Lessepsian rabbitfish *Siganus luridus* reached the French Mediterranean coasts

by

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RÉSUMÉ. - Arrivée sur les côtes méditerranéennes françaises du poisson-lapin lessepsien *Siganus luridus*.

Deux individus de *Siganus luridus* (Rüppell, 1829) ont été capturés par des pêcheurs à Sausset-les-Pins, à proximité de Marseille, le premier le 9 juillet et le second le 27 septembre 2008. Ceci constitue une extension considérable de l'aire de distribution de cette espèce lessepsienne en Méditerranée, où les populations les plus nord-occidentales étaient connues en Sicile et dans le détroit de Sicile. L'origine de ces individus n'est pas clairement établie, bien qu'ils puissent être arrivés avec des eaux de ballast d'un bateau venant de Méditerranée orientale, de mer Rouge ou du sud-ouest de l'océan Indien. La possibilité d'une migration naturelle depuis une population lointaine, comme celle de Sicile, est également discutée.

Key words. - Siganidae - *Siganus luridus* - MED - Lessepsian species - First record.

The rabbitfish *Siganus luridus* (Rüppell, 1829) is a species usually found in the western Indian Ocean and Red Sea. Since the opening of the Suez canal, between the Red Sea and the Mediterranean in 1869, 309 species, called "Lessepsian" species, entered into Mediterranean waters, including ~75 fish species (Galil, 2009). Among them, two herbivorous fish species belonging to the Siganidae family, *Siganus luridus* and *S. rivulatus* Forsskål, 1775 have become very common in most parts of the eastern Mediterranean and strongly interact with native herbivorous fish species through competition for food resources and habitat (Bariche *et al*., 2004). *S. luridus* was first recorded in the Mediterranean in 1956 (Ben-Tuvia, 1964) and progressively continued its geographical expansion through the eastern Mediterranean. The westernmost *S. luridus* populations are reported in the north-east of Tunisia (Ktari-Chakroun and Bouhlal, 1971), the island of Linosa in the Sicily Strait (Azzurro and Andaloro, 2004) and in Cape d'Orlando, northern Sicily (Castriota and Andaloro, 2005).

The 9th of July 2008, a professional fisherman (S. Piro) caught a specimen of *Siganus luridus* in his gillnets (~200 m long, with a mesh size of 13 mm usually used for captures of *Mullus* spp.) near Sausset-les-pins (43°19,647 N - 005°07,698 E), at a depth of about 5-10 m in a site mostly characterized by rocky bottoms mixed with *Posidonia oceanica* beds (Fig. 1). The fish measured 20.5 cm (TL) (Fig. 2) and since his capture is maintained alive in the aquaria of the Parc Marin de la Côte Bleue (its reference number is MNHN 2009-0148). A second individual was caught in the same area by

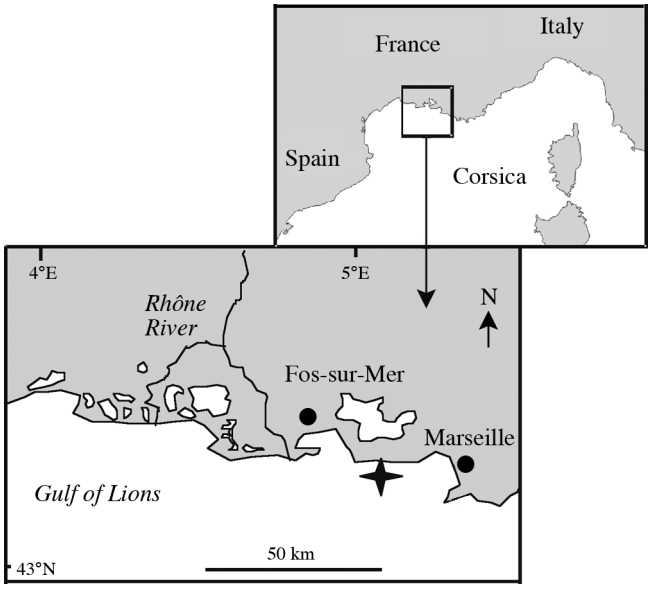

Figure 1. - Location of the site of Sausset-les-pins (star) where two *Siganus luridus* were caught, the 9th of July and the 27th of September 2008.

Figure 2. - *Siganus luridus* caught off Sausset-les-pins the 9th of July 2008 and maintained alive in the aquaria of the Parc marin de la Côte bleue (reference n° MNHN 2009-0148).

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another professional fisherman (C. Malaussena) the 27th of September, 2008. He was fishing with trammel nets with a mesh size of 9 mm. This second fish was unfortunately not conserved and its size (18.3 cm TL) was measured from pictures (available from the authors).

These captures constitute a considerable extension of the known distribution range of the species within the Mediterranean, but the origin of these individuals is not clear and three hypotheses could be proposed. First, they could result from a release, accidental or not, from a private aquaria. However, siganids are not very sought after by local aquariologists and are not found in local / regional aquaria stores. The release hypothesis is thus not strongly supported. Moreover, the first specimen seems to be a wild fish, because it has taken about one month after his catch for eating other foods than algae in its aquaria. Second, they could have been transported from another site in the eastern Mediterranean Sea or the Red Sea through ship-ballast' waters. The area of capture is close to two major harbor areas (Marseille and Fos-sur-Mer, see figure 1) and this hypothesis remains plausible, as it constitutes one of the major causes of introduction of exotic species, including teleost fish (Wonham *et al*., 2000). We are aware that we cannot verify this hypothesis for *S. luridus* yet, but a recent work on an exotic gobiid evidenced transport through vessel ballasts (Goren *et al*., in press). Third, these individuals could 'simply' be fishes coming from a far-off and non-identified population. *Siganus luridus* displays a large home range and is an active swimming species. Thus, one can suggest these individuals might come from a distant population, such as those found in Sicily, in Linosa Island or even in northeastern Tunisia. A complementary explanation could be found when considering the hypothesis of Azzurro *et al*. (2006) regarding dispersal dynamics of this species, as they indicated (see also references therein) that siganid larvae could be dispersed for up ~1000 km. This could have also been facilitated due to major coastal currents prevailing in the region, i.e. towards the north / northwest along Italian coasts, and towards the west from the Ligurian area to the Provence coasts. Another complementary explanation is to consider that undiscovered small populations might occur somewhere between Sicily and the area close to Marseille. We are aware that any data support this hypothesis and further research is thus needed to better assess the expansion of this Lessepsian siganid in the western Mediterranean basin. We should also consider the fact that *S. luridus*, a thermophilic species, was found in one of the coldest sector of the whole Mediterranean. This might suggest that we are facing an important signal of climatic changes in such area (Boero *et al*., 2008).

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