

CORRELATION OF MAP UNITS

Symbol	Age	Period
Qa, Qd, Qm, Qs, Qts, Qus, Qus, Qus	Holocene	QUATERNARY
Unconformity		
Tp	Pleistocene to Oligocene (?)	QUATERNARY AND TERTIARY
Tr	Miocene and Oligocene (?)	
Tp, Tr	Oligocene	
Te	Oligocene and Eocene	
Tc	Oligocene (?) and Eocene	TERTIARY
Tsu	Eocene	
Tec, Tsc, Ttr, Tts	Eocene (?) and Paleocene	
Mts, Mvs, Mms, Mss	Upper Cretaceous	CRETACEOUS
Td	Pliocene (?)	
Tm	Oligocene (?)	TERTIARY
Ts	Eocene	

SYMBOLS

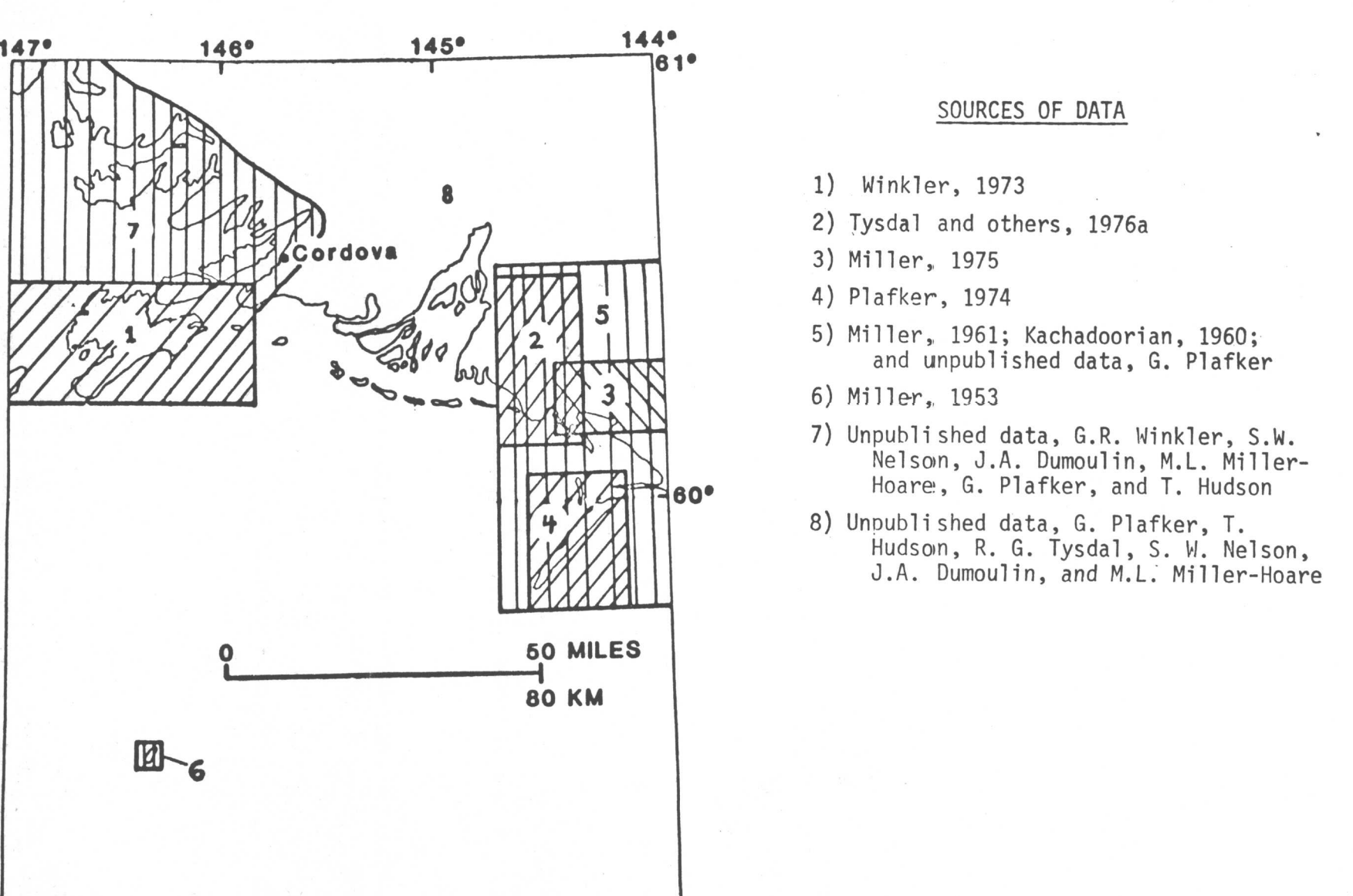
- Contact, showing dip; dotted where concealed
- Fault, showing dip; dashed and overlined where probable, dotted where concealed; U, upthrown side, D, downthrown side; arrows indicate relative lateral movement
- Concealed thrust fault (bars on upper plate)
- Lineament, possibly a fault, but not identified on ground
- Anticline, showing trace and plunge of axial plane and dip of limbs; dotted where concealed
- Overturned anticline, showing trace and plunge of axial plane and dip of limbs
- Syncline, showing trace of axial plane and direction of plunge; dotted where concealed
- Overturned syncline, showing trace and plunge of axial plane and dip of limbs
- Multiple overturned folds, showing trace of axial plane and dip of limbs
- Inverted anticline, showing trace and plunge of axial plane and dip of limbs
- Inverted syncline, showing trace of axial plane and dip of limbs
- Strike and dip of beds
- Inclined (barb indicates top not known)
- Vertical (90 on up side, where known)
- Variable, showing average strike and dip
- Overturned
- Horizontal
- Strike and dip of cleavage or foliation
- Inclined
- Vertical
- Direction and plunge of lineations
- Bedded rocks
- Foliated rocks
- Fissure (bar and ball on down-dropped side)
- Area of abundant oil and gas seeps (Katalla area)
- Area of magnetite injection gneiss
- Line of structure section
- Dry exploratory well (44 shallow wells drilled between 1901 and 1932 in Katalla area are not shown)
- Fossil locality (number refers to Table 1)
- K-Ar age locality (number refers to Table 2)
- Aeromagnetic contours (offshore only; contoured at 200, 300, and 400 gammas above arbitrary datum)

