1086-05-2133 **Daryl R DeFord*** (`daryl.deford@email.wsu.edu`). *Enumerating Distinct Chessboard Tilings.*
Counting the number of distinct colorings of various discrete objects, via Burnside's Lemma and Pòlya Counting, is a traditional problem in combinatorics. Motivated by a method for proving upper bounds on the order of the minimal recurrence relations satisfied by a set of tiling instances, we address a related problem in a more general setting. Given an $m \times n$ chessboard and a fixed set of (possibly colored) tiles, how many distinct tilings exist, up to symmetry? More specifically, we are interested in the recurrent sequences formed by counting the number of distinct tilings of boards of size $(m \times 1), (m \times 2), (m \times 3), \ldots$, for a fixed set of tiles and some natural number m.

We present explicit results and closed forms for several well–known classes of tiling problems, including tilings with dominoes and tilings with squares. Several of these cases have convenient representations in terms of the combinatorial Fibonacci numbers. Finally, we give a characterization of all $1 \times n$ tiling problems in terms of the generalized Fibonacci numbers and colored Fibonacci tilings. (Received September 25, 2012)