

USE OF BIOTA IN MINERAL EXPLORATION IN AREAS OF TRANSPORTED COVER IN THE YILGARN CRATON

Ravi Anand, Matthias Cornelius and Cajetan Phang

CRC LEME, CSIRO Exploration and Mining

Ravi.anand@csiro.au

Biota geochemistry has not been widely used as an exploration technique for Au and base metals in Western Australia because sampling of soils and other surface materials has been reasonably effective in finding new mineral deposits in deeply weathered areas with or without shallow transported overburden. Future discoveries of base metal and Au resources in deeply weathered terrains are likely to occur under several to many metres of transported overburden where soil and lag sampling are likely to be ineffective. As the focus of exploration shifts to these more difficult terrains, biota geochemistry needs to be investigated. This paper presents findings of some recent LEME work on biota that form geochemical anomalies at surface over buried deposits.

We are investigating several gold and base metal deposits in the Yilgarn Craton and of these we will discuss two sites. At these locations, transported cover ranges in thickness from 8 to 20 m. A variety of biota samples were collected at each site and procedures were developed for their preparation and analyses. Soil samples were also taken 5-10 cm below surface at each site to compare the chemistry of the biota and soil. In contrast to soil data, biota geochemistry shows unequivocal evidence of buried mineralisation and therefore appears to be more effective in certain environments than conventional soil and selective extraction of soil.

Present biota geochemistry results are most encouraging and may lead to a practical method for locating mineralisation under transported cover in greenfield areas. We consider this a highly perspective field for future research which LEME is therefore addressing as a matter of priority.