

STEPOVAK FORMATION  
(OLIGOCENE)

PRELIMINARY TERTIARY MOLLUSCAN BIOSTRATIGRAPHY  
OF THE ALASKA PENINSULA, SOUTHWESTERN ALASKA

by  
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This report summarizes the stratigraphic occurrence, age and general correlations of Tertiary marine mollusks that have been collected from nine measured stratigraphic sections and numerous spot samples on the Alaska Peninsula and adjacent islands of southwestern Alaska. The paleontological and biostratigraphic data presented here are intended to supplement the meager information previously reported from this region. This progress report is presented for the purpose of making available biostratigraphic data that have accumulated in U. S. Geological Survey collections since the only previous overview of Alaska Peninsula Tertiary molluscan faunas, by F. S. MacNeil (in Burk, 1965). The senior author collected the majority of the specimens reported on here and is responsible for taxonomic identifications. All fossil localities are prefixed with an "M," indicating that they are housed in U. S. Geological Survey collections in Menlo Park, California.

It must be emphasized that this is a progress report. The senior author is currently making detailed biostratigraphic and faunal studies of the Alaska Peninsula Tertiary molluscan sequence that will undoubtedly modify some of the results presented here.

Mollusk-bearing Tertiary marine strata crop out along both the Bering Sea and Pacific sides of the Alaska Peninsula. Most such outcrops occur along or adjacent to coastlines or on neighboring Pacific islands (Burk, 1965). This belt of discontinuous outcrops extends about 560 km, from just south of Port Heiden (latitude 56°55'N, longitude 158°41'W) to the distal end of the Alaska Peninsula (latitude 54°48'N, longitude 163°20'W.) (Burk, 1965; McLean et al., 1978; McLean, 1979; Marinovich, 1983; Marinovich and McCoy, 1984). Tertiary marine molluscan faunas in this region range in age from late middle Eocene to late Miocene, although the stratigraphic sequence containing them is incomplete. Tertiary marine microfossils and terrestrial plant megafossils are known from the Alaska Peninsula (Burk, 1965), but mollusks have provided the principal means of dating and correlating Alaska Peninsula Tertiary strata.

Tertiary mollusks of the Alaska Peninsula were first noted by Grewingk (1850), from strata now assigned to the Bear Lake Formation (Burk, 1965; Marinovich, 1988a). Dall (1896, 1904) was the first scientist to personally collect Tertiary fossils from this region, and also was the first to attempt dating them by relating the taxa to faunas in the U. S. Pacific Northwest (Dall, 1904). A long hiatus in molluscan studies of this region was broken by a summary of Alaska Peninsula Cenozoic mollusks by F. S. MacNeil in the monumental reconnaissance study of the Alaska Peninsula by Burk (1965). Since then, Tertiary mollusks have been described or recognized from occasional finds made in the course of geological field work (MacNeil, 1970, 1973; Allison and Addicott, 1976; Lyle et al., 1979; Lindberg and Marinovich, 1988; Marinovich, 1981, 1988a). Tachilini Formation mollusks were monographed by Marinovich (1988b, 1983), and Tolstoi Formation mollusks were described and illustrated by Marinovich (1988a, 1983), and Tolstoi Formation mollusks were described and illustrated by Marinovich (1988a, 1983). Taxa from several formations were included in monographs of the bivalves *Mya* (MacNeil, 1965) and *Pectinidae* (MacNeil, 1967) and the gastropod family *Neptunidae* (Nelson, 1974). Allison (1978) provided a useful summary of Gulf of Alaska Cenozoic molluscan faunas, including those from the Alaska Peninsula.

