

Microplastic Pollution in *Leuciscus baicalensis* and *Rutilus rutilus*: An Impending Danger to Aquatic Biodiversity in Western Siberian Riverine Fishes

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INTRODUCTION & AIM

Microplastic pollution is an escalating environmental issue, posing a significant threat to aquatic ecosystems and human health.

The aim of the research include:

- Review existing research on microplastic pollution
- Quantify and analyze the levels, morphology, and sources of microplastics in *Leuciscus baicalensis* and *Rutilus rutilus*.
- Investigate the impact of microplastics smaller than 0.150mm absorbed in the intestines of these fish species.

RESULTS & DISCUSSION

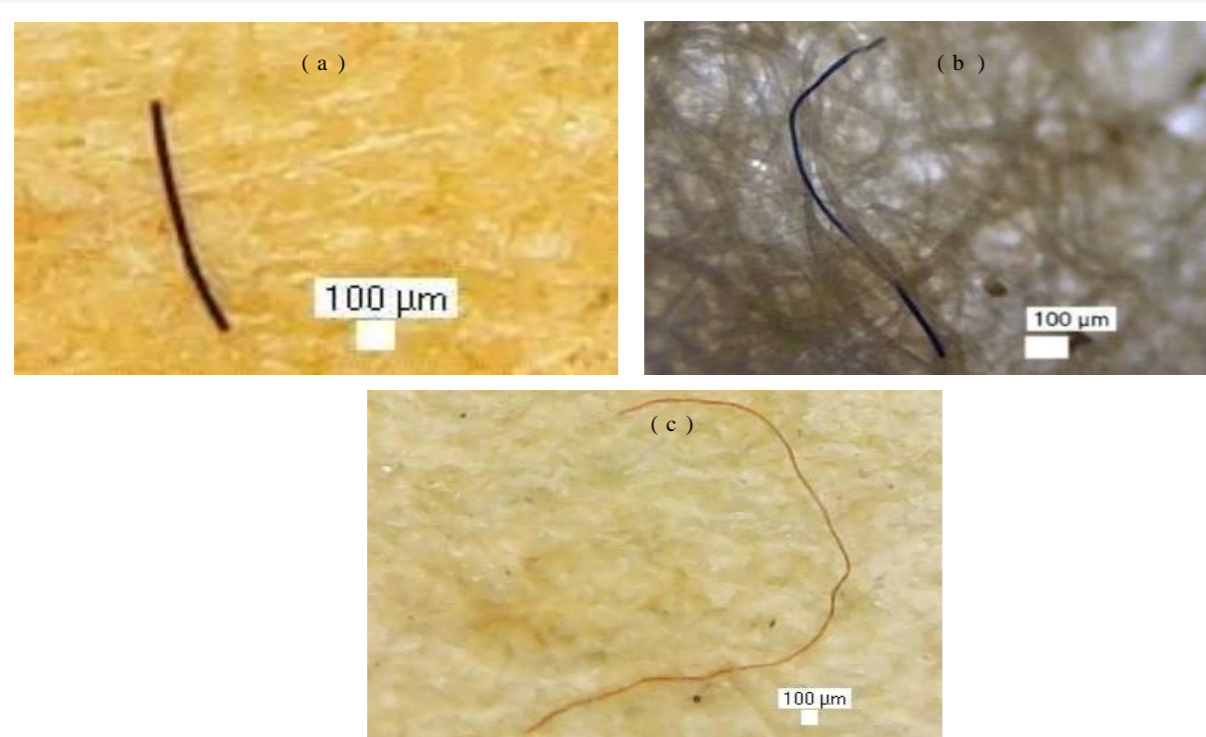


Figure 1. The color of microplastic found in the gastrointestinal tract of pelagic and demersal fish in Bitung, North Sulawesi. (a) Black; (b) Blue; (c) Red.

