

TABLE DR1. FORAMINIFERAL DISTRIBUTION AND OCCURRENCES AT BRUN CREEK

| Sample interval (m) | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 27.3 | 28.3 | 29 | 30 | 31 | 32 | 33 | 34 | 34.15 | 34.2 | 34.5 | 35 | 35.5 | 36 | 36.5 | 37 | 37.5 | 38 | 38.5 | 39 | 39.5 | 40 | 40.5 | 41 |
|--|---|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|------|------|----|----|----|----|----|----|-------|------|------|----|------|----|------|----|------|----|------|----|------|----|------|----|
| Stratigraphic unit | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Barren of foraminifera | B | B | B | B | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Foraminiferal species | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Placostammina</i> sp. | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Spiroplectammina</i> <i>ammovitrea</i> | R | R | A | R | R | F | R | R | C | F | C | R | R | F | R | F | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Vermiculinoides perplexus</i> | R | R | A | R | R | C | | R | R | R | F | R | R | R | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Ammodiscus</i> sp. | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Haplophragmoides</i> <i>topagorukensis</i> | R | R | | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Haplophragmoides</i> spp. | R | | | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Reophax vasiformis</i> | R | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Saccammina</i> sp. | R | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Placostammina elongata</i> | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Textularia topagorukensis</i> | R | R | C | R | R | | R | | R | R | | R | R | | R | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Glomospira</i> sp. | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Placostammina lathrami</i> | R | | | R | R | R | R | R | R | R | R | R | R | R | R | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Trochammina rainwateri</i> | R | | | | R | | | R | R | R | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Trochammina rutherfordi</i> | R | R | | R | R | R | R | R | R | R | R | R | R | R | R | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Trochammina</i> spp. | R | | | | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Hyperammina erugata</i> | | | | | | | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Flabellammina</i> <i>hendersonensis</i> | | | | | | | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Saccammina alexanderi</i> | | | | | | | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Bathysiphon</i> spp. | | | | | | | R | | | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Placostammina</i> spp. | | | | | | | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Reophax</i> sp. | | | | | | | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Haplophragmoides</i> cf. <i>spiritense</i> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Hedbergella loetterlei</i> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Hedbergella delrioensis</i> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Heterohelix globulosa</i> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Miscellaneous components | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Fish remains | X | X | X | X | X | X | X | X | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Algal cysts | X | X | X | X | X | X | X | X | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Lignite | | | | | | | | | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | | | | | | | |
| Inoceramus prisms | | | | | | | | | | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | | | | | | | |
| Pyrite rods | | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Notes: R—rare (1–5 specimens), F—few (6–10 specimens), C—common (11–20 specimens), A—abundant (21–100 specimens), F—flood (>100 specimens), X—present.

