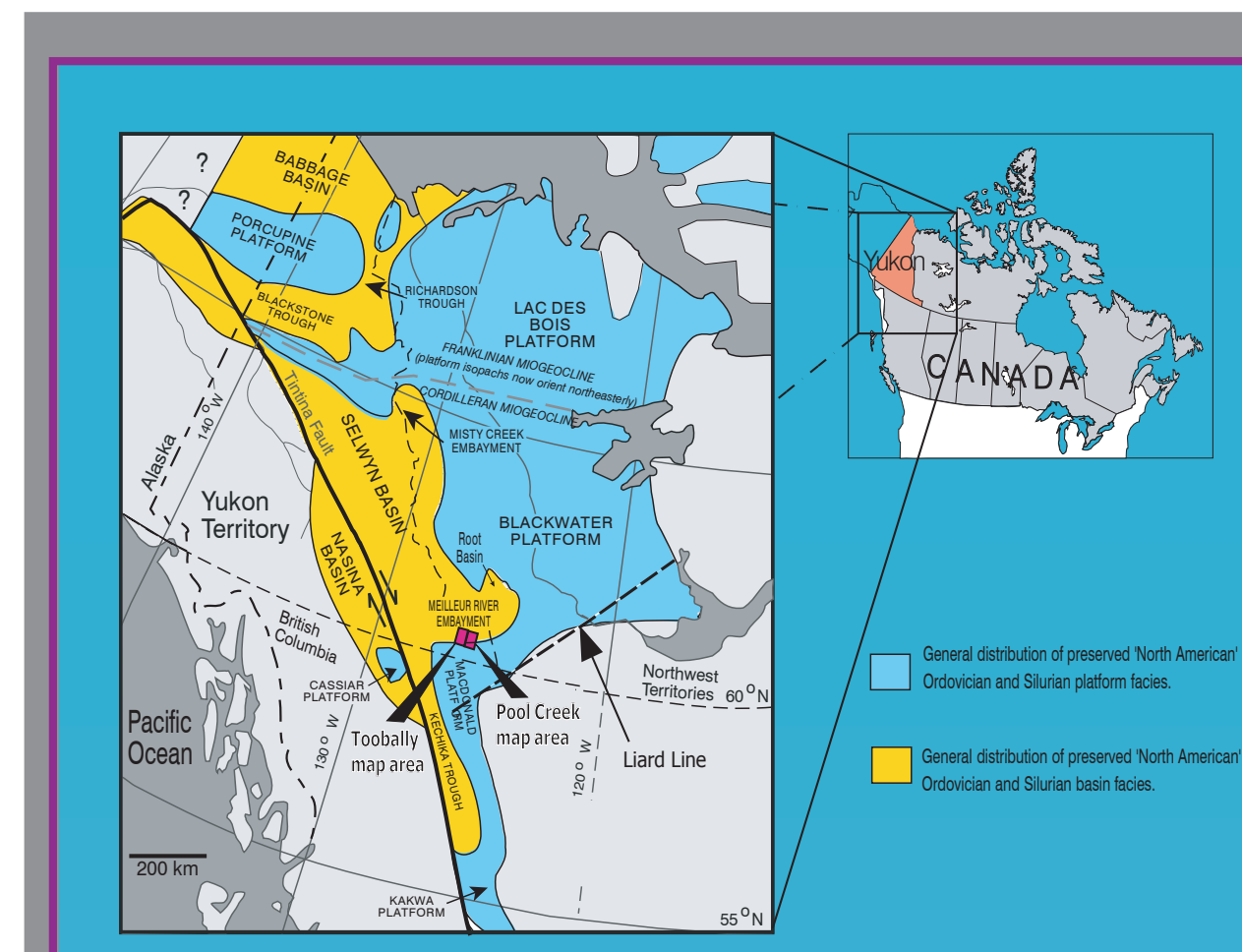

BABBAGE BASIN
PORCUPINE PLATFORM
RICHARDSON TROUGH
BLACKSTONE TROUGH
LAC DES BOIS PLATFORM
FRANKLINIAN MIOGEOCLINE
CORDILLERAN MIOGEOCLINE
MISTY CREEK EMBAYMENT
SELWYN BASIN
NASINA BASIN
BLACKWATER PLATFORM
Root Basin
MEILLEUR RIVER EMBAYMENT
Alaska
Yukon Territory
British Columbia
CASSIAR PLATFORM
Pacific Ocean
Toobally map area
Pool Creek map area
Northwest Territories
Liard Line
KAKWA PLATFORM
200 km
Yukon
CANADA
General distribution of preserved 'North American' Ordovician and Silurian platform facies.
General distribution of preserved 'North American' Ordovician and Silurian basin facies.

