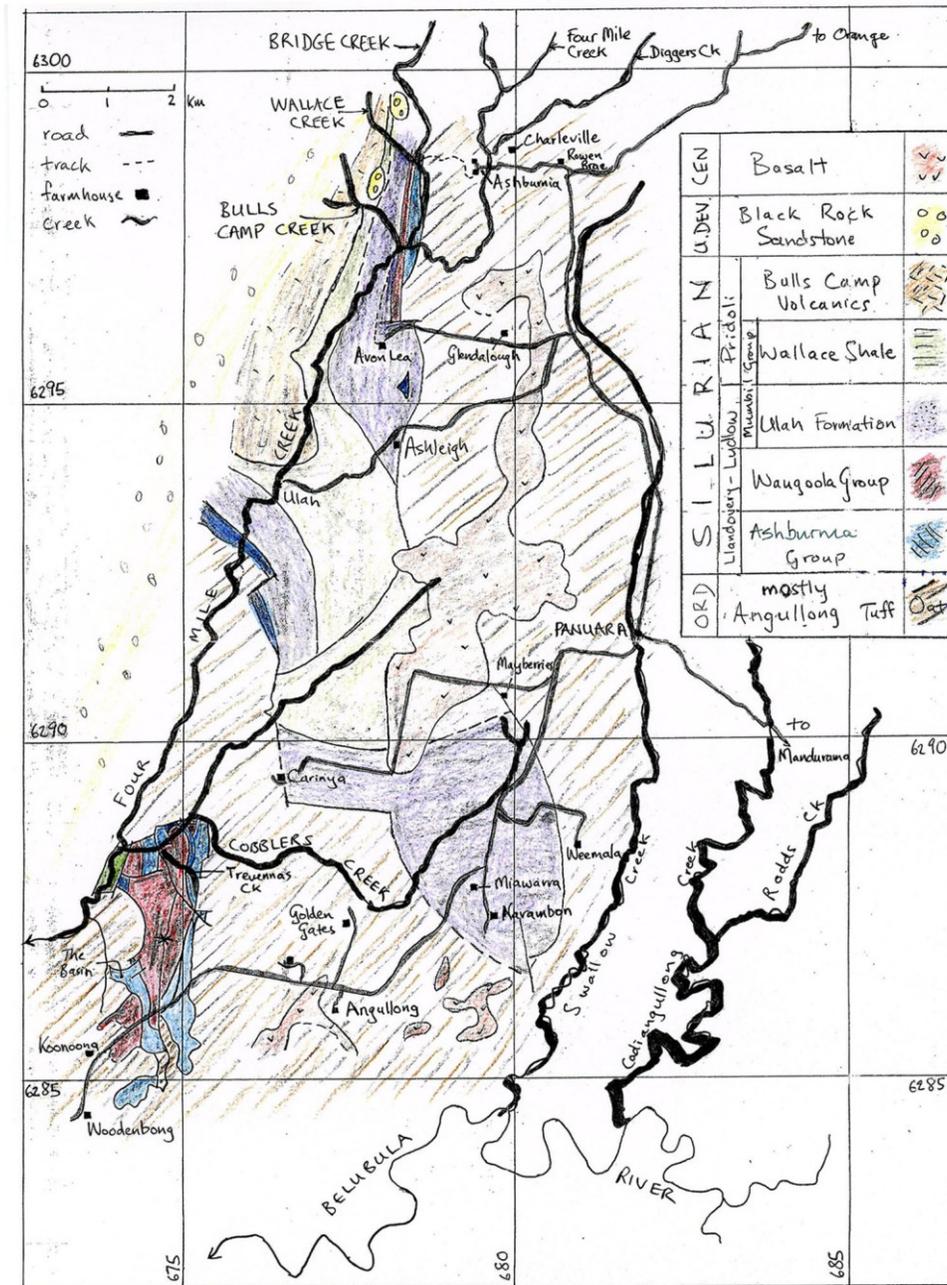


## Silurian coral research in central-western NSW



**Preamble.** Dr Ross McLean and I have been carrying out joint research on fossil corals since he resettled here from Canada in 2013. The initial and main focus of our research has been on the occurrence of the genus *Phillipsastrea* in eastern Australia, this has resulted in the monograph cited below (McLean & Wright 2021); the actual manuscript was submitted in mid-2018 but at last it will appear in 2021. In the interim Ross has produced major studies of two other groups of rugose corals (McLean 2018, 2021), the latter monograph being in press. I have been working on several research projects on Devonian corals and brachiopods (Revision of the Devonian

tetracoral genus *Trapezophyllum*; A review of some Chinese calceolide corals; Taxonomy, evolutionary relationships and biogeographic affinities of calceoloid corals from north Viet Nam; A giant new strophodontide brachiopod genus from the Devonian Mount Frome Limestone, New South Wales, Australia; and (with J.A. Talent) Occurrences of the Devonian pentameride brachiopod *Zdimir* in eastern Australia).

**Geological background.** The study region is just south of Orange, and lies between the Belubula River to the South, Cadia Mine to the East, and the old hamlet of Four Mile Creek to the North. It has important Silurian sequences with abundant fossils, as well as a large vineyard at Angullong in the south of the area. The area has traditionally been known as the Four Mile Creek or Panuara area. These sequences were first studied in detail in the 1950s by Neville Stevens (1953, 1954) with Gordon Packham, followed by students from Sydney University in the 1960s and 1970s (e.g. Jenkins 1978, 1986). In the interval 1990-2010, Professor Barrie Rickards (Cambridge University) and I undertook studies of Silurian graptolites from various parts of central-western NSW, including the Panuara area (Rickards *et al.