Table 1. Description of fossil localities in the Orca Group shown on the map.

No. Locality	Identification	Identified by	Location	Age	References
1	Pelecypoda: <i>Sitta batesi</i> (Dowling) <i>Sitta batesi</i> sp. nov. <i>Sitta batesi</i> sp. nov. <i>Sitta batesi</i> sp. nov. <i>Sitta batesi</i> sp. nov.	F. S. Moulton F. S. Moulton	North of Galena Bay, 1901 locality # 2003 60°30'N, 140°15'W	Early Paleocene	Plafker and Miller, 1961; Moulton and Plafker, 1974
2	Foraminifera: <i>Elphidium</i> sp. cf. <i>E. sp.</i> <i>Elphidium</i> sp. cf. <i>E. sp.</i> <i>Elphidium</i> sp. cf. <i>E. sp.</i> <i>Elphidium</i> sp. cf. <i>E. sp.</i>	M. V. Kaska	Johnstone Point, 1901 locality # 2004 60°30'N, 140°15'W	Paleocene-early Eocene	Winkler, 1973
3	Foraminifera: <i>Elphidium</i> sp. cf. <i>E. sp.</i> <i>Elphidium</i> sp. cf. <i>E. sp.</i> <i>Elphidium</i> sp. cf. <i>E. sp.</i> <i>Elphidium</i> sp. cf. <i>E. sp.</i>	M. V. Kaska	See Section 1901 locality # 2005 60°30'N, 140°15'W	Late Paleocene-early Eocene	Winkler, 1973
4	Foraminifera: <i>Elphidium</i> sp. cf. <i>E. sp.</i> <i>Elphidium</i> sp. cf. <i>E. sp.</i> <i>Elphidium</i> sp. cf. <i>E. sp.</i> <i>Elphidium</i> sp. cf. <i>E. sp.</i>	M. V. Kaska	See Section 1901 locality # 2006 60°30'N, 140°15'W	Paleocene	Winkler, 1973
5	Foraminifera: <i>Elphidium</i> sp. cf. <i>E. sp.</i> <i>Elphidium</i> sp. cf. <i>E. sp.</i> <i>Elphidium</i> sp. cf. <i>E. sp.</i> <i>Elphidium</i> sp. cf. <i>E. sp.</i>	M. V. Kaska	See Section 1901 locality # 2007 60°30'N, 140°15'W	Paleocene-early Eocene	Winkler, 1973
6	Foraminifera: <i>Elphidium</i> sp. cf. <i>E. sp.</i> <i>Elphidium</i> sp. cf. <i>E. sp.</i> <i>Elphidium</i> sp. cf. <i>E. sp.</i> <i>Elphidium</i> sp. cf. <i>E. sp.</i>	M. V. Kaska	North of Galena Bay, 1901 locality # 2008 60°30'N, 140°15'W	Paleocene-early Eocene	G. Plafker, unpublished data
7	Echinoids: <i>Stictocentrotus</i> sp. <i>Stictocentrotus</i> sp. <i>Stictocentrotus</i> sp. <i>Stictocentrotus</i> sp. <i>Stictocentrotus</i> sp.	J. A. Barron I. G. Hartman	Shattered Peak, 1901 locality # 2009 60°30'N, 140°15'W	Late Cretaceous-Eocene	Plafker, 1968
8	Diatoms: <i>Thalassiosira</i> sp. <i>Thalassiosira</i> sp. <i>Thalassiosira</i> sp. <i>Thalassiosira</i> sp. <i>Thalassiosira</i> sp.	J. A. Barron	Rugged Mountain, 1901 locality # 2010 60°30'N, 140°15'W	Late Paleocene-early Eocene	Tysdal and others, 1976a

Table 2.—Stratigraphic data for intrasite igneous rocks from the Cordova and Middleton Island quadrangles.

Map No.	Field No.	Latitude	Longitude	Assumed method	t_2 (10 ³ yr)	t_1 (10 ³ yr)	t_2 (10 ³ yr)	t_1 (10 ³ yr)	Distance (km)
INTRASITE ROCKS									
1	72AP222C	60°42'	144°50'	Whole-rock	0.575	0.508	0.574	0.29	50.3 ± 1.3
1	72AP222C	60°42'	144°50'	Whole-rock	0.515	0.515	0.515	0.29	53.2 ± 1.4
2	47M1	60°30'	144°30'	Whole-rock	0.850	0.860	0.860	0.28	51.4 ± 2.0
3	72AP220B	60°30'	144°15'	Whole-rock	0.292	0.288	0.288	0.12	50.4 ± 1.5
4	72AP220C	60°30'	144°15'	Whole-rock	0.71	0.715	0.715	0.28	50.9 ± 1.5
5	72AP212C	60°20'	144°15'	Whole-rock	0.288	0.288	0.288	0.28	55.3 ± 1.4
ANALYSIS BY U.S. GEOLOGICAL SURVEY. Presentation estimates by late laboratory, ages analyzed by J. G. W. Evans, M. S. Cambridge, M. Williams.									
*Statistical model: $t_1 = 0.575 \pm 0.010$ yr, $t_2 = 0.715 \pm 0.010$ yr, $t_3 = 0.860 \pm 0.010$ yr, $t_4 = 0.288 \pm 0.010$ yr.									
METAMORPHIC ROCKS									
6	72AP212A	60°20'	144°15'	Whole-rock	0.085	0.085	0.085	0.239	47.4 ± 1.4
Analysis by the Geochemical Laboratory of the Department of Geology, University of Alaska, Fairbanks. Ages recalculated using the constants above.									
Mylonite									
7	72AP212A	60°20'	144°15'	Whole rock	0.557	0.557	0.557	0.28	51.2 ± 1.3
Analysis by Southern Laboratory Services, Sausalito, California, Inc. Ages recalculated using the constants above.									

