Annual Report 2014 for the Rising Star Cave and Empire Cave systems

After being awarded the permit for excavation in October of 2013, a large expedition was conducted to collect hominin remains from the Rising Star chamber and adjacent areas of the Rising Star system. More than 60 scientists, students, explorers and amateur cavers participated in the excavation between the period November 7th to November 28th. Underground activities included the laying of approximately 3.5 kilometres of temporary communication wiring, 9 video cameras and three intercom systems. Excavation was conducted in the Rising Star chamber using methods developed specifically for the difficult situations where the fossils were located. These included traditional best practice archaeological methods for extraction and mapping as well as the novel use of the Arctec white light scanner for hyper accurate 3D mapping and scanning of the fossils and their surrounds prior to extraction. Such methods allowed mapping accuracy levels that exceeded .5 of a mm in 3D space.

More than 1350 fossils were collected during this expedition. Specimens were given field catalogue numbers which were transferred to the University of the Witwatersrand's faunal and hominin cataloguing system. The locality was given the University of the Witwatersrand site number of UW-101, other fossil bearing localities in the system were given the site number 102 to 104.

Fossils were individually sorted, identified and boxed in the field and then transferred safely to the vaults of the University. A catalogue has been produced in both physical and electronic format and copies are lodged with the University curator of collections.

Due to perceived security risks to the deposits, five gates were permitted and placed within the underground system to prevent unauthorized entry to the chamber.

In April 2014 additional specimens were extracted from 101 and 102 bringing the total number of fossils catalogued to 1754.

In May 2014 a workshop involving 54 local and international scientists was held and resulted in the description of all fossils recovered. The results of this work are presently under review in a series of 12 papers and are expected to be published early 2015.

Additional specimens were removed from 102 in November 2014 due to being in danger due to their position within the system. These specimens are presently under study in preparation for publication.

In December of 2014, several geological samples were taken for dating purposes. Permits for their removal to international labs were obtained and local laboratories involved in the analysis were issued loans by the University Curator.

Detailed 3D mapping and exploration of the large underground system is ongoing. Detailed mapping of the surface of the area over the underground system is underway.

Future activities will be determined by the results of the dating analysis as well as continued extraction of critical fossils from the identified localities.