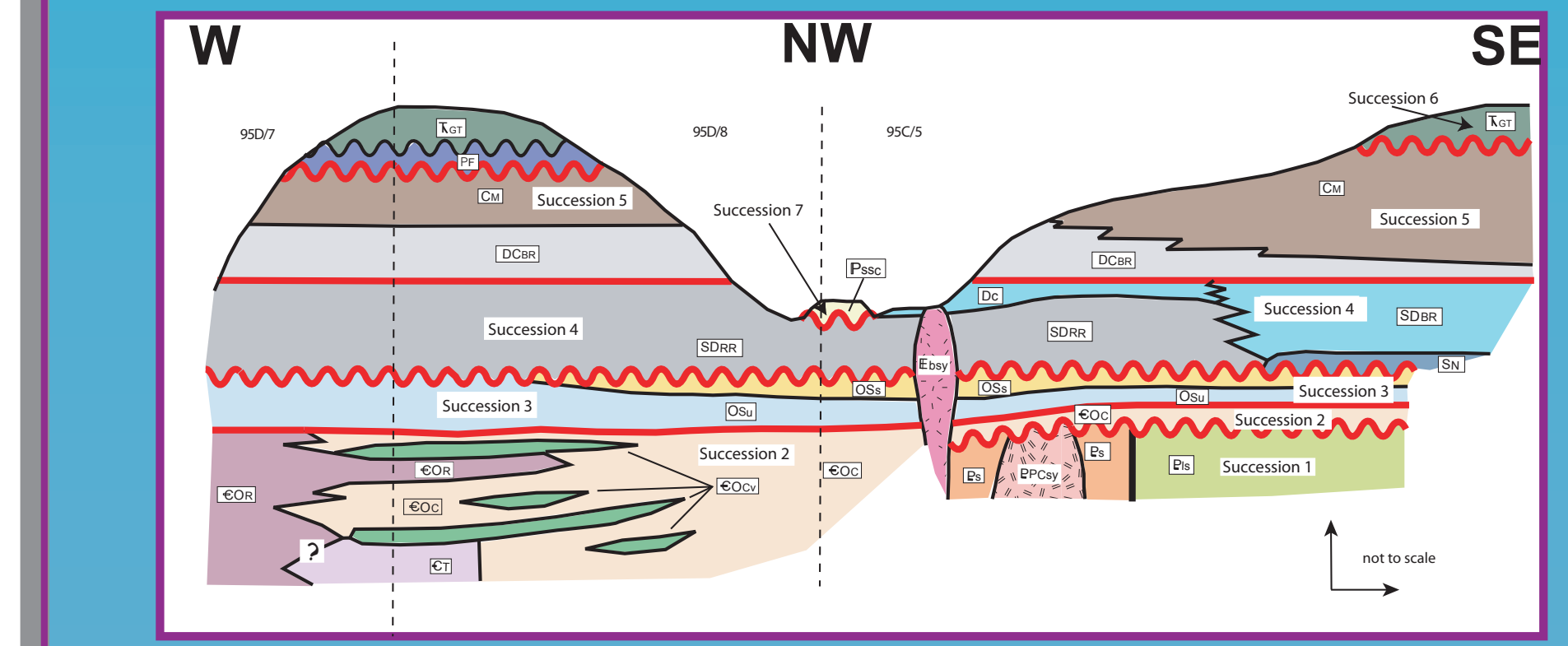
Location

160 km northeast of Watson Lake

NTS map sheet 95D/8 on east side of Coal River sheet (95D)

NTS map sheet 95C/5 on west side of La Biche River sheet (95C)

