

## Chapter 14

# THE EFFECTS OF WATER POLLUTION CAUSED BY HUMAN ACTIVITIES ON FISH POPULATIONS: THE CASE OF NİLÜFER STREAM

Abdullah KARATAŞ<sup>1</sup> , Ebru KARATAŞ<sup>2</sup>

### Introduction

Water is indispensable for the sustainability of life and every living thing needs water to live. As a living species, human also needs water to live. However in all living things only human is a threat to this very important source of life. Especially with the Industrial Revolution, the size of this threat has increased even more.

Water pollution occurs when unwanted materials enter in to water, changes the quality of water and harmful to environment and human health. Water is an important natural resource used for drinking and other developmental purposes in our lives. Safe drinking water is necessary for human health all over the world. Being a universal solvent, water is a major source of infection. According to World Health Organization (WHO) 80% diseases are water borne. Discharge of domestic and industrial effluent wastes, leakage from water tanks, marine dumping, radioactive waste and atmospheric deposition are major causes of water pollution. Heavy metals that disposed off and industrial waste can accumulate in lakes and river, proving harmful to humans and animals (Haseena et al., 2017: 16).

Potentially harmful substances-e.g. pesticides, heavy metals and hydrocarbons-are often released into the aquatic environment. When large quantities of pollutants are released there may be an immediate impact as measured by large-scale sudden mortalities of aquatic organisms, e.g. fish kills resulting from contamination of waterways with agricultural pesticides. Lower levels of discharge may result in an accumulation of the pollutants in aquatic organisms. The end results, which may occur long after the pollutants have passed through the environment, include immunosuppression, reduced metabolism, and damage to gills and epithelia (Austin, 1998). All the human-caused pollutants destroy the structure of the water, which is the most important resource that nature presents to us.

---

<sup>1</sup>Assistant Professor, Niğde Ömer Halisdemir University, Niğde/Turkey, akaratas@ohu.edu.tr

<sup>2</sup>Lecturer , Niğde Ömer Halisdemir University, Niğde/Turkey, ekaratas@ohu.edu.tr

- Conferences highlighting the importance of biodiversity in ecosystems can be given by academicians.
- Environmental problems should be avoided in their source without growing up. Local governments have great duties and responsibilities in this regard.
- Even more important than taking all the measures is environmental education because it is possible to change human behaviors in the desired direction only through education. Children who are given environmental love through environmental education at a young age will be a part of the solution of environmental problems in the future, not the cause.

## References

Altınışık, F. (1999). The Investigation Of Water-rock Relationship Of The Area Between Doğançi And Nilüfer The Dam On The Bursa-nilüfer Stream. Doctoral Thesis. Istanbul Technical University Institute of Science and Technology. İstanbul.

Atteberry, L. (2018). Why is water vital to life?. (Retrieved from <https://science.howstuffworks.com/environmental/earth/geophysics/water-vital-to-life.htm> in 14/07/2018).

Austin, B. (1998). The effects of pollution on fish health. (Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/21182713> in 18/04/2018).

Bucke, D. (1993). Aquatic pollution: Effects on the health of fish and shellfish. *Parasitology*, 106 (1): 25-37.

Dorak, S. & Çelik, H. (2017). Irrigation water quality of Nilüfer Stream and effects of the wastewater discharges of the treatment plants. *Ege Üniversitesi Ziraat Fakültesi Dergisi*, 54 (3): 249-257.

Gellert, A. (2017). The effects of water pollution around the world. (Retrieved from <https://sciencing.com/effects-water-pollution-around-world-6456.html> in 21/07/2018).

Ghose, T. (2015). Why is water so essential for life?. (Retrieved from <https://www.livescience.com/52332-why-is-water-needed-for-life.html> in 12/07/2018).

Güteryüz, G., Arslan, H., Çelik, C., Güçer, Ş. & Kendall, M. (2008). Heavy metal content of plant species along Nilüfer Stream in industrialized Bursa City, Turkey. *Journal of Water, Air and Soil Pollution*, 195 (1-4): 275-284.

Haseena, M., Malik, MF., Javed, A., Arshad, S., Asif, N., Zulfiqar, S. & Hanif, J. (2017). Water pollution and human health. *Journal of Environ Risk Assess Remediat*, 1(3): 16-19.

Jowit, J. (2008). World is facing a natural resources crisis worse than financial crunch. (Retrieved from <https://www.theguardian.com/environment/2008/oct/29/climatechange-endangeredhabitats> in 04/07/2018).

Karaer, F. & Küçükbalı, A. (2006). Monitoring of water quality and assessment of organic pollution load in the Nilüfer Stream, Turkey. *Journal of Environmental Monitoring and Assessment*, 114: 391-417.

Keleş, R. (2012). The quality of life and the environment. *Procedia-social and behavioral sciences*, 35: 23-32.

Moiseenko, T. I. (2010). Effect of toxic pollution on fish populations and mechanisms for maintaining population size. *Russian Journal of Ecology*, 41 (3): 237-243.

Ökdemir, U. (2018). Eskiden balık tutuluyordu, artık canlı yaşamıyor. (Retrieved from <https://www.evrensel.net/haber/354901/eskiden-balik-tutuluyordu-artik-canli-yasamiyor> in 15/07/2018).

Summak, S., Aydemir, N. C., Vatan, Ö., Yılmaz, D., Zorlu, T. & Bilaloğlu, R. (2010). (Bursa/Turkey) water using piscine micronucleus test. *Journal of Food and Chemical Toxicology*, 48 (8-9): 2443-2447.

Svobodová, Z., Lloyd, R., Máchová, J. & VYkusová, B. (1993). Water quality and fish health. *EIFAC Technical Paper*. Food and Agriculture Organization. No. 54. Rome, Italy.

Üstün, G. E. (2011). The assessment of heavy metal contamination in the waters of the Nilüfer Stream in Bursa. (Retrieved from <http://agris.fao.org/agris-search/search.do?recordID=AV2012080567> in 06/07/2018).

WWF-World Wildlife Fund Global. (2017). Water pollution. (Retrieved from [http://wwf.panda.org/knowledge\\_hub/teacher\\_resources/webfieldtrips/water\\_pollution/in](http://wwf.panda.org/knowledge_hub/teacher_resources/webfieldtrips/water_pollution/in) 02/07/2018).

Williams, DK (2018). How does water pollution affect fish? (Retrieved from <https://sciencing.com/water-pollution-affect-fish-4565696.html> in 22/07/2018).

Woodford, C. (2017). Water pollution: An introduction. (Retrieved from <https://www.explainthatstuff.com/waterpollution.html> in 17/07/2018).