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Adoption of Polygyne-Derived Newly Mated Queens by Queenless Monogyne and Polygyne *Solenopsis invicta* Colonies

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We reported earlier that queens, either monogyne or polygyne of the fire ant, *Solenopsis invicta*, have a remarkable affect on conspecific recognition. After removal of their colony queen(s) workers quickly become non-aggressive toward non-nestmate workers and to introduced newly mated queens. We demonstrate here that queenless workers readily adopt multiple monogyne-or polygyne-derived newly mated queens, although usually over time the number of maintained queens is reduced to one. However, sometimes-orphaned colonies will adopt and maintain more than one queen, thus creating a "polygyne" colony. Newly mated queens adopted by workers have a distinct advantage over their claustrally founding cohorts in biomass production and a ready-made worker force to shield them from negative outside forces. A complex genetic scenario dictates that monogyne workers should execute all monogyne and polygyne-derived newly mated queens and that polygyne workers should execute all monogyne derived newly mated queens, but accept a proportion of polygyne-derived queens. We demonstrate here that the genetic rules do not apply to queenless worker groups, since workers from both social forms readily accept monogyne-derived newly mated queens. Polygyne workers adopting polygyne-derived newly mated queens have a greater probability of adopting additional polygyne-derived newly mated queens, than the other possibilities. We suggest that the behavioral/adoption phenomenon we report here opens the door to alternative explanations of some of the events that have led to the widespread occurrence of polygyny in the United States.