

Presence of *Gambusia affinis* (Baird & Girard, 1853) in a freshwater ecosystem of Campania region (Italy)

Carella, F¹, Uliano, E¹, Esposito, L², Agnisola, C¹, De Vico, G¹

¹*Department of Biology, via Mezzocannone 8, University of Naples Federico II, Napoli, Italy*

²*Dept Veterinary medicine and Animal production, via Delpino 1, UNINA, Napoli, Italy*
francesca.carella@unina.it

The western mosquitofish, *Gambusia affinis*, is a small fish native to the southeastern United States. In the past century this species, and its congener, the eastern mosquitofish, *Gambusia holbrooki*, have been stocked in permanent and temporary waters throughout the world for mosquito control.

These two species, very similar in appearance and biology, quickly became invasive with a strong ecological impact on ecosystems. They are considered responsible for the decline of several native amphibians and small fish in the Mediterranean region.

Previous studies on European population conducted from Portugal to Greece reported the presence of only *G. holbrooki* in Italy, with report on Sicily (Catania) and Tuscany (Coltano) (Vidal, 2010). During an experimental trawl survey in 2010, samples of mosquito fishes were collected with nets from a pond near Cannello Arnone (Campania, Caserta, Italy). In order to define the *Gambusia* species, identification through dichotomous keys and DNA based methods were conducted. In particular, gonopodia morphology of preserved male individuals along with dorsal and anal fin rays were used to species differentiation (Walters and Feeman, 2000; Veenvliet, 2007), in our case giving uncertain results. For the molecular characterization, DNA from muscle tissue was isolated and two primer sets were used based on the conserved regions of the 12S and 16S rRNA loci as described by Kitano et al. (2007). PCR amplification and sequencing showed a 100% of maximum identity with *G. affinis* sequences in Genbank.

These results, while contributing to unriddle the ambiguities in *Gambusia* taxonomy (see Vidal, 2010), call for further studies in order to define *Gambusia affinis* distribution in the Campania region and its impact on freshwater population.

Keywords: *Gambusia* sp., invasive species, dichotomous keys, rDNA

References: -¹Kitano T., Umetsu K., Tian W. and Osawa M., 2007 Two universal primer sets for species identification among vertebrates. *Int J Legal Med* 121: 423–427 -²Vidal O., Garcia-Berthou E., Tedesco P. A. and Garcia-Marin J.L., 2010 Origin and genetic diversity of mosquito fish (*Gambusia holbrooki*) introduced to Europe. *Biol Invasions* 12: 841–851 -³Veenvliet, P., 2010 Species identity of *Gambusia* (Pisces: Poeciliidae) introduced to Slovenia. *Natura Sloveniae* 9: 43-46 -⁴Walters D. M. and Freeman B. J., 2000 Distribution of *Gambusia* (Poeciliidae) in a Southeastern River System and the Use of Fin Ray Counts for Species Determination. *Copeia*, 2: 555-559.