal region, but has the outline and radial ornament suggestive of Buchia rugosa.

Sample: 96 TM 66-D Noes of Eagle Creek

Fossils present: *Paleodictyon* sp.

Remarks: This trace is indicative of bathyal to abyssal environments and typical of flysch facies. is not found in neritic environments (Seilacher, 1967).

Samples: 96 FC 15 North side of Chevron Hill

Fossils present: *Buchia* sp.

Age: Oxfordian - Valanginian

Remarks: This specimen is probably *Buchia sublaevis* (Early Valanginian), but it is too poorly preserved for positive identification.

Samples: 96 FC 17D South side of Chevron Hill

Fossils present: *Buchia sublaevis* Keyserling

Age: Early Valanginian

Remarks: Specimens scattered in sample.

Samples: 96 MAW 3 Tingmerkpuk Mountain

Fossils present: Buchia *sublaevis* Keyserling

Age: Early Valanginian

Remarks: *Buchia* are preserved on a single bedding plane associated with hummocky cross-stratification. Specimens are not size sorted and show no preferred orientation.