



**ADVANCES IN THE POPULATION ECOLOGY  
OF STREAM SALMONIDS - V**

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**Andrea Gandolfi**, Daniel Eisendle, Josef Wieser, Matteo Girardi, Stefano Casari, Barbara Crestanello and Andreas Meraner

**Do it right or don't do it at all! Genetic screening of *S. marmoratus* exemplifies the need to revise many or most salmonid conservation and restocking programmes**

Demographic collapse of Italian trout populations, owing to the last century freshwater quantitative and qualitative impoverishment, was contrasted by massive stocking of exotic congeners to sustain angling pressure. After the restoration - or at least regulation - of sustainable water use and management, the envisaged solution to halt population depletion turned out to be the new problem: all native Italian trout populations resulted to be heavily impacted by Atlantic brown trout through hybridisation and genetic introgression. In order to contrast the native trout decline, dozens of projects based on captive breeding programs were then started. Despite a formal general agreement that supportive or supplemental breeding should base on strong genetic data, in order to recover and conserve micro-scale diversity and evolutionary significant units, most breeding programs - sustained by from the smallest local angling association up to the European Community - still exclusively depend on i) morphological selection of breeders, ii) maintenance of captive semi-domesticated breeding stocks, and/or iii) stocking of selected conspecific from different water systems. The outcome of such management actions is, at times, favouring a phenotypic shift of hybrids to the expected or desired morphology patterns, accelerating introgression by fostering the reproduction of hybrids, promoting artificial versus natural selection in non-natural breeding conditions, depleting local biodiversity by mixing and homogenising different management units. We here report a multi-year case study on a drainage-scale management plan of marble trout (*Salmo marmoratus*) in the North – East of Italy. We present the outcomes of an extensive genetic screening of breeding stocks derived from different generations of phenotype selection and maintained for supportive breeding, demonstrating all the main limitations of such a scheme; we introduce the shift to supplemental breeding, based on strict genetic evaluation of wild spawners; and we finally show the first evaluation of the qualitative and quantitative effects of this change of pace. We thus try to exemplify the way to avoid that the foreseen solution to the problem, i.e. conservation projects, will once more translate to the next and final sprint in the race to native trout genomic extinction.

**Guillermo R. Giannico**, Michael Scheu and Ian Tattam

**To Move or not to Move: Downstream Rearing Chinook Salmon in the Upper John Day River, Oregon, U.S.A**

Juvenile Chinook salmon typically follow an early life history pattern known as natal reach rearing (NRR) in which they remain in the colder reaches in which they were spawned until their second spring in freshwater. However, in some rivers a variety of patterns have been observed in movement timing of juvenile individuals between natal reaches and the estuary. In the Upper John Day River, Oregon, young salmon have been detected moving downstream during their first spring shortly after