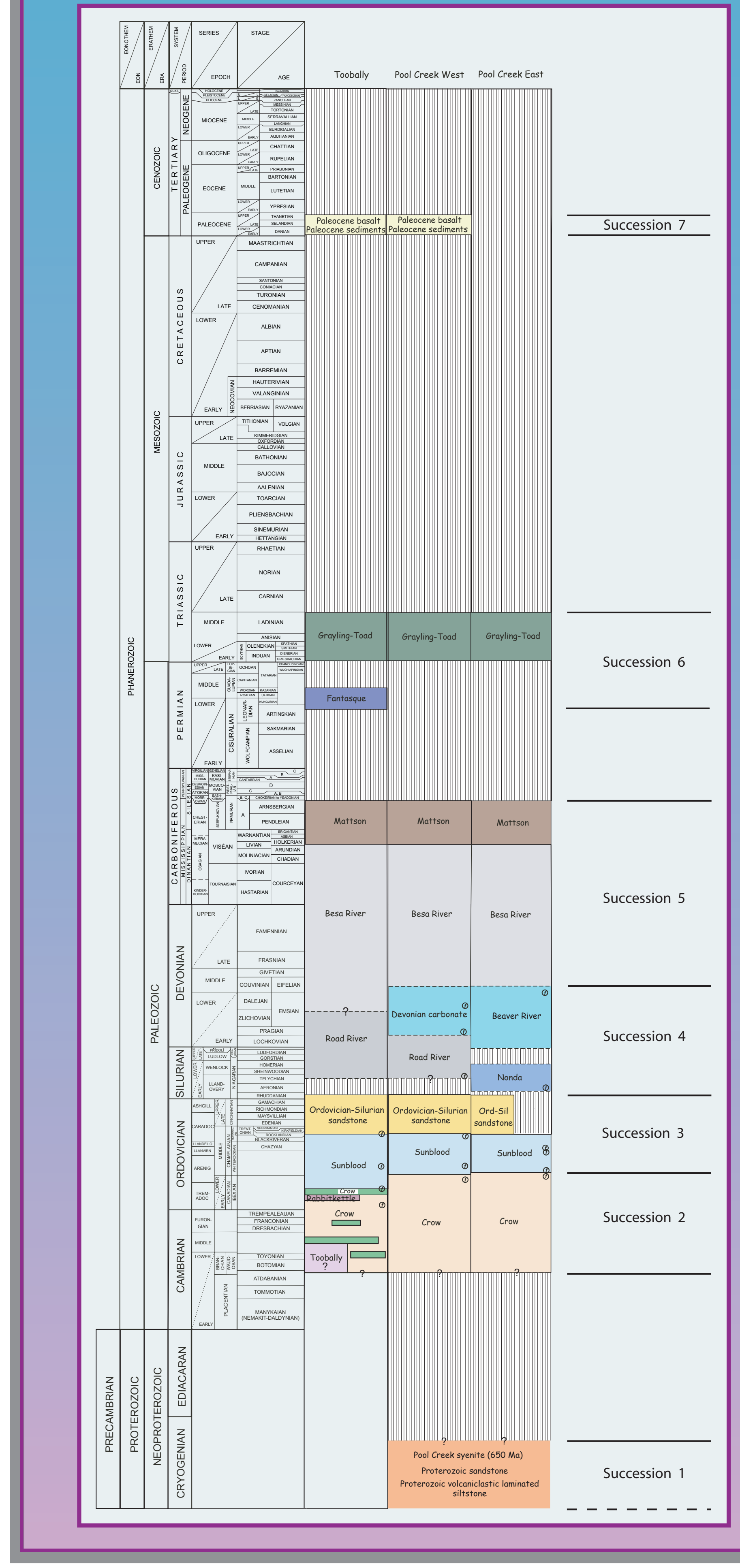
Valleys are heavily forested. Sparse outcrop occurs on ridge tops and along incised streams. Best outcrops are along east-trending stream valleys.


W
NW
SE
95D/7
95D/8
95C/5
Succession 7
Succession 6
Succession 5
Succession 4
Succession 3
Succession 2
Succession 1
not to scale

Schematic Cross Section with Facies Changes

Seven stratigraphic successions from Proterozoic to Paleocene.