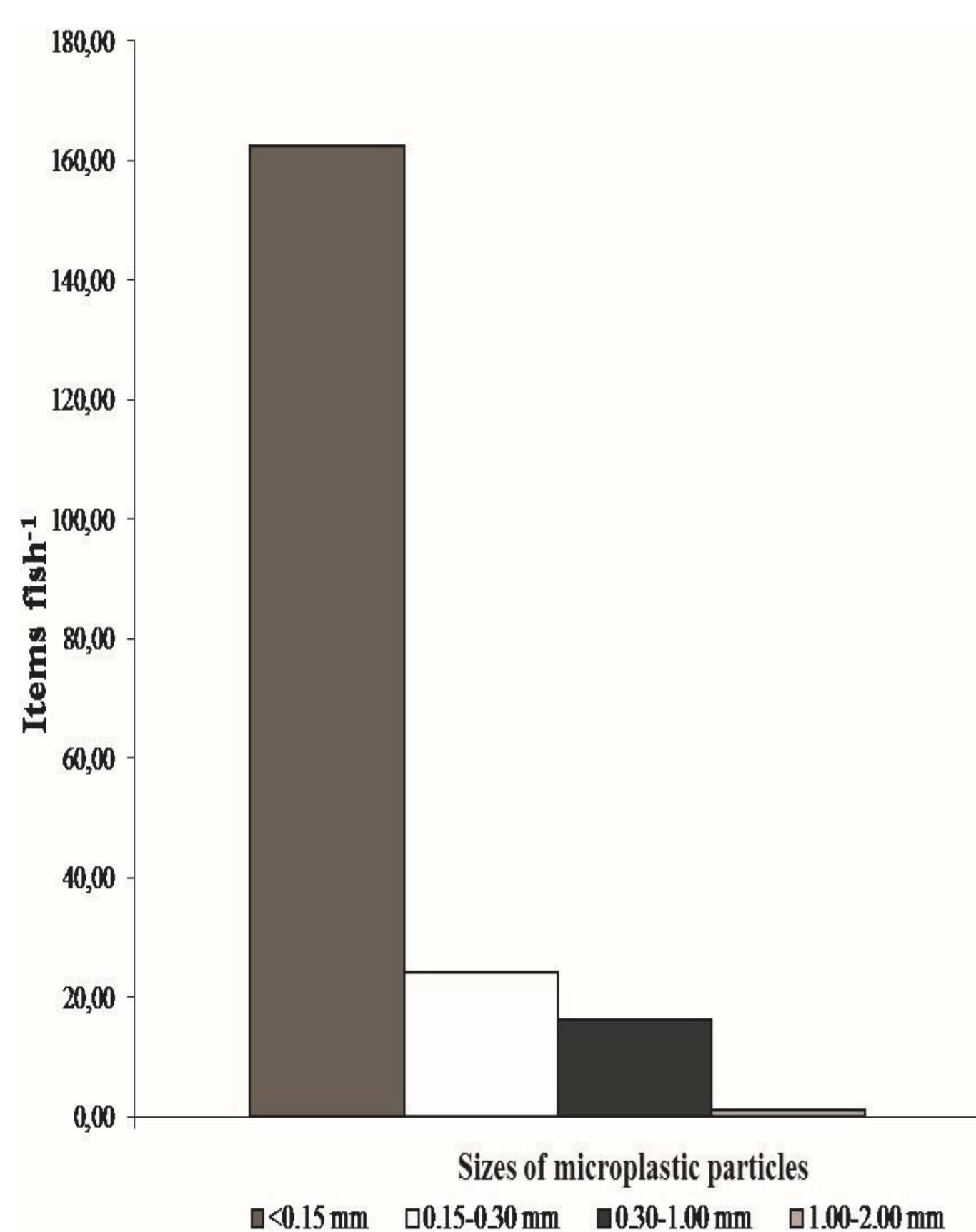


Figure 2. Abundance of microplastic sizes in the guts of the Tom River dace (a), differences in microplastic sizes abundance (b)

REFERENCES

- Aunurohim, A. (2023). Abundance and Characteristics of Microplastics Found in The Gastrointestinal Tract of Commercial Marine Fish from Bitung, North Sulawesi – Indonesia. *Squalen*, 18(1), 31–41. <https://doi.org/10.15578/squalen.719>
- Frank, Y. A., Vorobiev, E. D., Babkina, I. B., Antsiferov, D. V., & Vorobiev, D. S. (2020). Microplastics in fish gut, first records from the Tom River in West Siberia, Russia. *Vestnik Tomskogo Gosudarstvennogo Universiteta. Biologiya*, 52, 130–139.

