

2000-2

**The Age-specific Fecundity of Mammalian Populations:
A Test of Three Mathematical Models**

Timothy B. Gage

University at Albany-SUNY

and

Southwest Foundation for Biomedical Research

Draft

February 2000

**DRAFT COPY – NOT FOR CITATION OR QUOTATION WITHOUT THE AUTHORS’
PERMISSION**

ABSTRACT

This paper investigates methods of mathematically modeling mammalian age-specific fecundity distributions. The aim is to identify the optimum model for smoothing and/or graduating these distributions. Three models are tested, a) the Gamma distribution, b) the Hadwiger function, and c) the Brass polynomial. The data used to test the models includes fecundity distributions from four types of primates (including humans), Asian Elephants, and Przewalski’s horse (an extinct species). The results indicate that all three models work well with a variety of mammalian data. The simplest of these models, the Brass polynomial, can not be rejected based on available data and appears to be the optimum choice.

*Support for this research was provided by grants to the Center for Social and Demographic Analysis from NICHD (P30 HD32041) and NSF (SBR-9512290). Opinions, findings, and conclusions expressed here are those of the author and do not necessarily reflect the views of the funding agencies.