The oldest Tertiary marine mollusks of the Alaska Peninsula are in the Tolstoi Formation, which contains plant megafossils of Paleocene and possibly earliest Eocene age (Burk, 1965). The Tolstoi marine facies was recently dated as late middle Eocene in age by species-level correlations with faunas of California, Washington, Kamchatka and Chukotka (Marinovich, 1988a). The Stepovak Formation was considered to be of late Eocene and Oligocene age by MacNeil (in Burk, 1965) and Marinovich and McCoy (1984), but was found to contain only Oligocene mollusks in this study. The Bear Lake Formation is challenging to date because of abundant endemic species. However, comparisons with eastern Asian faunas have recently yielded more precise dating from some Bear Lake outcrops, including the oldest ones of early middle Miocene age (Marinovich and McCoy, 1984; Marinovich and Kase, 1986; Marinovich, 1988a, b, c). The precise placement of the youngest Bear Lake faunas within the late Miocene is still uncertain. The Tachilini Formation is known to be of late Miocene age based on numerous species that co-occur in faunas of the U. S. Pacific Northwest and eastern Asia (Marinovich, 1983).

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TOLSTOI FORMATION  
(EOCENE)

1 TOLSTOI TYPE SECTION  
(UPPER MIDDLE EOCENE)

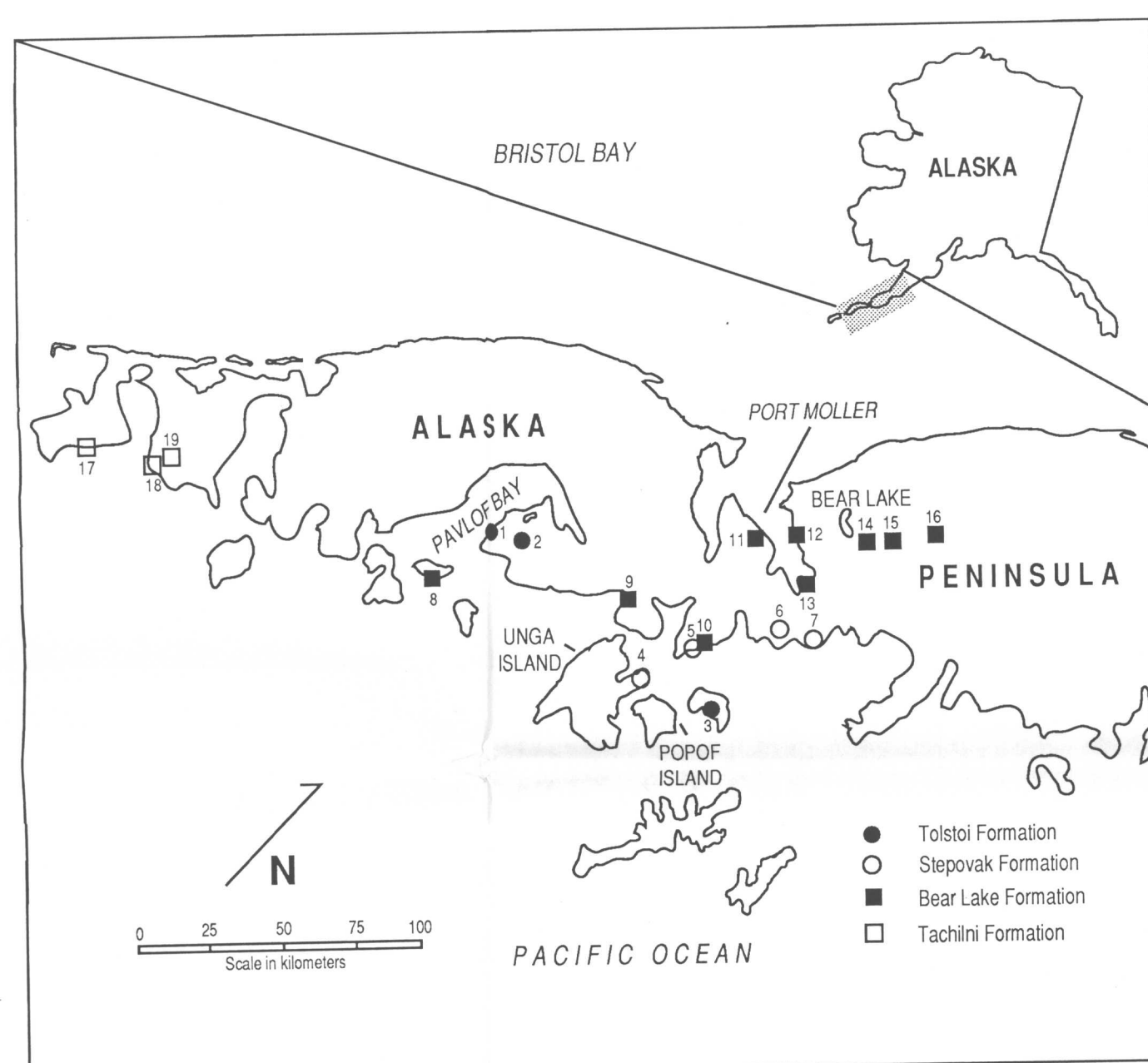
Locality number	M1108	M1109	M1170	M1189	M8052	M8379	M8380	M8382	M8384	M8020
<b>Taxa:</b>										
<i>Bivalvia:</i>										
<i>Acanthocardia breweri</i> (Gabb)	x	x	x	x	x	x	x	x	x	x
<i>Brachidontes coveyensis</i> (Weaver & Palmer)	x	x	x	x	x	x	x	x	x	x
<i>Cardium</i> sp. indet.	x	x	x	x	x	x	x	x	x	x
<i>Glycymeris sagittata</i> (Gabb)	x	x	x	x	x	x	x	x	x	x
<i>Microstomatia coronata</i> (Gabb)	x	x	x	x	x	x	x	x	x	x
<i>Neulana</i> sp. indet.										
<i>Osinea</i> sp. indet.										
<i>Solenia</i> sp. indet.										
<i>Solenia</i> sp. indet.										
<i>Tellina</i> sp. indet.										
<i>Venericardia clarki</i> (Weaver & Palmer)	x	x	x	x	x	x	x	x	x	x
<i>Gastropoda:</i>										
<i>Cyrtina</i> sp. indet.	x	x	x	x	x	x	x	x	x	x
<i>Fusina</i> sp. indet.	x	x	x	x	x	x	x	x	x	x
<i>Naticidae</i> genus indet.	x	x	x	x	x	x	x	x	x	x
<i>Trochidae</i> sp. indet.	x	x	x	x	x	x	x	x	x	x
<i>Turritella uvulana stewarti</i> Merriam	x	x	x	x	x	x	x	x	x	x