Early to Middle Paleozoic successions are best preserved in area of interest. They record miogeoclinal facies transitions from shallow to deep water and trangression and regression cycles.



River bed gravels, sands and silts preserved only because of resistant valley basalt flow capping succession - ancestral Beaver River.

Cretaceous marine shales and sandstones preserved in synclines immediately east of the area of interest.

Triassic - shallow seas with abundant reworked Devonian pollens. Presently preserved in synclines and fault slices.

Permian - black siliceous shales and cherts.

Coarsening and shallowing upward succession with black shales (Besa River Fm) overlain by sandstones (Mattson Fm). Mattson Fm here is delta slope deposit with coals and aeolian sands farther east.

Macdonald carbonate platform (Beaver River Fm) transitional to Selwyn Basin shales (Road River Gp).

Coarsening upward succession with platform carbonates (Sunblood Fm) overlain by pebbly sandstones and siltstones (Unit OSs).

Coarse supratidal to shallow marine sandstones and maroon siltstones (Crow Fm) transitional to deeper water calcareous mudstones and limestones (Rabbitkettle Fm)

? sub-Franconian regional unconformity ?

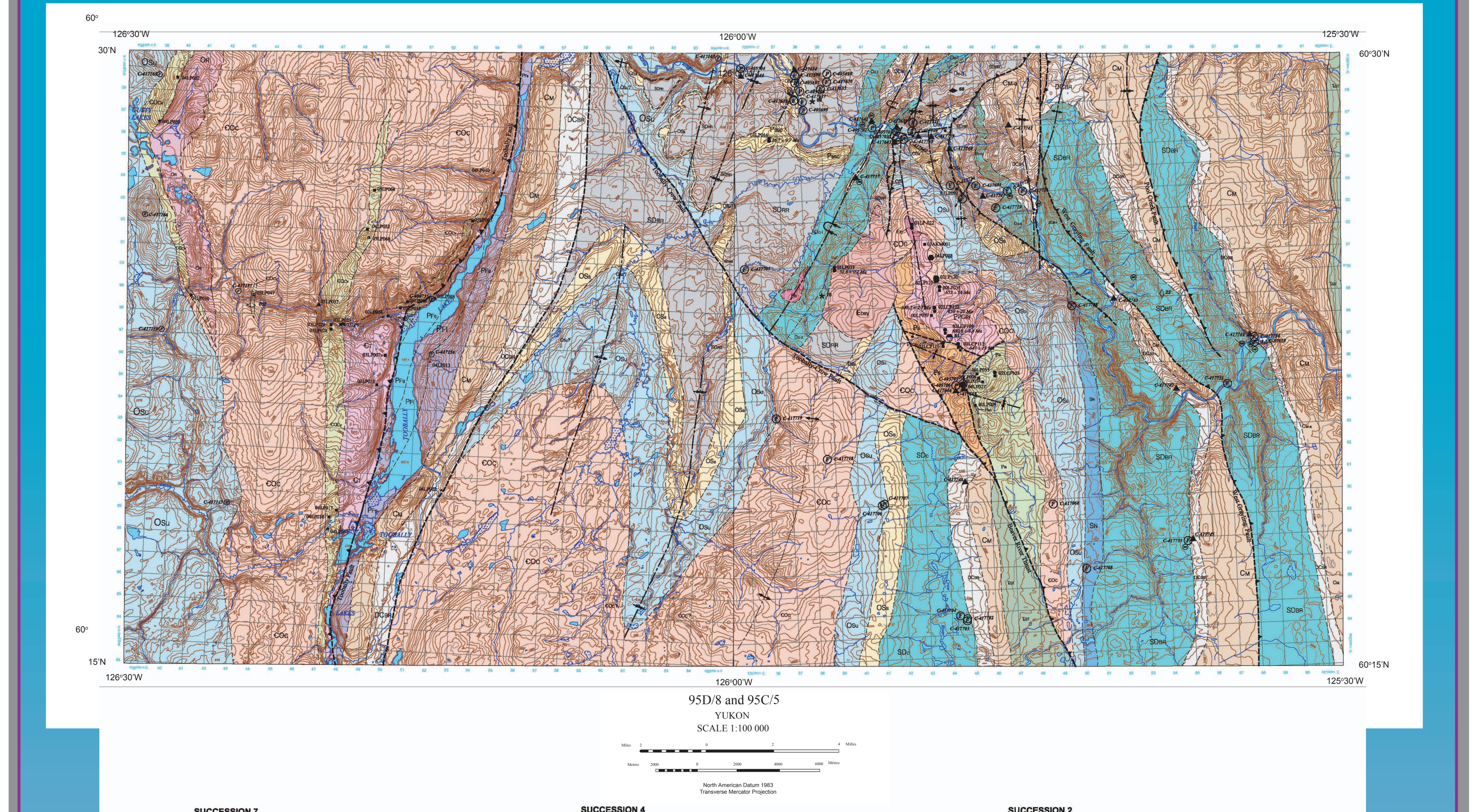
Proterozoic marine slope sandstones siltstones and volcaniclastic rocks deposited below wave base (Units Ps and Pls)

