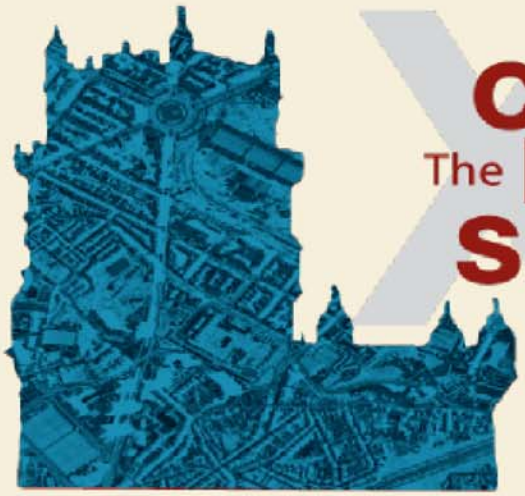

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BIOCHEMICAL PLASTICITY AND ENVIRONMENTAL STRESS: *IRIS PUMILA* AS A CASE STUDY

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Irradiance is the one of the most variable abiotic factors experienced by higher plants. Adaptive plastic responses to fluctuating light conditions have been documented to affect all aspects of plant phenotype – morphology, physiology and biochemistry. In order to examine the influence of light intensity on the plasticity of biochemical traits, a random sample of ten *Iris pumila* clones inhabiting an exposed site in the Deliblato Sands were partially covered with a neutral screen that transmitted 50% of daylight so that half of the ramets of a single clone experienced reduced and the other half full exposure to sunlight. In summer, leaf samples were collected and analyzed for the following biochemical traits: the relative levels of heat stress proteins (Hsp70 and two isoforms of Hsp90 – inducible Hsp90a and constitutive Hsp90b); the specific activities of antioxidant enzymes (SOD, CAT, POD, APX, GR); the contents of non-enzymatic antioxidants (carotenoids), and the extent of lipid peroxidation (MDA content). The relative levels of all three Hsps (in particular Hsp70 and Hsp90a) were elevated in the unshaded ramets when compared to their shaded counterparts. In addition, the oxidative stress index (OSI), expressed in terms of the ratio of MDA to the sum of the geometric means of all examined antioxidants, was shown to be about 30% greater in ramets from the exposed clone parts than in ramets from the shaded ones. Of all of the traits analyzed, Hsp70, Hsp90a and OSI exhibited higher values for the plasticity indices (PIv: 0.44, 0.53 and 0.37, respectively), pointing to their substantial role in coping with high light intensity. Conversely, Hsp90b appeared to be the least plastic trait (PIv: 0.21), which is in agreement with its constitutive function. Our results provide evidence that *I. pumila* displays a biochemical plastic response that enables overcoming fitness reduction under environmental stress that commonly occurs in their natural habitats.