

## State and perspectives in the sphere of marine waste: data from Russian Far East

Ekaterina Korshenko (1), Elena Tyurina (2), Alla Kravchenko (3), Elena Glotova (4), Olesya Sergeeva (5), Alexander Korshenko (6), Olga Nesterova (7), Valentina Tregubova (8), Viktoriia Semal (9,10), Alla Derbentseva (11), Lyudmila Purtova (12), and Nikolay Kostenkov (13)

(1) Master's degree student, School of Economics and Management at Far Eastern Federal University(connect\_@bk.ru), (2) Doctor of Economic Sciences, Associate Professor of the Department of Management, School of Economics and Management at Far Eastern Federal University (tyurina.ea@dvfu.ru), (3) Doctor of Economic Sciences, Associate Professor of the Department of World Economics, School of Economics and Management at Far Eastern Federal University (kravchenko.aa@dvfu.ru), (4) Doctor of Politic Sciences, Associate Professor of the Department of Marketing, Commerce and Logistics, School of Economics and Management at Far Eastern Federal University (glotova.ea@dvfu.ru), (5) PhD student, Assistant of the Department of World Economics, School of Economics and Management at Far Eastern Federal University (sergeeva.oo@dvfu.ru), (6) Doctor of Economic Sciences, Associate Professor of the Department of Management, School of Economics and Management at Far Eastern Federal University (alkorshenko@gmail.com), (7) Doctor of Science, Head of the Department of Soil Science, Far Eastern Federal University, Vladivostok, Russian Federation (nesterova.ov@dvfu.ru), (8) Doctor of Science, the Department of Soil Science, Far Eastern Federal University, Vladivostok, Russian Federation (tregubova.vg@dvfu.ru), (9) Doctor of Science, Associate professor, Department of Soil Science, Far Eastern Federal University (semal.va@dvfu.ru), (10) Senior researcher in Institute of Biology and Soil Science, Far Eastern Branch of Russian Academy of Sciences, Vladivostok, Russian Federation (semal.va@dvfu.ru), (11) Doctor of Science, the Department of Soil Science, Far Eastern Federal University, Vladivostok, Russian Federation (derbentseva.am@dvfu.ru), (12) Doctor of Science, Head of the Department of Soil Organic Matter, Institute of Biology and Soil Science at Far Eastern Branch of Russian Academy of Sciences, Vladivostok, Russian Federation, (13) Doctor of Science, Head of the Department of Soil Science and Ecology, Institute of Biology and Soil Science at Far Eastern Branch of Russian Academy of Sciences, Vladivostok, Russian Federation

Today, pollution of seas and coastal areas by waste is one of the most important environmental issues recognized at international scale. This problem consists in negative effect on marine flora and fauna, and as global experience shows, requires cooperation of government, business sector and civil society to overcome it.

A large number of studies confirm the serious impact of marine litter: sea inhabitants easily take pieces of plastic as something edible, these particles can get into stomach of fish, and then through the food chain into humans. Barnes highlighted the potential threat due to the appearance of alien species. Brown studied the entanglement of marine creatures at nets that eventually leads to the extinction of certain species and destruction of underwater fauna. According to the UN every year about one million seabirds, one hundred thousand turtles and other marine mammals entangle in fishing gear and die.

The problem of marine waste is also relevant for Primorsky Krai of the Russian Federation. Within the project "Ocean without borders" in 2014 monitoring of Japan Sea pollution was carried out: 2,67 hectares of 16 coasts were investigated, more than 500 kg of litter were collected and studied, among which 363 grams of marine debris was an average per 100 m<sup>2</sup>, and a number of collected waste units was about 143. It should be noted that the largest proportion of collected litter is plastic which is followed by glass and ceramics.

Today, marine debris in Primorsky Krai is disposed at specially organized landfills, where the air is contaminated by sulfur dioxide and various harmful organic compounds. It may lead not only to the deterioration of the environment, but also to the infectious diseases, the pollution of groundwater and soil. Therefore, an environmental entrepreneurship can be considered as a solution for the problem.

One of the first who dared to use ocean litter is the studio Swain (UK), which proposed the project of transforming collected waste into furniture. Another company, Adidas, has developed a new design of running shoes made of plastic and fishing nets where the key point is waste-free production.

Municipalities from different countries also began to take actions: in order to familiarize young people with environmental pollution, they hold workshops for the manufacture of handicrafts from marine litter. In Primorye since 2012 the Department of Natural Resources and Environmental Protection has hold similar workshops.

Thus, to create decent living conditions for people, the use of natural resources must be highly efficient, that means their reuse and recycling. Of course, the solutions for the problem of marine waste proposed by companies and government can not solve this problem, but their actions in the sphere of recycling marine litter can become an

example for other entrepreneurs.