* 1995, 2003a-b; Rickards & Wright 1997, 2004), especially those from exposures in Wallace, Bulls Camp, Bridge, Trevennas and Cobblers Creeks (see map). On one collecting trip in May 2004 a new locality with a diverse and well preserved abundant coral fauna was discovered. Our current focus is on this fauna from the property 'Ulah', some 30 km south of Orange (see map). The following text outlines the significance of our research in the regional geological context. The bulk of this coral research is based on thin sections prepared in the School, and publication quality illustrations of these sections have been prepared by using flat bed scanners either in the School or in our home studies, and very rarely using a Leitz Aristophot made available by the Geological Survey of NSW at their Londonderry facility.

This new 'Ulah' coral fauna is important as most coral faunas from the Panuara area are poorly preserved and of low diversity. This fauna is diverse, with some new genera and species, and it is probably the same age as the meagre fauna from the Bridge Creek Limestone (McLean 1974, 1975, 1985). It is the best preserved fauna from the Panuara area, so it will provide a wealth of descriptive data on the new coral taxa in the fauna, and will also lead to discussions of species, genera and faunas reported and described from the area as well as elsewhere in eastern Australia and beyond. Ross and I are currently writing up the manuscript on the taxonomy of this fauna, and its biostratigraphic, biogeographic and geological implications. Precise conodont biostratigraphic control of many Silurian limestones in central western area NSW was established by Günther Bischoff (1986), but not of limestones overlying the 'Ulah' coral-bearing beds; we hope to rectify this situation with new collections of relevant limestone samples. This conodont work (acid extraction and taxonomic study) will hopefully be undertaken by colleagues (Drs Yong Yi Zhen and Dr Ian Percival) from the NSW Geological Survey.

**Report on previous GeoQuest funding.** During 2020 I received the total of \$490 in the November and December rounds. All of this was spent on production of thin sections by Jose Abrantes, supplementing our pre-existing sections. The sections were of the early Silurian coral

material initially collected by me (in May 2004) and by Ross McLean and me in March 2016 from 'Ulah' property near Orange.

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