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Bridging pheno-plasticity with genetic profile of the hydrophyte *Ludwigia* stolonifera (Guill. & Perr.) P.H. Raven: With reference to its expansion to new habitats

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Ludwigia L is a pantropic genus of aquatic and subaquatic herbs. Recently, L. stolonifera (Guill. & Perr.) P.H. Raven became a dominant aquatic macrophyte in Egypt and it expanded from fresh water into salty habitats. Interestingly, the plant showed morphological plasticity in several characters such as leaf shapes, vesicles, flower sex, fertilization efficiency, fruit parameters and number of produced seeds/fruit. Accordingly, in Egypt this species morphologically grouped into seven morphotypes (1–7). The lack of information about the plant genome further complicates the identification of these morphotypes. Thus, it was crucial to investigate the morphotypes in terms of karyotyping and genetic profile to understand if this morphological plasticity is genetically based or it is an impression of habitat diversity. In this study, seven morphotypes located in different Egyptian habitats were compared using karyotyping and random amplified polymorphic DNA (RAPD-PCR) technique. Karyotyping indicated that some morphotypes were tetraploid (2n=32), while others morphotypes were triploid (2n=24). The measured similarity percentage based on RAPD data revealed a highest value (98.6%) between the triploid M4 and M5 morphotypes; similarly between the tetraploid M1 and M2 morphotypes showed 95.4%. Meanwhile, the lowest similarity (73.4%) was between the aquatic morphotype (M2) and the salt affected wetland morphotype (M3). The possible link between the genetic composition and ecological variation of this phenoplastic species will be discussed further.

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