



**CALIFORNIA STATE SCIENCE FAIR  
2013 PROJECT SUMMARY**

<b>Name(s)</b> <b>Ian V. Hughes</b>	<b>Project Number</b> <b>J0899</b>
<b>Project Title</b> <b>A New Ancient Community: Discovered Under a Bed</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The Ediacara Biota are the Earth's oldest macroscopic organisms. They lived 575-545 million years ago and are globally distributed. Scientists excavate fossil beds in order to collect data and understand the ecology of these organisms. For this project, a new fossil bed in Nilpena, Australia was excavated. The research investigated two hypotheses: 1) The fossils that are preserved on this bed are the same taxa as those on other excavated beds and that they are previously described genera and species and 2) The biodiversity pattern is similar to other beds that have been excavated.</p> <p><b>Methods/Materials</b> This newly discovered bed was excavated using pick axes, sledge hammers and shovels. It was then reconstructed and mapped for all fossils. Fossils were logged, photographed and copied using rubber latex. Specimens were later measured and compared. Data from this new bed was compared with other excavated beds from South Australia</p> <p><b>Results</b> Over 30 specimens of a new fossil was discovered on this bed, unknown from any other bed in the area or in Australia of this age. It is a new species and maybe a new genus. Based on its morphology, this fossil is being called "Bundle of Fibers" pending assignment of its Latin name. The presence of this fossil falsifies hypothesis number one because #Bundle of Fibers# is not found on other excavated and described beds. The diversity and abundance of all fossils on this bed were compared to those on the fifteen (15) other beds excavated in this area of Australia. Through this comparison, hypothesis two was also falsified. Both the fossil diversity and abundance is strikingly different than any other excavated bed.</p> <p><b>Conclusions/Discussion</b> This research not only identified a new species but also helps to demonstrate that Ediacaran ecosystems were more complex than scientists thought. Important further research is indicated as a result of this investigation particularly about the ecology of the environment in which "Bundle of Fibers" lived. Was this organism living in shallower waters, is "Bundle of Fibers" an animal or could it be another organism such as algae? In addition, this organism will need to be formally described so that scientists working on Ediacaran fossils throughout the world can compare "Bundle of Fibers" with fossil discoveries in other parts of the world.</p>	
<b>Summary Statement</b> A new fossil species, 565 million years old, was discovered along with a novel ancient community in Earth's oldest multicellular ecosystem.	
<b>Help Received</b> My mother and sister helped to put the poster together. Dr. Jim Gehling (South Australia Museum) facilitated bed excavation and research, museum volunteers helped with with the heavy lifting of excavation	