

PRELIMINARY ORDOVICIAN TRILOBITE BIOSTRATIGRAPHY OF THE EDDIES
COVE WEST - PORT AU CHOIX AREA, WESTERN NEWFOUNDLAND

by

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INTRODUCTION

The Cambrian-Ordovician carbonate deposits of the Great Northern Peninsula are the object of a continuing regional taxonomic-biostratigraphic study aimed at correlating western Newfoundland trilobite faunas with the standard Cambrian and Ordovician trilobite zonal schemes of North America (Palmer, 1977; Ross, 1951; Hintze, 1953). This report focusses on new Ordovician trilobite collections obtained by the author in September 1982 while acting as field assistant to Knight (this volume), who measured detailed lithostratigraphic sections in the Eddies Cove West - Port au Choix area. Close to one hundred fossiliferous horizons were sampled for trilobites. The information obtained by the author expands, updates and modifies the work of Boyce (1978, 1979, in preparation) and Fortey (1979) and allows their respective biostratigraphic sections to be linked for the first time. In addition, the faunal gap recorded by Boyce (1978, 1979, in preparation) at Boat Harbour is now shown to be recognizable at Eddies Cove West as well.

LITHOSTRATIGRAPHY

See Knight (this volume) for a detailed discussion of the lithostratigraphy. Of interest here are Ordovician rock units belonging to the Boat Harbour, Catoche and Aguathuna Formations (Units 6, 7 and 8, Knight, this volume) of the St. George Group.

BIOSTRATIGRAPHY - THE SEQUENCE OF
TRILOBITE FAUNAS

Unit 6

Along the coast south of Squid Cove and north of Fish Point, beds assigned to Unit 6 have yielded the trilobite

Hystriocurus oculilumatus Ross (1951) in association with rare straight cephalopods and the planispiral gastropod *Lecanospira*. *Hystriocurus oculilumatus* Ross and *Lecanospira* have also been obtained from a roadside quarry along the Viking Trail, 4 km north of the junction with the road to Port Saunders.

At Fish Point, Unit 6a has yielded the trilobites *Parahystriocurus* cf. *P. carinatus* Ross (1951) and ?*Paraplethopeltis* sp.. The species *Parahystriocurus carinatus* Ross occurs in the Early Ordovician Ross-Hintze Zone E in Utah (Ross, 1951).

In the vicinity of Eddies Cove West at Old Man Cove, an incompletely exposed dolomitized interval occurs near the top of Unit 6b. In the equivalent sequence at Barbace Point, Port au Choix Peninsula, Knight (this volume) has identified two sequences that contain numerous white to vitreous blue quartz-lined spherical vugs. A solution surface has also been identified at the top of the second sequence. This dolomitized interval is believed to be stratigraphically equivalent to that in Boat Harbour containing the "pebble bed" disconformity of Knight (1977, 1978, 1980), Boyce (1978, 1979, in preparation) and Stouge and Boyce (in press).

In Eddies Cove West, twenty-one fossiliferous horizons were sampled in Unit 6b below the Old Man Cove dolomitized interval. The following trilobites were obtained: *Hystriocurus* sp. nov. 1 (Boyce, in preparation), "*Parabellefontia*" sp. (Boyce, in preparation), *Hystriocurus oculilumatus* Ross, *Parahystriocurus* sp. nov. (Boyce, in preparation), *Leiostegium* sp. nov. (Boyce, in preparation), *Tesselacauda* cf. *T. depressa* Ross sensu Demeter (1973), *Paraplethopeltis seelyi* (Whit-

field, 1889), *Hystericurus* sp. nov. 2 and *Hyperbolochilus* sp. nov. (Boyce, in preparation). Associated with these trilobites were brachiopods (*Diaphelasma*, orthids), cephalopods (*Bassleroceras*), echinoderms (eocrinoid debris) and gastropods (*Ecculiomphalus*, *Lecanospira*). The same fauna occurs below the Boat Harbour "pebble bed". *Hystericurus oculilunatus* Ross occurs in Early Ordovician Ross-Hintze Zones E and F in Utah (Ross, 1951; Hintze, 1953; Terrell, 1973) while *Tesselacauda depressa* Ross sensu Demeter is apparently restricted to Zone E (Demeter, 1973).

Above the Old Man Cove dolomitized interval, four fossiliferous horizons were sampled in Unit 6b. The following trilobites were collected: *Bolbocephalus* sp. nov. 1 (Boyce, in preparation), *Isoteloides peri* Fortey (1979), *Bolbocephalus convexus* (Billings, 1865), *Benthomaspis* sp. nov. (Boyce, in preparation; the same species as unassigned pygidium of Hintze, 1953; pl. XV, figs. 18a,b), *Hystericurus* sp. nov. 3 (possibly the same species as undetermined pygidium of Hintze, 1953; pl. XX, figs. 14a,b), *Bathyrina* sp. nov. (Boyce, in preparation; the same species as Genus et sp. indet. II of Poulsen, 1946; pl. XXIII, fig. 10 only) and *Bathyurellus abruptus* Billings (1865). The species *Benthomaspis* sp. nov. (Boyce, in preparation) occurs in the Early Ordovician Ross-Hintze Zone G₂, as possibly does *Hystericurus* sp. nov. 3. On the north side of Barbace Cove on the Port au Choix Peninsula, six fossiliferous horizons from this interval yielded only *Isoteloides veri* Fortey.

