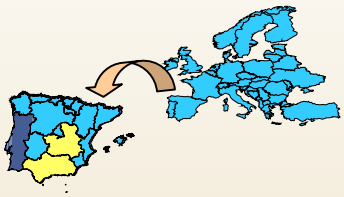
Analysis of past distribution patterns of inland water fish in southern Spain

Menor A, Álvarez-Robles JA y Prenda J.

Biología de las Aguas Epicontinentales, Dpto. Biología Ambiental y S.P., Universidad de Huelva, España
E-MAIL: jprenda@uhu.es



INTRODUCTION

Patterns of abundance and distribution of the Iberian fishes have suffered important changes in the last years. These changes may be a consequence of the dramatic transformation of streams and rivers.

In this work, we reconstructed the distribution of the native fish species in a pristine context in order to quantify the magnitude of the contemporary changes in their distribution range. For this purpose we compiled data about the distribution of fishes from historical records and compared them with current distributions. Here we present examples from eel (*Anguilla anguilla*), barbel (*Barbus sclateri*, *B. microcephalus* and *B. comiza*) and trout (*Salmo trutta*).

Eel

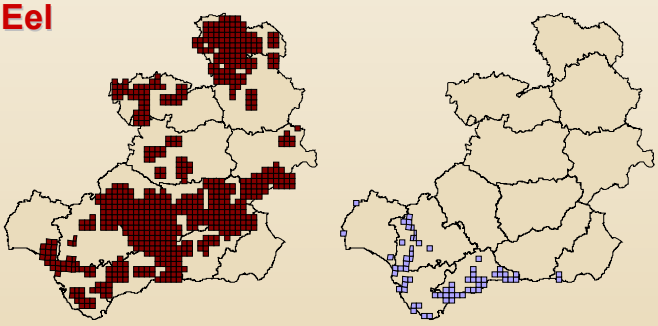


Fig. 1. **Distribution of *Anguilla anguilla*** (as an example of migratory species) **in 1850 (left) and current distribution (right)**

METHODOLOGY

We compiled the historical records from the "*Diccionario Geográfico-Estadístico-Histórico de España*" by Pascual Madoz (1845-1850) belonging to Castilla-La Mancha and Andalucia regions (South of Spain). We created a data base assigning each fish record to the current municipalities. This information was mapped in 10x10 UTM squares using ArcView program. Then, we compared these results with the current distribution reported by *Atlas y Libro Rojo de los Peces Continentales de España* (Doadrio, 2001), to asses changes in the distribution of the target species.

Barbel

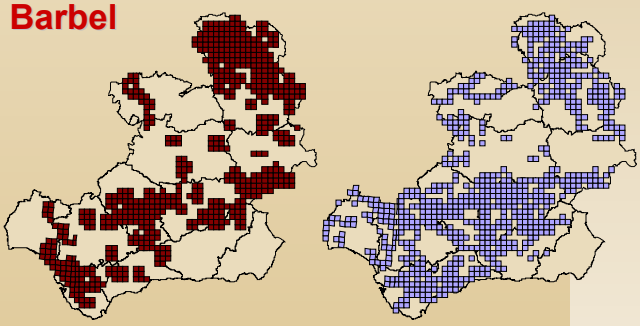


Fig. 2. **Distribution of *Barbus* sp.** (as an example of cyprinid species) **in 1850 (left) and current distribution (right)**

Trout

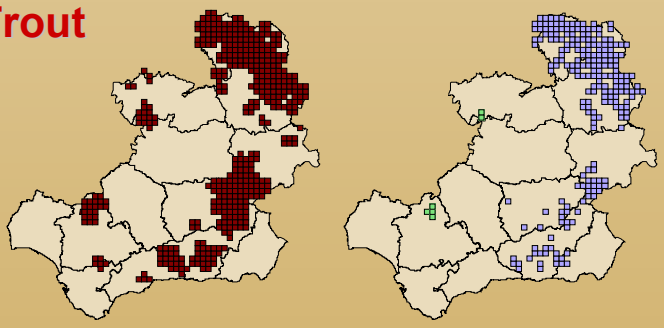


Fig. 3. **Distribution of *Salmo trutta*** (as an example of salmonid species) **in 1850 (left) and current distribution (right). The places where trout has been restocked appear in green.**

RESULTS AND DISCUSSION

The most important changes in the distribution range affect to migratory species, as can be observed in the case of eel. On the other hand, sedentary species (trout and barbel) maintain, practically, the same distribution as in the XIX century. However, this is an artifact in the case of trout, because a large proportion of the sites inhabited nowdays by this species is made of by restockings of different strains from northern Europe and authoctonous populations have gone definitevely extinct.

These results show different patterns of distribution range evolution, from migratory species almost extint (due to impoundment of rivers), to non-comercial cyprinids or trout, whose range remains almost the same (only apparently for salmonids).