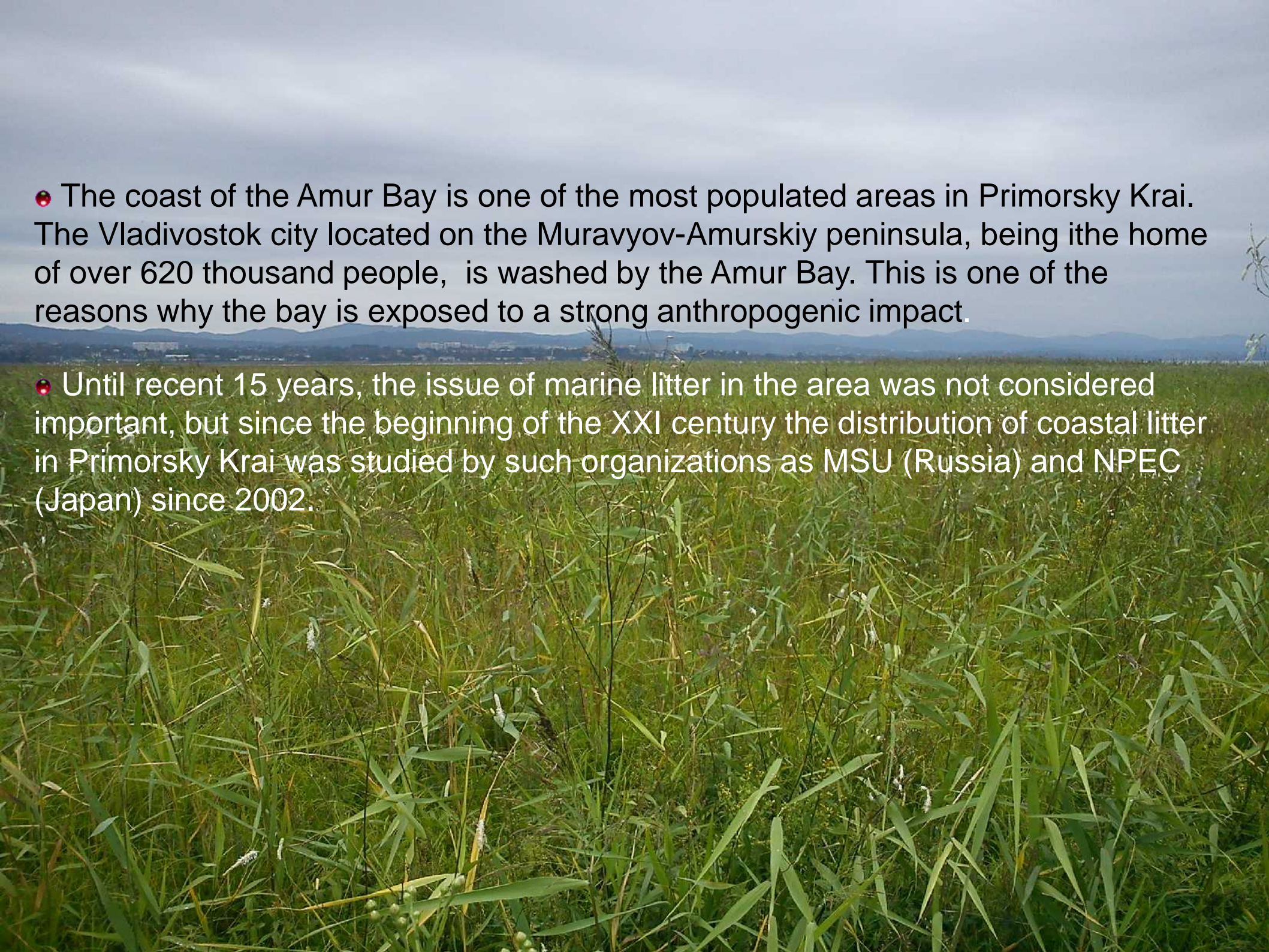




***Marine debris in the Amur Bay of the
Peter the Great Gulf.
Distribution and sources***

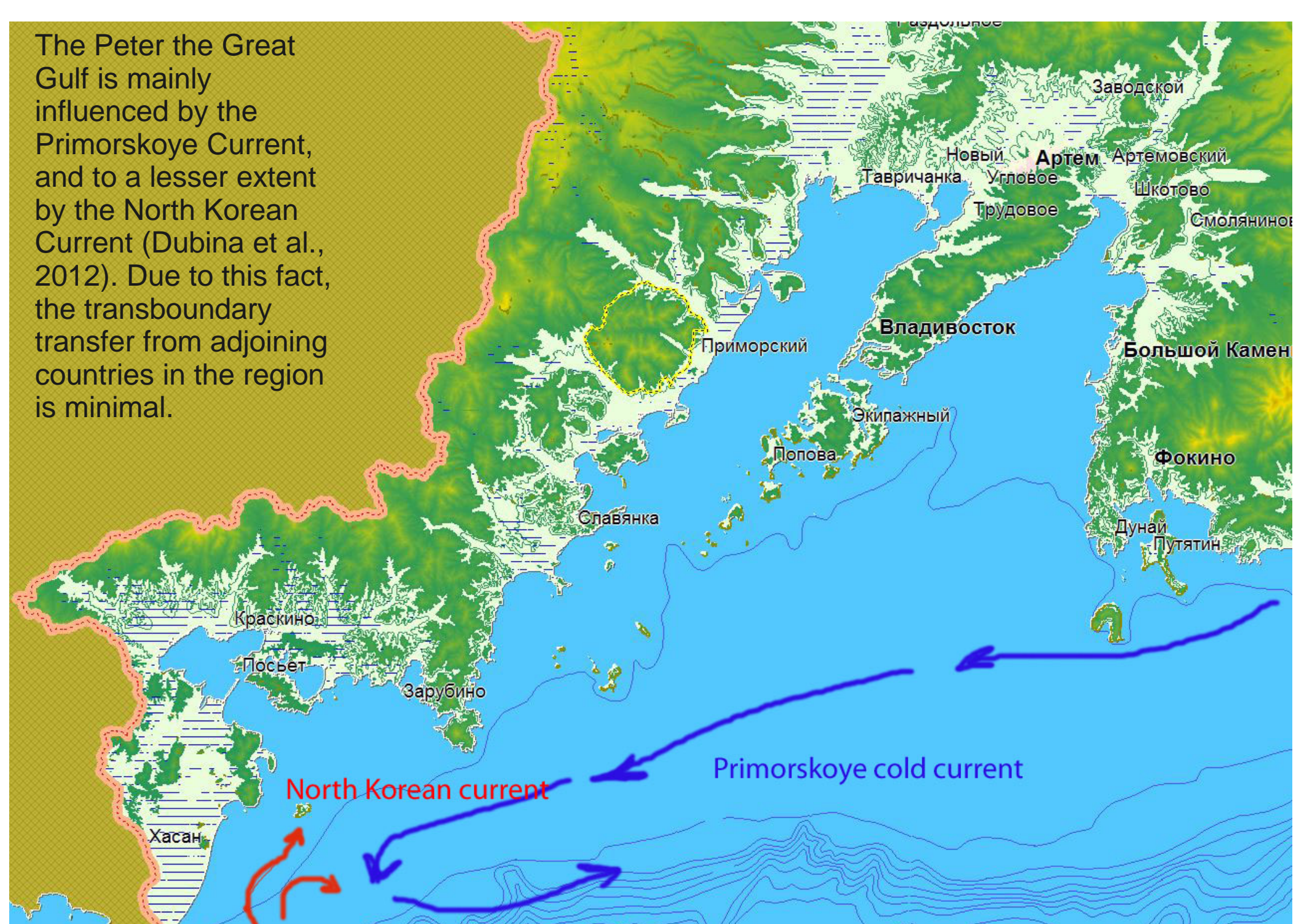
***Nikolai Kozlovskii
Pacific Geographical Institute
FEB RAS***



● The coast of the Amur Bay is one of the most populated areas in Primorsky Krai. The Vladivostok city located on the Muravyov-Amurskiy peninsula, being the home of over 620 thousand people, is washed by the Amur Bay. This is one of the reasons why the bay is exposed to a strong anthropogenic impact.