The Significance of the Old Man Cove Dolomitized Interval

The incompletely exposed Old Man Cove dolomitized interval separates Zone E-F and Zone G₂ trilobite faunas. Zone G₁ faunas are apparently absent, as is the case farther north in the Boat Harbour area where the "pebble bed" discontinuity of Knight (1977, 1978, 1980),

Boyce (1978, 1979, in preparation), and Stouge and Boyce (in press) also separates Zone E-F and Zone G₂ trilobite faunas. The magnitude of the faunal gap may be different in Eddies Cove West, however.

Unit 7

In the Eddies Cove West area, forty-one fossiliferous horizons were sampled in Unit 7 and the following trilobites obtained: *Isoteloides veri* Fortey, *Bolbocephalus convexus* (Billings), *Hystericurus* sp. nov. 3, *Bathyrina* sp. nov. (Boyce, in preparation), *Bathyurellus abruptus* Billings, *Peltabellia* cf. *P. willistoni* Lochman (1966), *Petiturus* cf. *P. groenlandicus* Poulsen (1937), *Uromystrum affine* (Poulsen, 1937), *Petiturus nero* (Billings, 1865), *Grinnellaspis* sp. nov. (Boyce, in preparation), *Benthomaspis* sp. undet., *Ischyrotoma* sp. undet., *Benthomaspis conica* Fortey (1979), *Striagenalis caudata* (Billings, 1865), *Isoteloides latimarginatus* Fortey (1979), *Punka flabelliformis* Fortey (1979), *Ischyrotoma anataphra* Fortey (1979), *Uromystrum* sp. nov. 1, *Bathyrina timon* (Billings, 1865), *Catochia ornata* Fortey (1979), *Strotactinus insularis* (Billings, 1865), *Benthomaspis gibberula* (Billings, 1865), *Bolbocephalus* sp. nov. 2 (= Genus et sp. ind. Poulsen, 1937; pl. 8, fig. 2), *Uromystrum* sp. nov. 2 (Boyce, in preparation; = *Uromystrum* cf. *affine*, Fortey, 1979), *Bathyurellus platypus* Fortey (1979), and *Catochia glabra* Fortey (1979). A Ross-Hintze Zone G₂ age is suggested by the species *Hystericurus* sp. nov. 3 (Boyce, this report) and *Benthomaspis conica* (Fortey, 1979, p. 102). A Zone H age is also indicated by the presence of *Benthomaspis gibberula* (Billings), which Fortey (1979, p. 101-102) has identified from that zone in Utah (i.e. *B. distinctus* Young, 1973, p. 98; pl. 1, figs. 9-17).

On the north side of Barbace Cove on the Port au Choix Peninsula, seven fossiliferous horizons were sampled in

Unit 7. The following trilobites were collected: *Isoteloides peri* Fortey, *Benthamaspis* sp. nov. (Boyce, in preparation), *Ischyrotoma* sp. undet., *Hystericurus* sp. nov. 3, *Bathyurina* sp. nov. (Boyce, in preparation), *Bolbocephalus convexus* (Billings), *Peltabellia* cf. *P. willistoni* Lochman, *Grinnellaspis* sp. nov. (Boyce, in preparation), *Petiquirus* cf. *P. groenlandicus* Poulsen, *Petiquirus nero* (Billings), *Benthamaspis conica* Fortey and *Strigigenalis caudata* (Billings). The species *Hystericurus* sp. nov. 3, *Benthamaspis* sp. nov. (Boyce, in preparation) and *Benthamaspis conica* Fortey suggest only a Ross-Hintze Zone G₂ age for the rocks exposed here. On the south side of Barbace Cove, however, Fortey (1979, p. 63, fig. 11) has identified in Unit 7 the Zone H species *Carolinites genacinaca nevadensis* Hintze (1953) and *Benthamaspis gibberula* (Billings). Here, Fortey (1979) sampled thirteen fossiliferous horizons.

Unit 8

At Back Arm in Port au Choix, Unit 8 has yielded the trilobite *Bathyurus perplexus* Billings (1865) of probable early Middle Ordovician age. It was previously unknown from this locality.

SUMMARY

Below the incompletely exposed dolomitized interval in the Eddies Cove West - Port au Choix area, Unit 6 is of Early Ordovician Ross-Hintze Zone E-F age. Above this interval, however, Unit 6 is of Early Ordovician Zone G₂ age. Zone G₁ trilobite faunas are apparently absent, as is the case farther north in the Boat Harbour area. The magnitude of the faunal gap in the Eddies Cove West - Port au Choix area may be different, however. Unit 7 is of Early Ordovician Ross-Hintze Zone G₂-H age and Unit 8 is, at least in its uppermost part, of probable early Middle Ordovician age.

The information obtained by the author from the continuous Eddies Cove West section will allow a comprehensive Ordovician trilobite biostratigraphic zonation for western Newfoundland to be erected from the non-overlapping biostratigraphic sections of Boyce (in preparation) and Fortey (1979).

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