

Fauna of the Lower Ordovician Al Rose Formation, Mazourka Canyon, Inyo County, California

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Abstract. Two new fossiliferous localities of the Lower Ordovician Al Rose Formation occur in Mazourka Canyon, Inyo Mountains, east-central California. A diverse fauna of graptolites, inarticulate brachiopods, trilobites, gastropods and pelmatozoans suggests mixing of two separate, original biotic communities. Presence of benthic/nektobenthic and planktic taxa indicates the paleogeographic position of the North American continental shelf-edge in the northern Mazourka Canyon area during the Early Ordovician.

INTRODUCTION

The Lower Ordovician Al Rose Formation is a rock unit of shale and silty shale with minor limestone beds that crop out discontinuously along a NW-SE belt for about 50 km (30 mi) in the Inyo Mountains, east-central California [Ross, 1966]. In the northern Mazourka Canyon area, the formation is interpreted as a shelf-edge deposit [Stevens, 1984, 1986]. General faunal lists of several graptolite, trilobite, and brachiopod species presented in Ross [1963, 1965, 1966] support this interpretation. The only other report of fossils in the formation are the two crinoid species described by Ausich [1986] from approximately 1 km (0.6 mi) south of the present study area in Mazourka Canyon.

LOCATION AND METHODS

The two localities in northern Mazourka Canyon are present on the United States Geological Survey, Mazourka Peak, California, 7.5-min quadrangle, 1982 edition. All rock samples at the localities that contained any organic remains were collected, regardless of the fragmentary condition of the fossils. This method of sampling resulted in the discovery of numerous taxa not previously known from the formation. All collected specimens were deposited in the University of California, Museum of Paleontology (UCMP). A complete faunal list from both localities, plus geographic coordinates is shown in Table 1.

TABLE 1

UCMP 11000 ¹	UCMP 11001 ²
Brachiopods <i>Lingulella</i> sp.	Brachiopods <i>Lingulella</i> sp.
Trilobites ³ <i>Globampyx</i> sp. <i>Peraspis</i> ?	Trilobites ³ <i>Globampyx trinucleoides</i> <i>G.?</i> cf. <i>trinucleoides</i> <i>Peraspis</i> cf. <i>P. erugata</i> <i>P. n. sp.</i> (?) <i>P. sp.</i> <i>Arthrorhacus</i> sp. <i>Hypermeccaspis brevifrons</i>
Graptolites ⁴ <i>Tetragraptus bigsbyi</i> <i>Phyllograptus anna</i> <i>Didymograptus protobifidus</i> <i>/bifidus</i>	Graptolites ⁴ <i>Tetragraptus bigsbyi</i> <i>T. reclinatus</i> <i>T. serra</i> <i>Phyllograptus anna</i> <i>P. ilicifolius</i> <i>Didymograptus protobifidus</i> <i>/bifidus</i> <i>D. protoindentus</i> <i>D. nitidus</i> (?)
smooth indet. gastropods round pelmatozoan columnals <i>Chondrites</i> conularids?	smooth indet. gastropods round pelmatozoan columnals star pelmatozoan columnals <i>Chondrites</i> conularids?
¹ 36° 57' 37" N, 118° 05' 08" W; UTM coord. = 11SML03269082 ² 36° 57' 35" N, 118° 05' 09" W; UTM coord. = 11SML03229075 ³ Identifications by Rueben R. Ross, Jr. ⁴ Identifications by William B. N. Berry	

Table 1. Faunal list for the Lower Ordovician Al Rose Formation, UCMP localities 11000 and 11001, northern Mazourka Canyon, Inyo Mountains, east-central California.

sition to the asaphid (trilobites with flattened shell margins) community described and figured from Great Britain in McKerrow [1973, p. 70-72, Figure 6].

The graptolites constitute a separate, planktic community. Death of the graptolite colonies and subsequent sinking through the water column produced the final, mixed assemblage. Similar assemblages have been recognized in Ordovician rocks in the eastern United States [Walker, 1980]. Such fossil assemblages are used to determine the paleogeographic position of the continental shelf-edge. This corroborates the sedimentological evidence [Stevens, 1984, 1986] of the Ordovician North American continental shelf-edge in the Mazourka Canyon area with the Pacific basin to the west.

AGE

The presence of well-preserved graptolites is particularly important as they hold biostratigraphic primacy in Ordovician rocks worldwide. Ordovician graptolites of western North America have a mature taxonomy and zonation [Cooper *et al.*, 1991] and are present in abundance at both UCMP localities, establishing an Early Ordovician, Ibexian Age (W. B. N. Berry, pers. comm., 1991). Correlation is with the zone 6—*Didymograptus protobifidus* zone of Marathon, West Texas [Berry, 1960].

DISCUSSION AND CONCLUSIONS

Taphonomic and paleoecologic studies of the UCMP collections of R. Hanger and E. Strong (in prep.) suggest that the fauna consists of a mixed assemblage from at least two original biotic communities. The benthic and nekto-benthic taxa (*i.e.*, inarticulate brachiopods, trilobites, gastropods, pelmatozoans) are members of one community which is similar in structure and composition

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