Elizabeth and her husband John Gould came to Australia in 1838, remaining for two years. John Gould was a noted taxidermist and ornithologist but could not draw. A talented artist, Elizabeth began illustrating bird specimens for her husband's letters, her style becoming more refined over time. Eventually, she began reproducing accurate and scientific images of birds from their taxidermied form.

The Australian trip resulted in John Gould's famous work, *The Birds of Australia*. Published in seven volumes, *The Birds of Australia* included 600 plates, all produced by Elizabeth. Many of these drawings were subsequently made into lithographs by a zoological illustrator, H. C. Richter who published them under his own name. To compound the insult, many museum websites and suppliers of prints continue to list John Gould as the artist next to Elizabeth's drawings. In other cases, Elizabeth is simply cited as "J. and E. Gould".

Elizabeth Gould is memorialised in the name of the gouldian finch of tropical Australia, *Chloebia Poephila gouldiae* and Mrs Gould's sunbird, *Aethopyga gouldiae*. 