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FROM INVASIVE CRAYFISH TO VALUABLE RESOURCES

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Invasive Alien Species (IAS) are ranked among the top five direct causes of biodiversity loss, posing a substantial threat to humanity in the coming decade. The spiny-cheek crayfish, *Faxonius limosus*, native to Eastern North America, has now spread to over 20 European countries, including Serbia, and is classified as an IAS of Union concern. As a prominent aquatic invader in European inland waters, this species presents significant challenges for biodiversity conservation efforts, particularly in terms of its prevention, control, and eradication.Effective management of invasive species requires innovative strategies that turn these challenges into a variety of eco-products, aligning with the Zero Waste concept. Our study addresses the current problem of the invasive crayfish *F. limosus* in the Danube and its detrimental impact on native crayfish species and biodiversity, for which a systemic solution is lacking. We are turning this challenge into an opportunity by developing novel food and feed products while simultaneously utilizing shells for developing biosorbents, rubber bio-fillers, and bio-based packaging materials. Crayfish meat will be used to develop innovative food, pet food, and feed products. The leftover shells, which are rich in chitin—the second most abundant polymer after cellulose—offer a solution to two major environmental challenges: heavy metal contamination in aquatic ecosystems and plastic pollution. Due to their exceptional adsorption capabilities, crayfish shells can effectively remove heavy metals from industrial wastewater. However, the disposal of saturated biosorbents presents a challenge. To overcome this, the saturated biosorbents will be incinerated, with the resulting ash being utilized as a biofiller for rubber. Additionally, chitin and proteins extracted from the shells will be used to create bio-based packaging materials, offering an eco-friendly alternative to single-use plastics.

Keywords: Invasive species, spiny-cheek crayfish, crayfish meat, crayfish shells, zero waste

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