2 HUMPY CREEK SPOT SAMPLE  
(UPPER MIDDLE EOCENE)

Locality number	M8385
<b>Taxa:</b>	
<i>Bivalvia:</i>	
<i>Cardium</i> sp. indet.	x
<i>Neulana</i> sp. indet.	x
<i>Solenia</i> sp. indet.	x
<i>Tellina</i> sp. indet.	x
<i>Venusta</i> sp. indet.	x
<i>Gastropoda:</i>	
<i>Cyrtina</i> sp. indet.	x
<i>Fusina</i> sp. indet.	x
<i>Naticidae</i> genus indet.	x
<i>Turridae</i> genus indet.	x

3 KOROVIN ISLAND SPOT SAMPLES  
(UPPER MIDDLE EOCENE)

Locality number	M1105	M8339	M8041
<b>Taxa:</b>			
<i>Bivalvia:</i>			
<i>Coeloceras</i> sp. indet.	x	x	x
<i>Trochus</i> sp. indet.	x	x	x
<i>Gastropoda:</i>			
<i>Turritella uvulana stewarti</i> Merriam	x	x	x



INDEX MAP SHOWING LOCATION OF MEASURED SECTIONS AND SPOT SAMPLES.

4 WEST HEAD SECTION  
(LOWER OLIGOCENE)

West Head  
(after Burk, 1965)

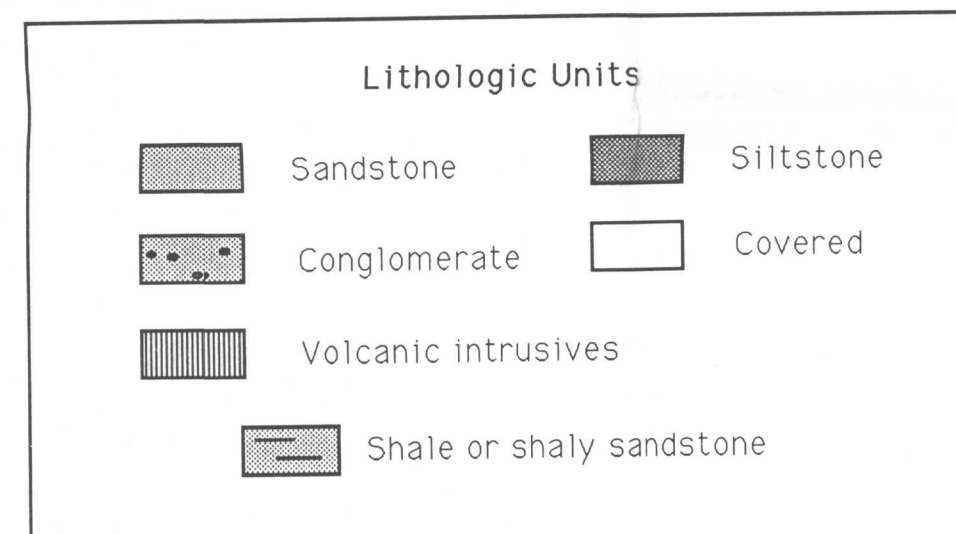
Locality number	M8030	M8031	M8032
<b>Taxa:</b>			
<i>Bivalvia:</i>			
<i>Actia</i> sp. indet.	x	x	x
<i>Chlamys</i> sp. indet.	x	x	x
<i>Macoma</i> sp. indet.	x	x	x
<i>Castra gachemina</i> Krištobovich	x	x	x
<i>Papyroscia harizani</i> Dall	x	x	x
<i>Pododemus</i> sp. indet.	x	x	x
<i>Tagelus</i> sp. indet.	x	x	x
<i>Trochus</i> sp. indet.	x	x	x
<i>Venericardia</i> sp. indet.	x	x	x
<i>Gastropoda:</i>			
<i>Callipteria alaskana</i> (Dall)	x	x	x
<i>Crepidula unguata</i> Dall	x	x	x
<i>Fusina</i> sp. indet.	x	x	x
<i>Neveitia quadrifrons</i> (Weaver)	cf	cf	cf
<i>Whitneyella sinuata anagomae</i> Turner	cf	cf	cf