Stratigraphy Summary for Southeast Yukon

(95D/8 and 95C/5)

Lee Pigage

Yukon Geological Survey


60°
30'N
15'N
126°30'W
126°00'W
125°30'W
60°30'N
60°15'N
Toobally Fault
Beaver River Thrust
West Grayling Fault
East Grayling Fault
Pool Creek Fault
TOOBALLY LAKES
Miles
Metres
North American Datum 1983
Transverse Mercator Projection

95D/8 and 95C/5
YUKON
SCALE 1:100 000

SUCCESSION 7

PALEOCENE

siltstone, sandstone, conglomerate, basalt

Pssc — poorly consolidated siltstone, sandstone and conglomerate capped by basalt

SUCCESSION 6

TRIASSIC

Grayling and Toad formations (undivided)

TrGT — grey, red, and green shale interbedded with thin- to thick-bedded, brown sandstone and siltstone; locally calcareous

PERMIAN

Fantasque Formation

PFl — dark grey, light grey-weathering, finely crystalline, fetid, sandy, bedded limestone; contains thin interbeds of dark grey to black, fissile shale

PFs — dark grey, siliceous, bedded shale; contains lesser thin interbeds of limestone, limestone concretions and sandy limestone

SUCCESSION 5

LOWER CARBONIFEROUS

Mattson Formation

CM — pale grey, strongly indurated, fine-grained, quartz sandstone; grey-weathering; locally contains trace amounts of fine pyrobitumen.

DEVONIAN to LOWER CARBONIFEROUS

Besa River Formation

DCBR — dark grey to black, carbonaceous shale, siltstone, bedded chert and siliceous limestone; weathers recessively to pale bluish-grey

SUCCESSION 4

DEVONIAN

limestone

Dc-l — buff- to grey-weathering, medium grey, argillaceous limestone; micritic, with the exception of local thin grainstone beds (< 10 cm) containing *Gasterocoma(?) bicaula* Johnson & Lane and other crinoids

dolostone

Dc-d — medium dark grey to dark grey, thin to thickly bedded, fetid dolostone; black, discontinuous, fossiliferous (crinoids, etc.) chert bands and nodules

SILURIAN to DEVONIAN

Beaver River Formation

DBR — buff- to grey-weathering, light to medium grey, massive, fine-grained, vuggy, unfossiliferous dolostone

carbonate

SDc — buff- to grey-weathering, light to medium grey, thick-bedded dolostone and limestone; locally fossiliferous, locally vuggy; correlative with Nonda Formation and Beaver River Formation

Road River Group - undivided

SDRR — dark grey to black, locally calcareous or dolomitic, graptolitic shale or siltstone with lesser very fine-grained sandstone, bedded chert (porcellenite) and limestone; weathers recessively

SILURIAN

Nonda Formation

SN — dark grey, fetid, medium to thick bedded, fossiliferous dolostone; contains discontinuous lenses and beds of black chert

SUCCESSION 3

ORDOVICIAN to SILURIAN

quartz sandstone and conglomerate

OSs — grey to buff, quartz-rich sandstone to pebbly sandstone; grains are subround to round; contains beds up to 2 m thick of heavily burrowed, slightly dolomitic, very fine-grained sandstone and siltstone

