Proceedings of the LXII SIGA Annual Congress
Verona, Italy – 25/28 September, 2018
ISBN **978-88-904570-8-1**

Poster Communication Abstract – 5.21

DNA BARCODING AS A TOOL FOR EARLY WARNING AND MONITORING ALIEN DUCKWEEDS (*LEMNA* SP.PL.): THE CASE OF CENTRAL ITALY

MARCONI G.*, LANDUCCI F.**, ROSELLINI D.*, CASSIBBA V.*, VENANZONI R.**, ALBERTINI E.*

*) Department of Agricultural, Food and Environmental Sciences, University of Perugia, Borgo XX Giugno 74, 06121 Perugia (Italy)
**) Department of Chemistry Biology and Biotechnology, University of Perugia, Via Elce di sotto 8, 06123 Perugia (Italy)

chloroplast genome, DNA sequence analysis, exotic species, invasive plants, molecular phylogeny

Aquatic habitats are vulnerable to the invasion of alien species, so early warning protocols are necessary for eradication. The presence in Italy of two alien duckweeds in freshwaters has been documented: *Lemna minuta*, that showed high invasivity, and *L. valdiviana*, still confined to south Lazio. These two species may be mistaken for each other and for the domestic *L. minor* and *L. gibba* due to morphological variation. Here, we assess the applicability of DNA barcoding as a complement to morphological analysis for monitoring the spread of alien *Lemna*. We chose two chloroplast genome sequences for their ability to discriminate all *Lemna* species: the 5' intron of the *trnK* gene and the *matK* gene. Among 48 samples of *Lemna* collected at 22 sites in Central Italy, 20 were identified as *L. minor*, 19 as *L. minuta,* 5 as *L. trisulca*, and 4 as *L. gibba. L. minuta* was present at most sampling sites; in particular, at 6 locations of Lake Trasimeno, 8 *L. minuta* samples were found. We demonstrate that DNA sequence analyses with cost-effective barcoding techniques can effectively support expert efforts in species determination for an early alert system of invasive *Lemna* species.