TABLE DR2. FORAMINIFERAL DISTRIBUTION AND OCCURRENCES AT HIGHWOOD RIVER

| Sample interval (m) | 0.8 | 0.1 | 0.21 | 0.44 | 0.9 | 1.65 | 3.6 | 4.38 | 5.08 | 5.35 | 5.9 | 6.55 | 7.8 | 9.4 | 10.9 | 12.4 |
|---|------------|-----|------|------|-----|------|------------------|------|------|------|-----|------|-----|---------------|------|------|
| Stratigraphic unit | Mill Creek | | | | | | Barons Sandstone | | | | | | | Sunkay Member | | |
| Barren of foraminifera | B | | | | | | | | | | | | | | | |
| Foraminiferal species | | | | | | | | | | | | | | | | |
| Questionable aggl. forams | R | R | R | R | | | R | | R | | | | | | | |
| ? <i>Haplophragmoides</i> spp. | | R | R | R | | R | | | R | R | | | | | | |
| <i>Saccammina alexanderi</i> | | | R | | | | | | | | | R | | | | |
| <i>Hippocrepina</i> sp. | | | | | R | | | | | | | | | | | |
| <i>Saccammina</i> spp. | | | | | | R | | | R | | | | | | | |
| ? <i>Trochammina</i> sp. | | | | | | R | | | | | | | | R | | |
| <i>Tritaxia</i> sp. | | | | | | | R | | | | | | | | | |
| <i>Verneuilinoides</i> sp. | | | | | | | | R | | | | | | | | |
| <i>Bathysiphon</i> sp. | | | | | | | | | R | | | | | | | |
| <i>Gaudryina</i> sp. | | | | | | | | | | R | | | | | | |
| <i>Spiroplectammina</i> sp. | | | | | | | | | | R | | | | | | |
| <i>Textularia</i> sp. | | | | | | | | | | R | | | | | | |
| <i>Gaudryina spiritense</i> | | | | | | | | | | | R | R | | F | | |
| <i>Haplophragmoides</i> cf. <i>howardense</i> | | | | | | | | | | R | R | | | | | |
| <i>Miliammina ischnia</i> | | | | | | | | | | | R | | | | | |
| <i>Spiroplectammina ammovitrea</i> | | | | | | | | | | | R | R | | R | | |
| <i>Trochammina rutherfordi</i> | | | | | | | | | | | F | R | | | | |
| <i>Verneuilinoides perplexus</i> | | | | | | | | | | | C | R | F | F | | |
| <i>Gaudryina canadensis</i> | | | | | | | | | | | R | F | | | | |
| <i>Haplophragmoides</i> sp. | | | | | | | | | | | | R | | | | |
| <i>Trochammina rainwateri</i> | | | | | | | | | | | | R | | | | |
| <i>Uvigerammina</i> sp. | | | | | | | | | | | | | R | | | |
| Miscellaneous components | | | | | | | | | | | | | | | | |
| Fish remains | | X | | | X | | X | X | X | X | X | X | X | X | X | X |
| Algal cysts | | | X | | X | | | | | | | | | | | |
| Lignite | | | | X | | | X | | | | | | | | | |

Note: See Table DR1 for explanation of abundance coding.

TABLE DR3. FORAMINIFERAL DISTRIBUTION AND OCCURRENCES AT GHOST RIVER

| Sample number | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|------------------------------|---|---|---|------------------|---|---|---|---|---|-----------|----|
| Stratigraphic unit | | | | Barons Sandstone | | | | | | Sunkay M. | |
| Foraminiferal species | | | | | | | | | | | |
| ?Ammobaculites sp. | R | R | | | | | | | | | |
| Gaudryina spiritense | R | | R | | R | | | | R | | R |
| Haplophragmoides spp. | R | R | | R | R | | | R | | | F |
| Saccammina alexanderi | R | R | R | | | R | | | R | | |
| Tritaxia sp. | F | R | | | | | | | | | |
| Vemeulinoides perplexus | C | F | R | | R | R | R | F | F | R | R |
| Vemeulina sp. | | | R | | | R | | R | R | | R |
| Spiroplectammina ammonitrea | | | | R | | | | | | F | |
| Ataxophragmidae, unspecified | | | | R | | | F | F | | | |
| Bathysiphon sp. | | | | | R | | | | | | |
| Brachysiphon sp. | | | | | | R | R | | | | |
| Reophax incompta | | | | | | R | | R | | | |
| Pseudobolivina variana | | | | | | | | R | R | | |
| Trochammina rutherfordi | | | | | | | | R | | | |
| Trochammina spp. | | | | | | | | R | | R | R |
| Gaudryina canadensis | | | | | | | | R | | | |
| Hyperammina sp. | | | | | | | | | R | | |
| Miliammina sp. | | | | | | | | | | R | |
| Textularia sp. | | | | | | | | | | R | |
| Miscellaneous components | | | | | | | | | | | |
| Lignite | X | X | X | | X | | X | X | | | |
| Fish remains | X | X | X | X | X | | X | X | | | |

Note: See Table DR1 for explanation of abundance coding.

TABLE DR4. FORAMINIFERAL DISTRIBUTION AND OCCURRENCES AT CRIPPLE CREEK

Note: See Table DR1 for explanation of abundance coding. F.S.—Fish Scales Formation

