

RED ALERT: LIONFISH!

Lionfish, whose origins date back millions of years in the Indo-Pacific Ocean, is a species of marine life that thrives in warm waters with temperatures ranging from 10°C to 35°C. [1] They are known as a dominant predator species in their region and stand out with their poisonous spines. Nowadays, however, they have become a dangerous invasive species due to thoughtless human intervention. Their habitat is no longer limited to Indo-Pacific region, as they have begun to destroy the biological diversity in the areas they have invaded.



Figure 1: The winning drawing of a Lionfish by Tjaša Tory from Slovenian Raising awareness campaign

Interference and Ignorance

Modern day technology and international trade are evolving rapidly every day and it sometimes seems we cannot keep up with them. While we are blinded by our magnificent inventions and profit opportunities, we fail to see the long-term harmful consequences we cause to the environment, disrupting the balance of our planet. Lionfish is such a case. By no fault of its own it has acquired bad reputation in the Mediterranean Sea* and west coast of the USA and Central America [3].

In the 19th century, the Suez Canal, a corridor created by human hands connecting the Red Sea and the Mediterranean was built, and even further deepened in 2015. [10] Both interventions allowed more ships to pass through the canal. However, the latter made the sea ecosystem uncontrollable along this corridor. It led to many environmental damages, such as invasion of the Mediterranean Sea

by lionfish. "Advancing humanity" has disrupted the balance for the sake of convenience and faster trade. Was it really worth it?

Why Is Lionfish Problematic?

Lionfish feed on corals, fish and crustaceans. They are very aggressive and have no natural enemies outside its natural habitat. Their invasion has decreased the number of native-species and caused the disappearance of some marine plants. Additionally, they have displaced endangered marine creatures like dusky groupers, which use the rocky areas as their habitat [5,8].

In the interview conducted with Murat Drama, one of the pioneers in research on the Mediterranean region in Turkey, it was noted that their reproductive rates surpass those of the native species, which is highly disconcerting.

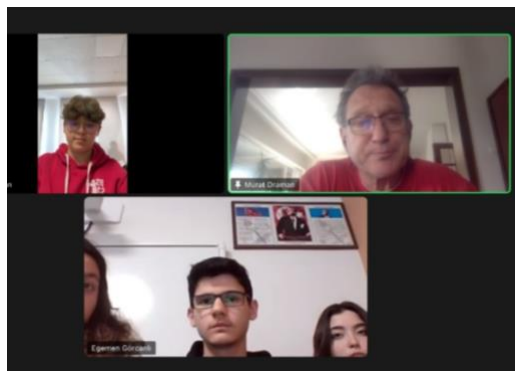


Figure 2: Interview with Murat Drama

The disruption of the Mediterranean Sea life also affects fishing and tourist industries in the region. Lionfish not only cause the loss of marine ecosystems, but also pose a danger to humans due to their highly poisonous spines causing nausea, changes in heart rate, sweating, fainting and more [11].

Do You Know Lionfish?

In order to find out what the level of awareness of the lionfish invasion is we conducted surveys with the same questions in Turkey and Slovenia. In Turkey (189 participants) 61.4% students are aware of the decrease in the number of native species in the Mediterranean, most of them citing global warming and industrial waste as main causes of this decline while the invasion of lionfish is actually one of the main reasons. Regarding the steps to be taken to protect marine ecosystems, when the problem caused by lionfish is explained, 45% prioritize the method of spearing and eliminating lionfish. Finally, 40.7% are neutral about the ongoing invasion.

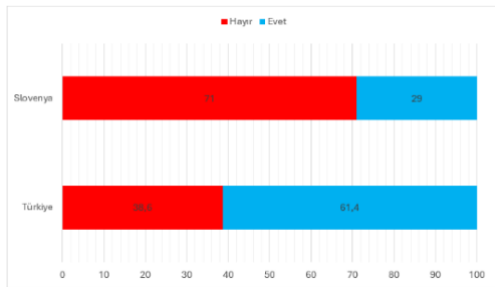
During the student collaboration and research, it became clear that the lionfish threat is not as acute in Slovenia as it is in Turkey; the reason being that Slovenia has a coastline in the North Adriatic with a bit cooler sea water (25-26°C in summer) than Turkey (28-30°C in summer) which lies further south.