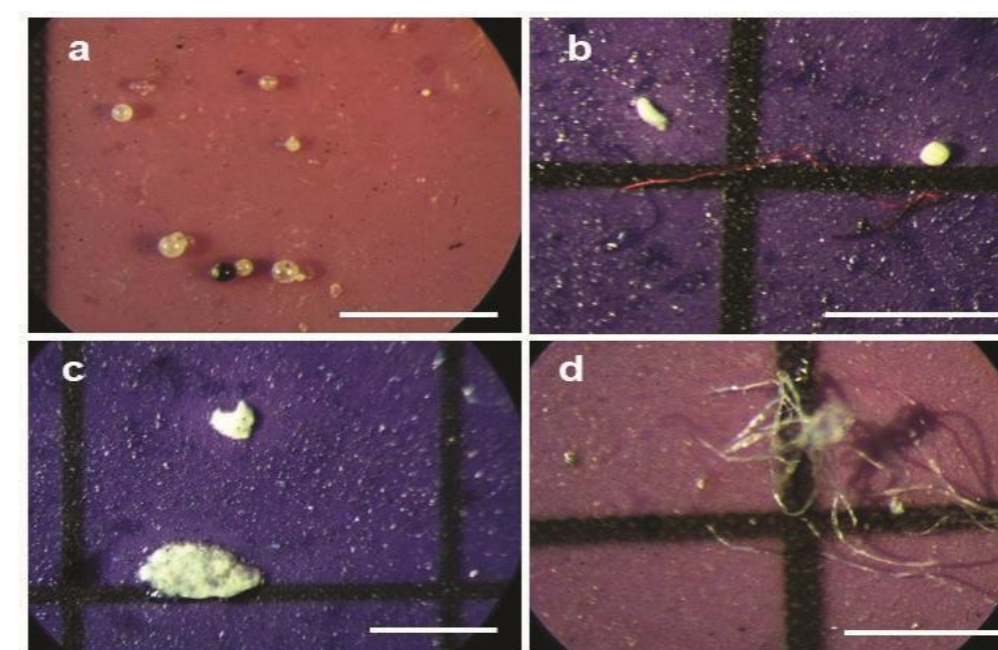


Figure 3. Microplastics found in dace from the Tom River were diverse in shape and included fragments, spheres, fibers and films ranging from <0.15 to 2.00 mm.

Table 1 Dimensional features of the dace, the Tom River, Tomsk, April 01, 2020

Parameters	Spheres	Films	Fibers	Fragments	<0.15	0.15-0.30	0.30-1.00	1.00-2.00	Total items fish ⁻¹
M ±mM	31.5 ±24.4	14.9 ±2.10	13.9 ±2.90	144 ±10.2	162 ±27.9	24.2 ±2.50	16.2 ±4.00	1.20 ±0.60	204 ±28.7
Min-Max	0.00323	5.00- 26.0	2.00- 35.0	96.0-225	74.0468	11.0- 39.0	1.00- 37.0	0.00- 7.00	114-512
Standard deviation	88.0	7.60	10.4	36.8	101	9.00	14.5	2.00	104
Coefficient of variation	279	50.9	74.8	25.7	62.0	37.1	89.1	173	50.7