TABLE DR5. FORAMINIFERAL DISTRIBUTION AND OCCURRENCES AT CADOMIN

| Sample interval (m) | 3.6 | 3.85 | 3.93 | 4.63 | 5.7 | 6.3 | 7.93 | 8.93 | 8.93 | 11 | 31.6 | 32.83 | 33.53 | 35.13 | 36.63 | 38.83 | 39.93 | 41.13 | 41.18 | 42.13 | 43 | 44.2 | 44.4 | 45.4 | 46.4 | 47.4 | 48.4 | 49.4 | 50.4 | | | | | | |
|---|------|--------------------|------|------|-----|-----|------|------|------|----|------|-------|-------|-----------------------|-------|-------|-------|-------|-------|-------|----|------|------|-------------------------|------|------|------|------|------|---|---|--|--|--|--|
| Stratigraphic unit | M.P. | Westgate Formation | | | | | | | | | | | | Fish Scales Formation | | | | | | | | | | Belle Fourche Formation | | | | | | | | | | | |
| Barren of foraminifera | B | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Foraminiferal species | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Ataxophragmiidae</i> , unspecified | F | C | | C | F | R | | R | | | F | R | R | F | F | F | | | | | | | | | | | | R | | | | | | | |
| <i>Haplophragmoides</i> spp. | F | F | F | F | | | F | R | | R | R | R | R | R | F | R | | R | R | R | | | | | | F | R | R | R | | | | | | |
| <i>Saccammina</i> spp. | R | R | F | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Verneuilina canadensis</i> | R | | R | R | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Ammobaculites</i> sp. | | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Miliammina manitobensis</i> | R | R | R | F | | | R | R | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Reophax</i> sp. | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Ammobaculites fragmentarius</i> | | C | F | F | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Placentammina fathrami</i> | | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Reophax incompta</i> | | R | | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Trochammina</i> spp. | R | | R | | | | | | | | | | | | | | | | | | | | | | | | | R | R | | | | | | |
| <i>Gaudryina spiritense</i> | | R | | | | | | | | | R | R | R | R | R | | | | | R | R | F | R | R | | | | | | | | | | | |
| <i>Gravellina chamneyi</i> | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Ammobaculites tyrelli</i> | | R | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Haplophragmoides</i> cf. <i>gilberti</i> | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Placentammina</i> sp. | R | | | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Reophax tundraensis</i> | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Miliammina awunensis</i> | | R | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Psamminopelta brownsberi</i> | R | | R | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Miliammina</i> sp. | | R | | | | | | | | | R | R | R | R | R | | | | | | | | | | | | | | | | | | | | |
| <i>Saccammina alexanderi</i> | | R | | | | | R | | | | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | R | | | | | |
| <i>Gaudryina hectori</i> | | | | | | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Haplophragmoides</i> topagorukensis | | | | | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Textularia</i> cf. <i>alcesensis</i> | | | | | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Ammobaculites pacalis</i> | | | | | | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Miliammina ischnia</i> | | | | | | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Ammomarginulina</i> <i>asperata</i> | | | | | | | R | R | R | | | | | R | | | | | | | | | | | | | | | | | | | | | |
| <i>Haplophragmoides</i> cf. <i>crickmayi</i> | | | | | R | | | | | | R | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Reophax</i> sp. | | | | | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Textularia</i> <i>alcesensis</i> | | | | | R | | | | | | | R | | | R | | | | | | | | | | | R | | | | | | | | | |
| <i>Verneuilinoides perplexus</i> | | | | | | | R | R | | | R | C | C | F | F | R | R | F | F | | R | F | | | | | | | | | | | | | |
| <i>Tritaxia pyramidata</i> var. <i>diminuta</i> | | | | | | | R | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Tritaxia</i> sp. | | | | | | | | R | R | | F | R | | | | R | R | | R | R | | R | R | | | | | | | | | | | | |
| ? <i>Ammobaculites</i> sp. | | | | | | | | R | | R | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Ammobaculites</i> cf. <i>obliquus</i> | | | | | | | | | R | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Gaudryina</i> sp. | | | | | | | | | | R | | | | | R | R | R | | | | | | | | | | | | | | | | | | |
| <i>Haplophragmoides</i> <i>howardense</i> | | | | | | | | | | | | | | | | | | | | | | | | | F | | R | | | | | | | | |
| <i>Haplophragmoides</i> <i>spiritense</i> | | | | | | | | | | | | | | | | | | | | | | | | F | | | | | | | | | | | |
| <i>Bathysiphon</i> sp. | | | | | | | | | | | | | | | | | | | | | | | | | F | | | | | | | | | | |
| <i>Haplophragmoides</i> cf. <i>pacalis</i> | | | | | | | | | | | | | | | | | | | | | | | | R | | | | | | | | | | | |
| Miscellaneous components | | | | | | | | | | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | | |
| Fish remains | | | | | | | | | | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | | | | |

Note: See Table DR1 for explanation of abundance coding. M.P.—???