ORDOVICIAN

Sunblood Formation

OSu — mottled light to dark grey dolostone and limestone; weathers light brownish-grey to buff

SUCCESSION 2

CAMBRIAN to ORDOVICIAN

Rabbitkettle Formation

OR — thin bedded, brownish grey, slightly dolomitic siltstone; uppermost part contains thin interbeds of nodular limestone

Crow Formation

€Oc — greyish-red, maroon and green, laminated siltstone to argillite interbedded with white, pink and maroon sandstone; locally contains quartz-sandstone conglomerate; contains bioturbated limestone with abundant trace fossils or brown-weathering dolostone.

Crow Formation volcanic horizons

€Ocv — grey-weathering, thick-bedded, basaltic lapilli tuffs and breccias interbedded with amygdaloidal to vesicular, pillowed flows; fresh colours are greyish-green with lesser maroon; lesser interbeds of sandstone, subarkosic sandstone, maroon siltstone and conglomerate

CAMBRIAN (?) or Proterozoic (?)

Toobally Formation

€T — dark grey to black, orange-brown weathering, polymictic, matrix-supported conglomerate; matrix mudstone to fine siltstone; clasts dominantly sedimentary sandstone, siltstone, and limestone

SUCCESSION 1

PROTEROZOIC

green laminated siltstone

Pls — green to grey, locally greyish-red, banded siltstone with very fine-grained sandstone; sandstone beds, 1 to 5 cm thick, are quartzose, internally laminated, and graded; the unit also includes soft sediment deformation, minor green, matrix-supported conglomerate beds and starved ripples

quartz sandstone and siltstone

Ps — white to light grey quartzite; very fine-grained to sugary, massive to faintly laminated; interbeds of dark grey to black, laminated siltstone

INTRUSIVE ROCKS

EOCENE

Ting suite

intrusive breccia

Eib — greyish-red and pale green, aphanitic, intrusive breccia; xenoliths include Pool Creek syenite, volcanic rocks, and quartz sandstone

biotite syenite

Ebsy — coarsely crystalline, unfoliated, white-weathering K-feldspar and plagioclase with lesser coarse biotite

PRECAMBRIAN

Pool Creek syenite

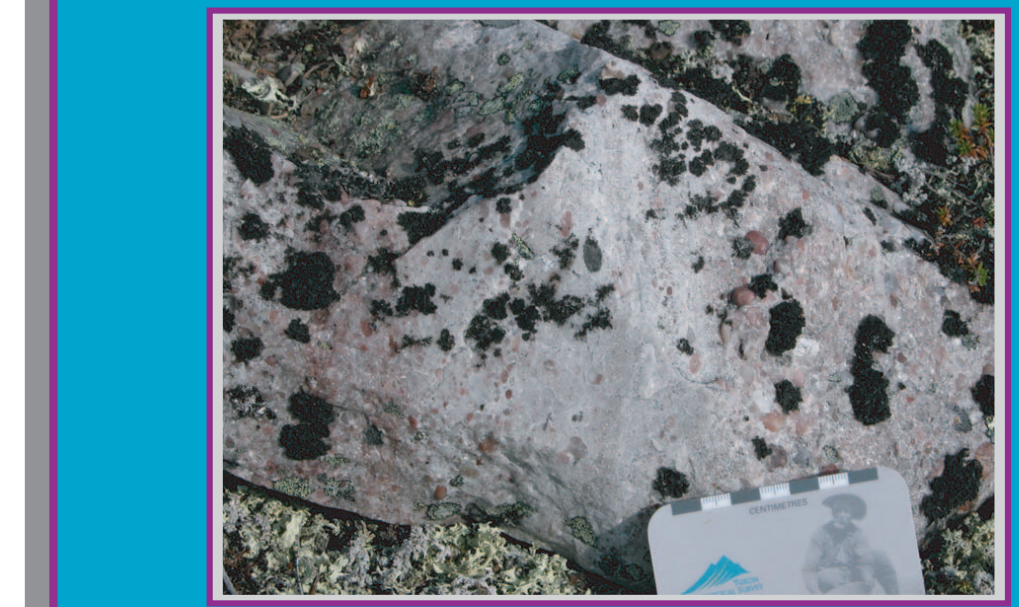
PPCsy — pink, medium to coarsely crystalline, unfoliated nepheline syenite; predominantly randomly oriented pink K-feldspar crystals with lesser sausseritized nepheline and minor dark, strongly chloritized biotite