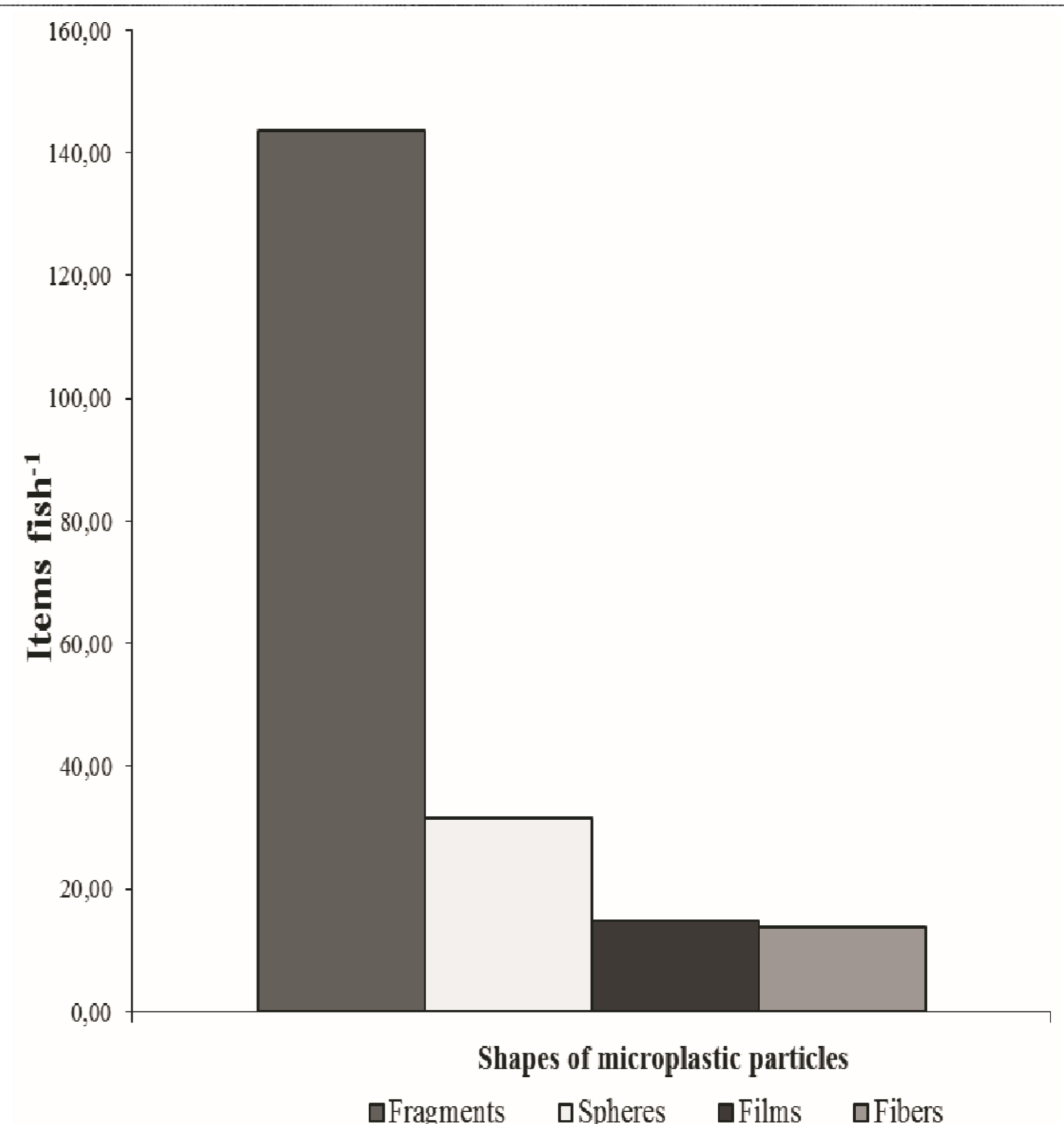


Figure 4. Diversity of microplastics from the guts of the Tom River dace: spheres (a), sphere, fibers and fragment (b), fragments (c), fibers (d). Scale bar is 1 mm.

CONCLUSION

Microplastic pollution significantly threatens aquatic biodiversity in Western Siberian riverine fishes, especially *Leuciscus baicalensis* and *Rutilus rutilus*. The study found diverse microplastics (fragments, spheres, fibers, films) in their gastrointestinal tracts, ranging from less than 0.15 mm to 2.00 mm. This pollution represents a severe environmental issue.