1009-05-124   **Joanna Anthony Ellis-Monaghan*** (`jellis-monaghan@smcvt.edu`), Department of Mathematics, Saint Michael's College, One Winooski Park, Colchester, VT 05439, and **Irasema Sarmiento**, Departamento de Matemáticas, CINVESTAV, Av. IPN 2508, CP 07000 Mexico City, Mexico. *A Duality Relation for the Topological Tutte Polynomial.* Preliminary report.

In "A polynomial invariant of graphs on orientable surfaces" [Proc. London Math. Soc. (3), 83 (2001) no. 3, 513-531] and "A polynomial of graphs on surfaces" [Math. Ann 323 (2002) no.1, 81-96], Bollobas and Riordan defined analogs of the Tutte polynomial for graphs embedded in surfaces, thus encoding topological information absent in the classical Tutte polynomial. We provide a 'recipe theorem' for these polynomials, giving specific conditions and substitutions to apply their universality property. We then use this to relate the topological Tutte polynomials to the generalized transition polynomial. This relation enables us to extend the duality relation for the topological Tutte polynomial in the latter paper from one degree of freedom to two, thus giving a natural extension of the duality relation for the classical Tutte polynomial. (Received August 11, 2005)