SYMBOLS

Geological contacts (defined, approximate, inferred)
Normal fault (dot on downthrown side) (defined, approximate, inferred)
Thrust fault (teeth on hanging wall) (defined, approximate, inferred)
Strike-slip fault (defined, approximate, inferred)
Fault, displacement unknown (defined, approximate, inferred)
Limit of outcrop
Fold axial surface trace (anticline: upright, overturned; syncline: upright, overturned)

Crow Formation (€Oc) Features

Lateral facies transition from Crow Fm (east) to Rabbitkettle Fm (west) occurs just west of 95D/8. Stratigraphic thickness of Crow Fm increases from 300 metres (east-95C/5) to greater than 5700 metres (west-95D/8). Upper contact is diachronous, ranging from Ibexian (east-95C/5) to Tremadocian (west-95D/8).



Pinkish, pebbly sandstone

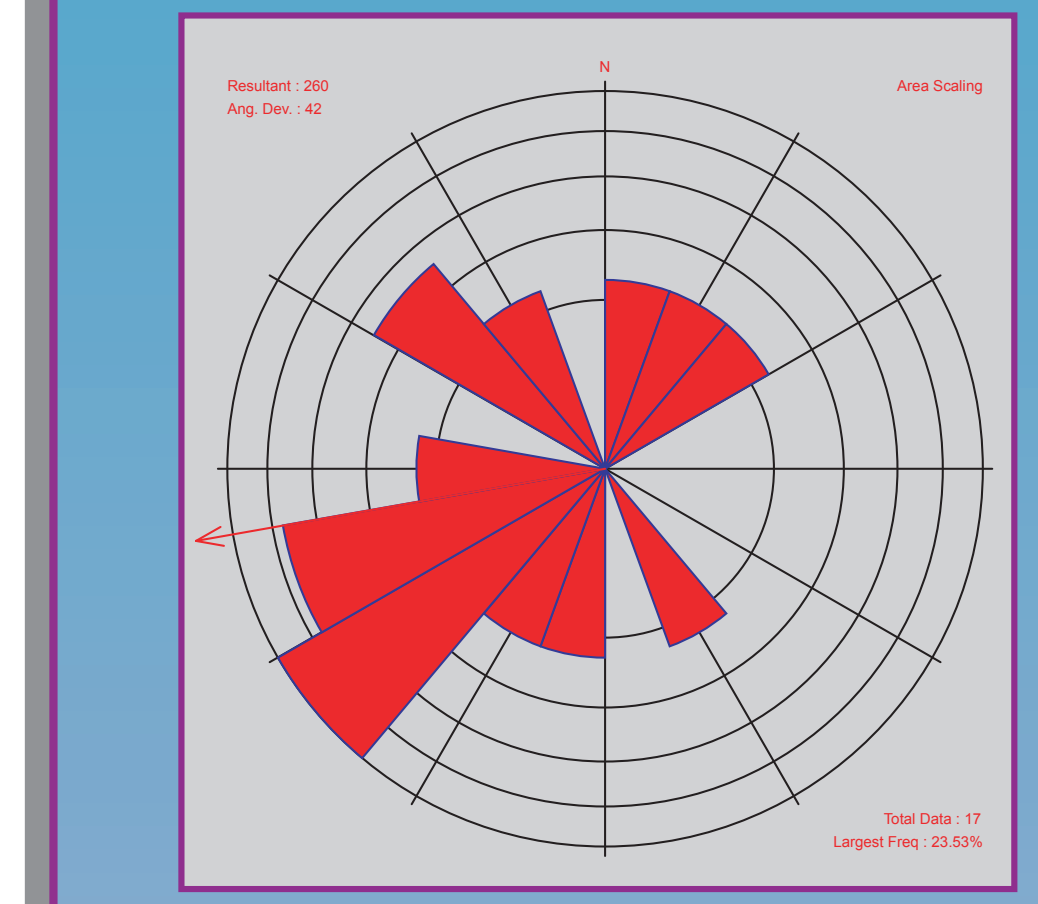
Coarse, subarkosic pinkish sandstone and pebbly sandstone with interbedded maroon and gray siltstones. All conodont samples collected so far range in age from Tremadocian to Ibexian.