6 CHICHAGOF PEAK SECTION  
(OLIGOCENE)

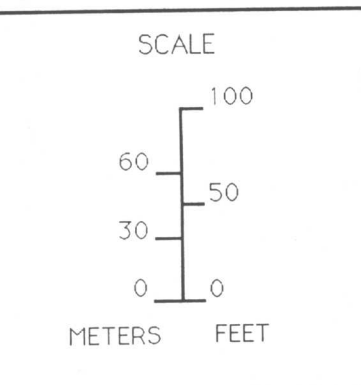
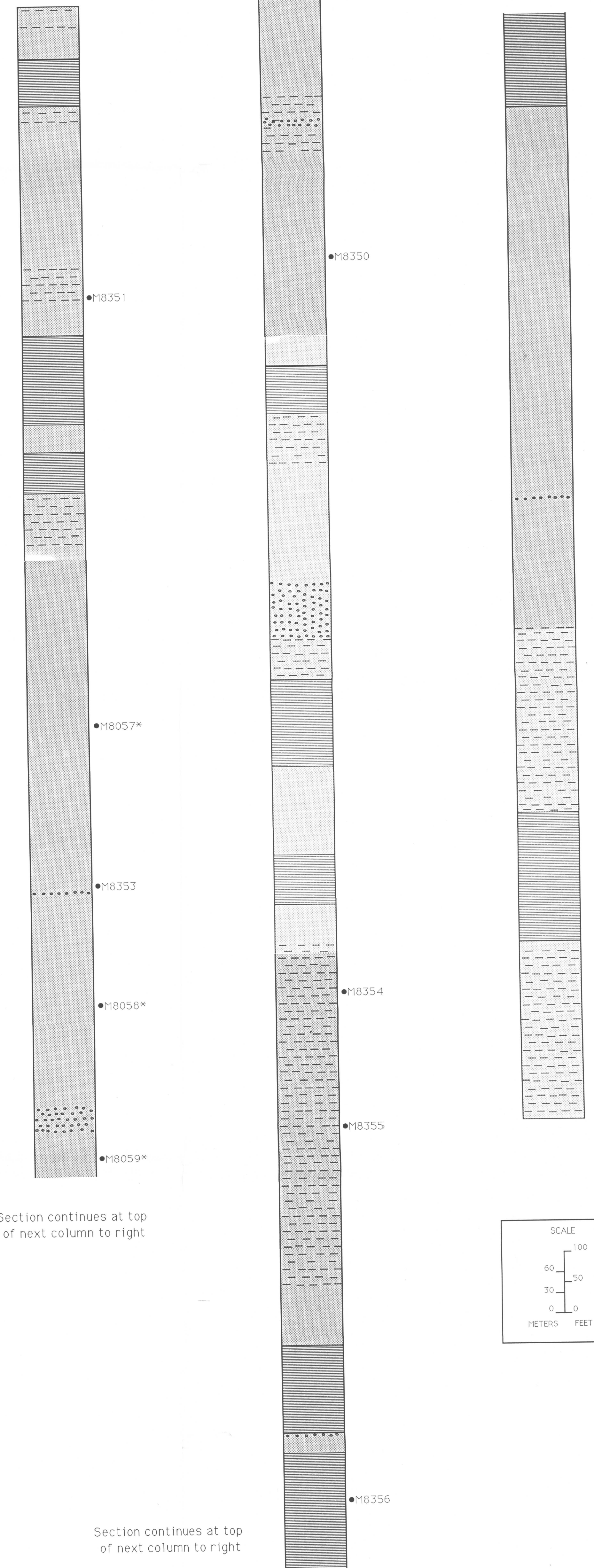
Locality number	M8057	M8058	M8059	M8349	M8350	M8351	M8353	M8354	M8355	M8356
<b>Taxa:</b>										
<i>Bivalvia:</i>										
<i>Actia</i> sp. indet.	x	x	x	x	x	x	x	x	x	x
<i>Mya</i> sp. indet.	x	x	x	x	x	x	x	x	x	x
<i>Castra gachemina</i> Krištobovich	x	x	x	x	x	x	x	x	x	x
<i>Pectinid</i> indet.	x	x	x	x	x	x	x	x	x	x
<i>Spiraea callistiformis</i> Conrad	x	x	x	x	x	x	x	x	x	x
<i>Spiraea</i> sp. indet.	x	x	x	x	x	x	x	x	x	x
<i>Uros</i> sp. indet.	x	x	x	x	x	x	x	x	x	x
<i>Yoldia breweri</i> Dall	x	x	x	x	x	x	x	x	x	x
<i>Yoldia palachei</i> Dall	x	x	x	x	x	x	x	x	x	x
<i>Gastropoda:</i>										
<i>Crepidula</i> sp. indet.	x	x	x	x	x	x	x	x	x	x
<i>Naticidae</i> genus indet.	x	x	x	x	x	x	x	x	x	x
<i>Trochidae</i> genus indet.	x	x	x	x	x	x	x	x	x	x

STEPOVAK FORMATION SPOT SAMPLES  
(OLIGOCENE)

Locality number	M8391	M8376
<b>Taxa:</b>		
<i>Bivalvia:</i>		
<i>Mya kasumensis</i> Nagao & Inoue	x	x
<i>Mya</i> sp. indet.	x	x
<i>Castra gachemina</i> Krištobovich	x	x
<i>Pectinid</i> indet.	x	x
<i>Spiraea callistiformis</i> Conrad	x	x
<i>Uros</i> sp. indet.	x	x
<i>Yoldia breweri</i> Dall	x	x



Chichagof Peak Section



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