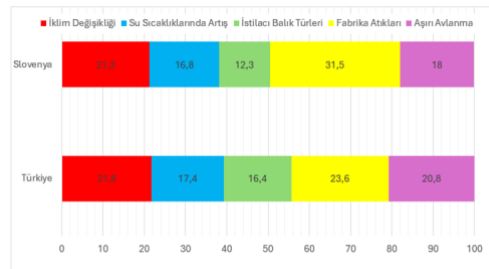
Figure 3: Lionfish Invasion Map-Image source YouTube Video of Terra Mater[6]

In Slovenia (170 participants) 71% students believe there has been no decrease in the number of native species in the Adriatic waters of Slovenia. Among the students who claimed there was a decrease, 77% identified global warming and industrial waste as the major reasons for it. Regarding lionfish invasions, 62% expressed concerns about being affected by it in the future. In terms of steps needed to protect marine ecosystems, 70% advocated that the species be kept in their original habitat.

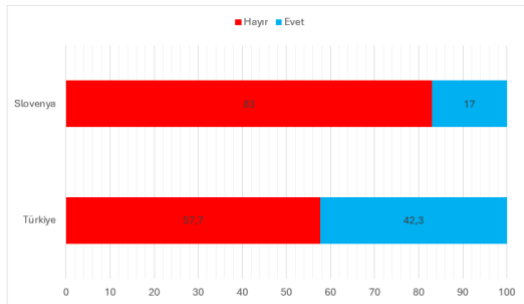
Graph 1: Result of the study on the decrease of the species



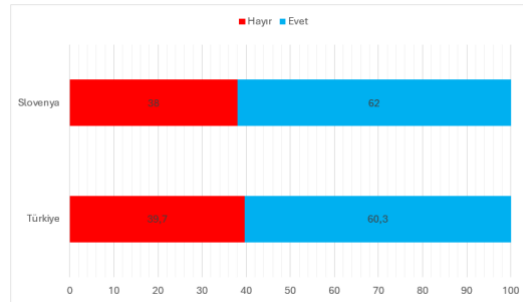
Graph 2: Result of the study to prevent the invasive species



Graph 3: Result of the study on the presence of lionfish in local waters



Graph 4: Attitude towards the perception of lionfish as a threat



The results show that the level of awareness about the dangers of the invasive lionfish in the Mediterranean Sea is quite low in both countries. The Turkish participants were more in favour of elimination by spearing while the Slovenes voted in favour of prevention. It is important to note, however, that students are highly aware of the global warming effects, which shouldn't be forgotten. As global warming increases, the temperature of the entire world rises and all seas gradually warm up and make the transition of the lionfish into non-native waters even easier since it prefers warmer waters [5,8].

Solutions So Far

In literature, options for addressing this threat include continuous observation and research, social awareness and education, collaborative monitoring, and early detection. [5] In Turkey, along the Mediterranean coast, efforts are being made to reduce the invasion and prevent the loss of biological diversity through observation, recording, controlled lionfish hunting, and consumption.

Slovenia has a tiny portion of the Mediterranean coast and although we have not been able to find any data on lionfish in Slovenia, Croatia, our neighbouring country is still number one summer tourist destination for most Slovenians.

What Can We Do about It?

According to our surveys, there is a dire need to raise awareness about the threat of the lionfish. If we do not see the situation as problematic, we will not act. This is the purpose of our article—to inform, educate, and raise awareness.

We need to keep up with our fast-paced world to ensure a balanced human evolution. Man-made environmental disasters (canal digging and global warming) have led to the uncontrolled migration of different species, resulting in invasions that disrupt the balance of marine ecosystems leading to biological losses. With sea temperatures rising each year the invasive migration of species such as lionfish will become a future threat even to regions currently unaffected, in this case Slovenia.

We chose to focus on young individuals, such as ourselves, but we urge our decision-makers to take action to protect our fragile marine ecosystem with international collaboration among Mediterranean countries, as we did.

*The article focuses on the Mediterranean Sea since Turkey and Slovenia are both in the Mediterranean.

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Survey link Turkey: <https://forms.gle/TH8GRg4MFjnD3xWS6>

Survey link Slovenia: <https://www.1ka.si/a/55e00a25>