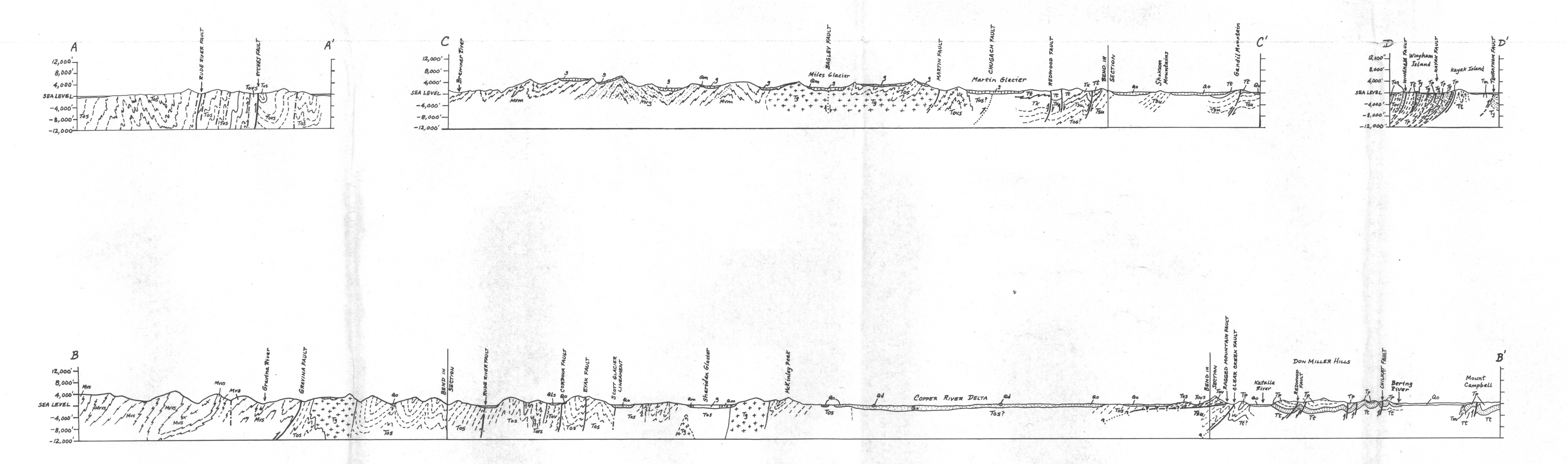


Sheet from 1:50,000 Topographic Series: HADLEYVILLE, 1955; KODUNA, 1959; 100' TO 100'.

SCALE 1:50,000

Compiled from unpublished mappings by George Plafker (1963-4, 1967, 1971-4); G. R. Winkler (1971-2, 1974); S. W. Nelson (1974, 1980-1); J. G. Case (1980); J. A. Dumoulin (1980-1); R. G. Greene (1972); Travis Hudson (1973-4); M. L. Miller-Hoore (1980-1); and R. G. Tysdal (1973-4).

This map is preliminary and has not been reviewed for conformity with U.S. Geological Survey editorial standards and stratigraphic nomenclature.



GEOLOGIC MAP AND CROSS-SECTIONS OF THE
CORDOVA AND MIDDLETON ISLAND QUADRANGLES, SOUTHERN ALASKA

By
G. R. Winkler and George Plafker