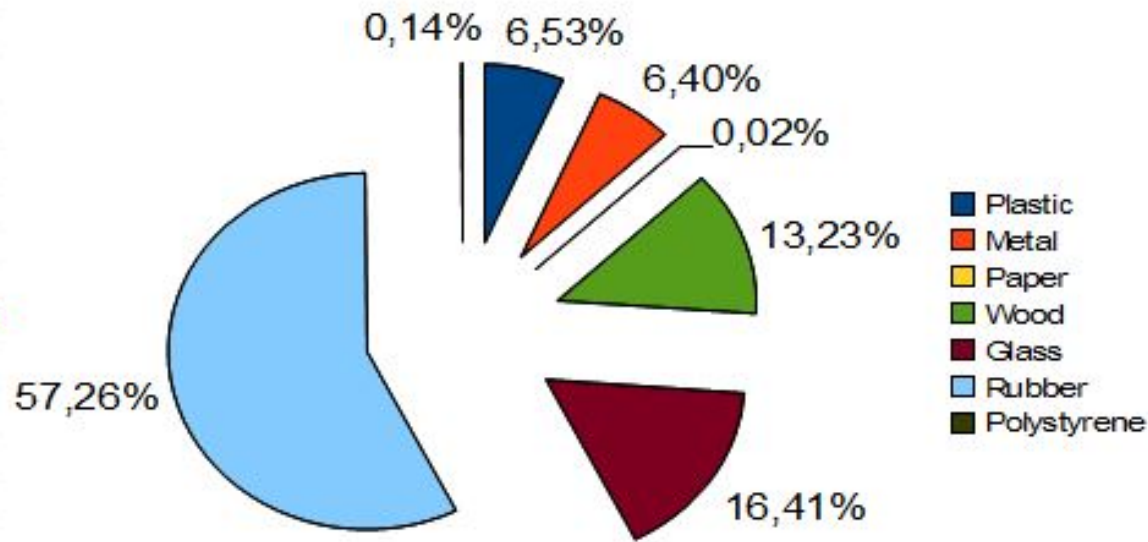
● Until recent 15 years, the issue of marine litter in the area was not considered important, but since the beginning of the XXI century the distribution of coastal litter in Primorsky Krai was studied by such organizations as MSU (Russia) and NPEC (Japan) since 2002.

The Peter the Great Gulf is mainly influenced by the Primorskoye Current, and to a lesser extent by the North Korean Current (Dubina et al., 2012). Due to this fact, the transboundary transfer from adjoining countries in the region is minimal.

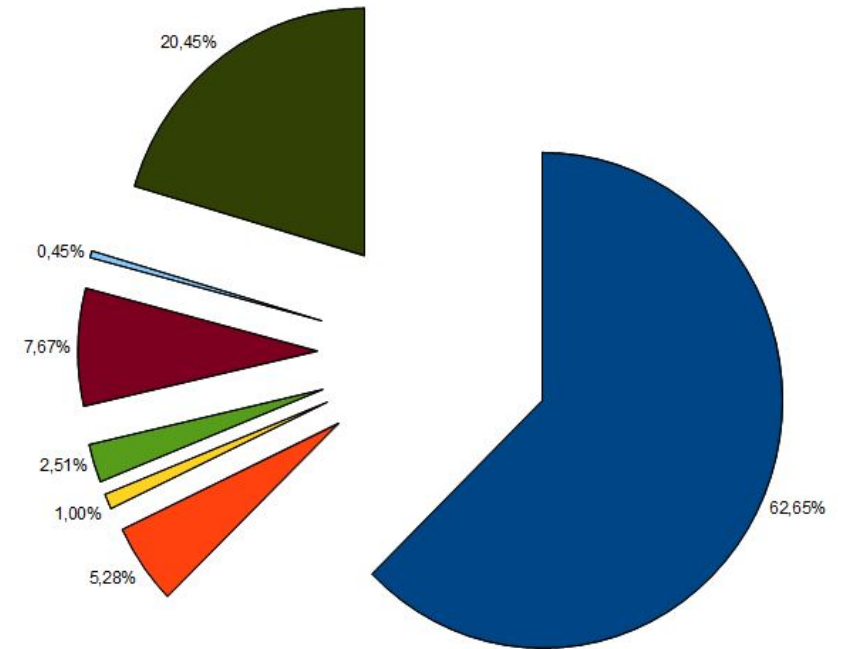


Ratio of shoreline debris:

Weight (%)

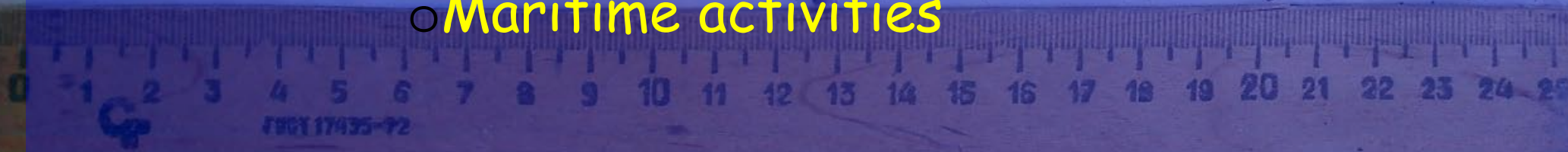


Quantity (%)



Main sources:

- Recreation
- Household activities
- Unauthorized waste disposal
- Construction
- Maritime activities



Recreation is the major source of marine debris in Primorsky Krai.

According to the data provided by renters of several beaches along the coast of the Amur Bay, average monthly amount of litter collected on an average beach in summer time is approximately 6 tons.





An urgent issue is reduction of litter transported to the coastal area with river and wastewater discharge.

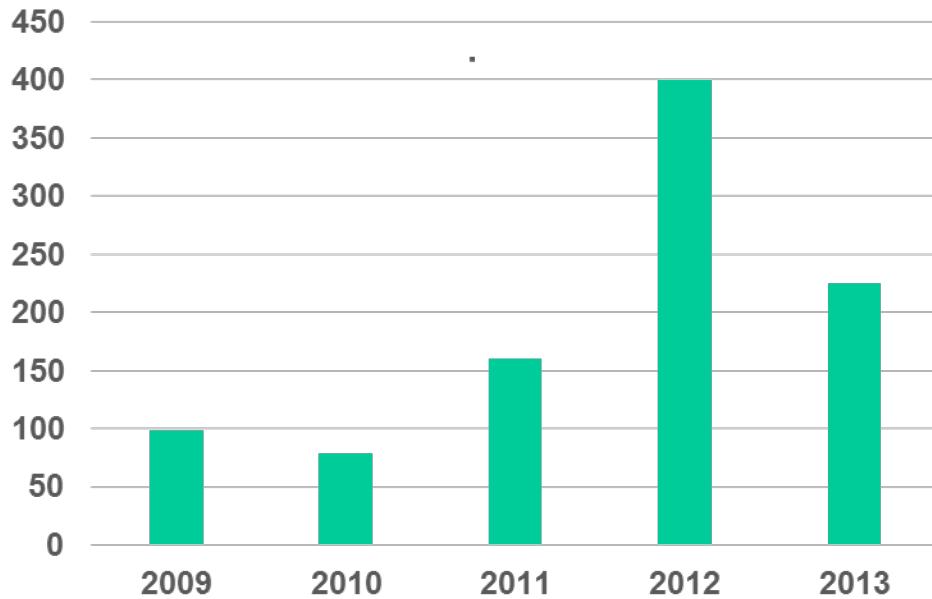
According to the Vladivostok City Administration, «the population of private residential areas and garden suburbs covering the area of 18,320 hectares lack efficient waste collection system.

The waste management system also leaves behind 17,292 hectares of forest stands belonging to the Federal District and 23,782 hectares of other federal lands (41,074 hectares in total).

Thus, the urban waste management system serves less than 25% of the district area and less than 70% of the population»

Sedanka River mouth after typhoon, summer 2012.

The dynamics of litter (volume in cubic meters) collected from the water area and territory of the Port of Vladivostok.



Two waste collection vessels operating across the water area of the Golden Horn Bay collect average 80 kg of waste daily.

