1136-20-543 **Jeffrey M Riedl*** (riedl@uakron.edu), Department of Mathematics, 302 Buchtel Common, University of Akron, Akron, OH 44325-4002. *Orbits and stabilizers for base normal subgroups in some wreath product 2-groups.*

Let G be the regular wreath product group $C \wr E$ where E is elementary abelian of order 4 and C is cyclic of order 2^e for some positive integer e. We wish to apply our knowledge of the structure of the automorphism group $\mathrm{Aut}(G)$ (obtained in an earlier work) to the study of the automorphism group $\mathrm{Aut}(H)$ for various subgroups H of G. It is natural to consider the subgroups H that satisfy $BH = G$ where B is the base group of G. There is a natural homomorphism from the stabilizer subgroup $N(H) = \{ \sigma \in \mathrm{Aut}(G) \,|\, H^\sigma = H \}$ to $\mathrm{Aut}(H)$ whose kernel we denote by $C(H)$. The factor group $N(H)/C(H)$ is isomorphic to a subgroup of $\mathrm{Aut}(H)$, and any knowledge of the structure of $N(H)/C(H)$ that we obtain might contribute to understanding $\mathrm{Aut}(H)$ and its structure in case the former is not too small compared to the latter. To calculate $N(H)$ it is helpful to calculate $N(H \cap B)$ for the normal subgroup $H \cap B$ of G. Motivated by this, I will describe my ongoing efforts to study the orbits and the stabilizer subgroups in the natural action of $\mathrm{Aut}(G)$ on the set consisting of all the normal subgroups of G that are contained in B, for small values of e. (Received January 22, 2018)