

F. M. KHAMIS, N. KARAM, S. EKESI, M. De MEYER, A. BONOMI, L. M. GOMULSKI, F. SCOLARIS, P. GABRIELI, S. SICILIANO, D. MASIGA, E. U. KENYA, G. GASPERI, A. R. MALACRIDA and C. R. GUGLIELMINO. (2009) Uncovering the tracks of a recent and rapid invasion: the case of the fruit fly pest *Bactrocera invadens* in Africa. **J. Molecular Ecology**, 18:4798 - 4810

Abstract

Phytophagous insects of the genus *Bactrocera* are among the most economically important invasive fruit fly pests. In 2003, an unknown *Bactrocera* species was found in Kenya. First identified as an 'aberrant form' of the Asian *B. dorsalis* complex, it was later recognized as a new species, *Bactrocera invadens*. Within 2 years of its discovery, the species was recorded in several African countries, becoming an important quarantine pest. As this invasive fly was discovered only recently, no data are available on its invasion pattern in Africa. This pilot study attempts to infer from genetic data the dynamic aspects of the African invasion of this pest. Using microsatellite markers, we evaluated the level of genetic diversity and the extent of common ancestry among several African populations collected across the invaded areas. A sample from the Asian Sri Lankan population was analysed to confirm the Asian origin of this pest. Genetic data cast no doubt that Sri Lanka belongs to the native range, but only a small percentage of its genotypes can be found in Africa. African populations display relatively high levels of genetic diversity associated with limited geographical structure and no genetic footprints of bottlenecks. These features are indicative of processes of rapid population growth and expansion with possible multiple introductions. In the span of relatively few years, the African invasion registered the presence of at least two uncorrelated outbreaks, both starting from the East. The results of the analyses support that invasion started in East Africa, where *B. invadens* was initially isolated.