The enterprises located on the territory of the Port of Vladivostok produce average 6 tons of waste annually.

Mean annual volume of litter collected by port reception facilities from ships reaches 2,500 m³.

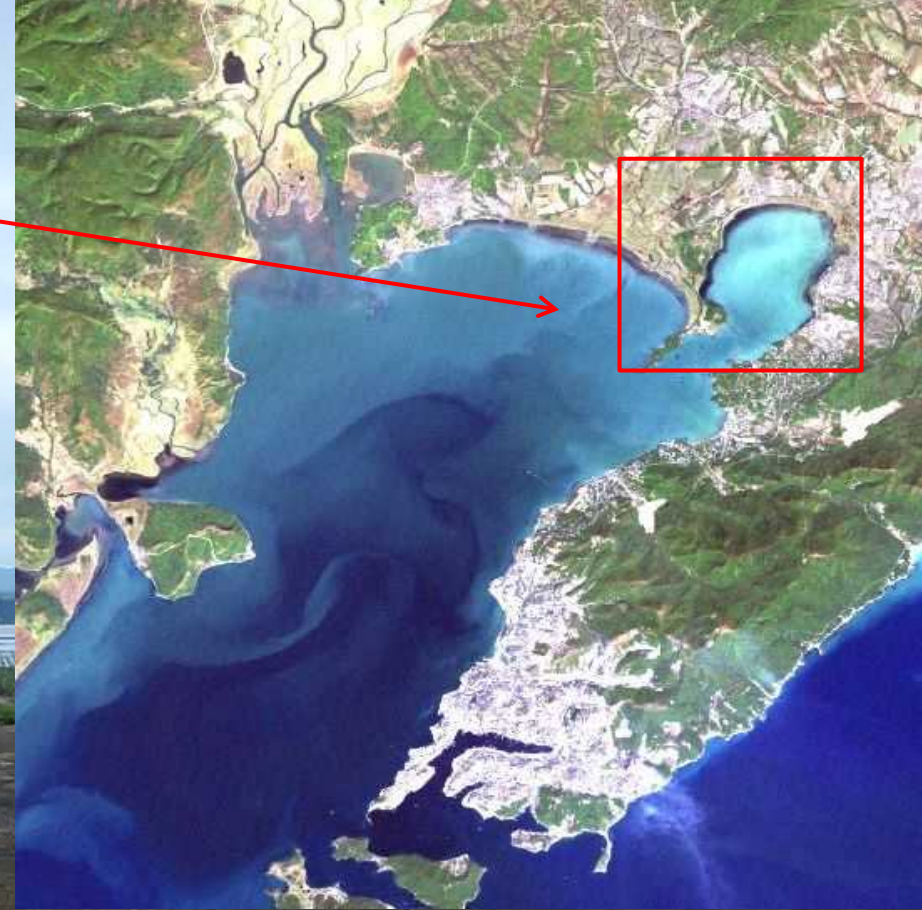
Waste collected from ships, water area and adjacent territory is transported to the waste incineration plant.



Adverse effects of the marine debris in the Amur Bay

- Decrease of recreational attractiveness of coasts
- Deterioration of coastal wetlands in Uglovoy Bay
- Entanglement of marine mammals
- Pollution with products of non-sanctioned incineration of stranded polymers
- Growing expenditures for waste removal for coastal nature users

The fate of debris in the Uglovoy Bay



Strong winds periodically move water masses along the bay, resulting in subsequent splash of litter ashore. The littering is facilitated by the natural "litter trap" - a large amount of algae rot and dense marsh vegetation.



What is done to fight the problem of marine debris?

- Putting into operation of new waste treatment facilities
- Upgrading of storm drain system in Vladivostok
- Regular coastal and river cleanup campaigns /
Sea floor cleanups by amateur divers

What is to be done ?

One of the major triggers of pollution is lack of so called environmental thinking of population. It is necessary to improve it for conservation of good environment for future generations.

It is necessary to get rid of inconformities on federal and municipal levels to strenghten the control over pollution on federal lands.

To further improve wastewaterdraining systems around the bay, toeliminate draining of litter with wastewater from suburban areas.

Thank you for your attention!!!

