



Abstract

# Presence of Invasive Alien Species (IAS) in Impounded Waters of Navarre (Spain) Using Multi-Mesh Gillnets <sup>†</sup>

Gonzalo Moncada <sup>1</sup>, Julen Torrens <sup>1,2</sup>, Javier Oscoz <sup>2</sup>, Enrique Baquero <sup>2,3</sup> , Nora Escribano <sup>2</sup> , Enrique Miranda <sup>2</sup>, Imanol Miqueleiz <sup>2</sup> , Ignacio Ruiz de la Cuesta <sup>2</sup>, Ibon Tobes <sup>4</sup> and Rafael Miranda <sup>2,3,\*</sup>

<sup>1</sup> Sociedad Ibérica de Ictiología SIBIC, Irunlarrea 1, 31008 Pamplona, Spain; gmoncada@alumni.unav.es (G.M.); julentorrens@gmail.com (J.T.)

<sup>2</sup> Biodiversity Data Analytics and Environmental Quality Group, Department of Environmental Biology, Universidad de Navarra, Irunlarrea 1, 31008 Pamplona, Spain; javioscoz@gmail.com (J.O.); ebaquero@unav.es (E.B.); nescribano@unav.es (N.E.); emirandagar@alumni.unav.es (E.M.); imiqueleiz@alumni.unav.es (I.M.); iruiz.19@alumni.unav.es (I.R.d.I.C.)

<sup>3</sup> BIOMA Instituto de Biodiversidad y Medioambiente, Universidad de Navarra, Irunlarrea 1, 31008 Pamplona, Spain

<sup>4</sup> Centro de Investigación en Biodiversidad y Cambio Climático (BioCamb), Facultad de Ciencias del Medio Ambiente, Universidad Tecnológica Indoamérica, Quito EC170103, Ecuador; ibontobes@uti.edu.ec

\* Correspondence: rmiranda@unav.es

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**Abstract:** The introduction of invasive alien species (IAS) is a severe problem in ecosystems worldwide, heavily impacting biodiversity and especially endemic species. This situation is especially worrying in the Iberian Peninsula, since Spain and Portugal's rivers and lakes host an outstanding richness of endemic freshwater species. Ignorance about IAS presence and distribution is a serious problem that hampers its management. Regarding invasive fish species, difficulties in sampling and studying the ichthyofauna of lentic and deep waters, where many IAS inhabit, comprise some of the reasons for this lack of knowledge. In this study, we sampled the fish community of ten impounded waters in Navarre (Ebro River Basin, Spain) using multi-mesh gillnets. Four sampling points were dams located in rivers, and the remaining points were ponds. One of these ponds had a direct connection with a water channel, and another was found in a flood plain, so it connects with a nearby river in floods. The remaining ponds did not have a direct connection to any major river. A total of 14 fish species were detected (9 of which were IAS (64.3%)), with 3383 specimens collected (56% IAS). Only one of the analyzed dams did not contain IAS. Numerically, the most abundant fish was the exotic bleak (*Alburnus alburnus*) (almost 44% of the captures), followed by the native Ebro nase (*Parachondrostoma miegii*) (23.4%). The most widely distributed IAS were the common carp (*Cyprinus carpio*) and the bleak, which appeared in 70% and 60% of the sampling stations, respectively. IAS in dams accounted for 50% of the total species found and represented 21.3% of fish abundance. On the other hand, 64.3% of species in ponds were IAS, reaching 68.3% of fish abundance. This percentage increased when analyzing only the ponds without a natural connection with rivers or canals, where IAS introduction would be anthropic. IAS species in these points represented 71.4% of total fish species and 92.5% of the abundance of fish.

**Keywords:** invasive alien species (IAS); impounded waters; multi-mesh gillnets; Navarre; Ebro Basin; Spain



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