Crow Fm - interbedded sandstone and maroon siltstone.

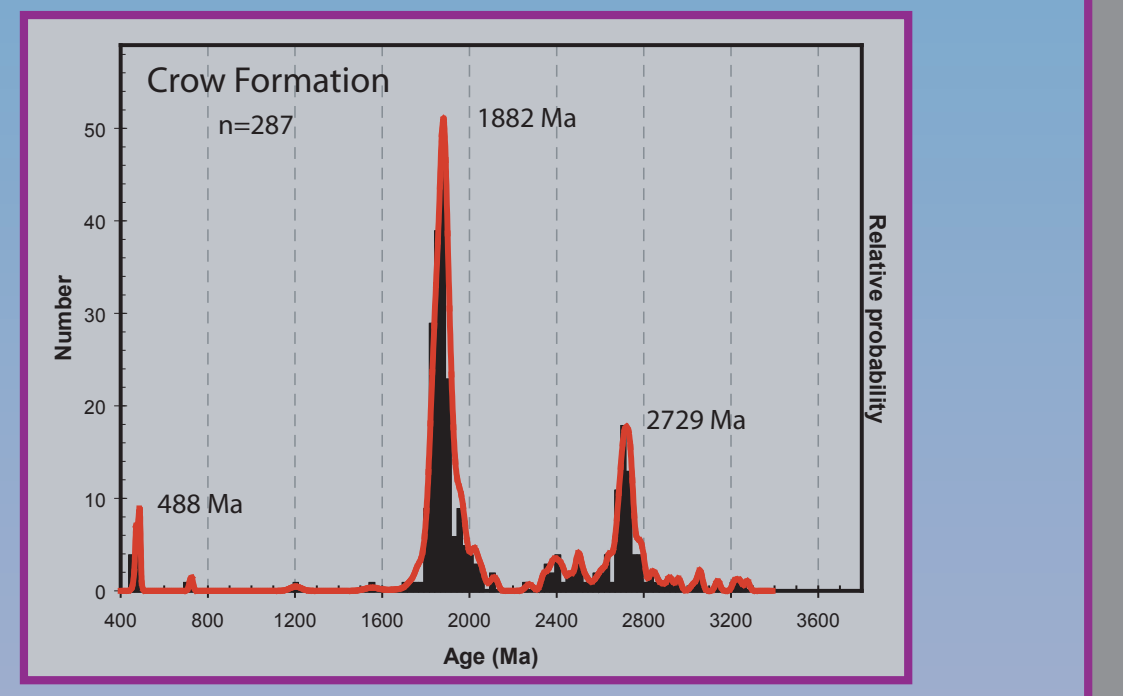
Coarse conglomerate interbeds occur only in eastern exposures of the Crow Fm (in 95C/5).

Dessication cracks and ripples are consistent with marine shallow water, subtidal to tidal depositional environments.

Western exposures of Crow Fm. in 95D/8 contain a tongue of Rabbitkettle Fm. To north and west theCrow Fm was not recognized and Rabbittkettle Fm occurs immediately below Sunblood Fm (Gabrielse and Blusson, 1969).



Dip directions of unfolded cross-beds in Crow Fm (see rose diagram) are overall consistent with dominant southwest transport direction (17 measured cross-beds).



Detrital zircon age dates are consistent with zircon sources being mainly Archean Slave Province and Wopmay Orogen (NWT, Nunavut and Alberta).

Crow Formation (€Oc) Conclusions

- Deposited in Cambrian-Early Ordovician as a near shore to shore clastic unit on a west- to southwest-facing shoreline.
- Deposited on west(?) margin of erosional/structural high.
- Records influx of coarse quartz-rich detritus with ultimate source of material being Slave Province and Wopmay Orogen.
- Laterally correlative with deeper water Rabbitkettle Fm.