



ID der Kurzfassung : 432

Harmonized One Health surveillance of antimicrobial resistance and heavy metal tolerance in Baltic Sea surface waters and wild birds

Inhalt

Abstract. Antimicrobial resistance (AMR) and heavy metal tolerance in aquatic and wildlife-associated bacteria are interconnected One Health challenges, yet harmonized cross-border data remain scarce.

BALTIC-AMR addresses this gap through standardized longitudinal surveillance across Germany, Sweden, Estonia, and Poland, integrating surface-water and wild-bird sampling with culture-based isolation, phenotyping, genomics, and residue analysis. From 04/24–09/25, 1,346 isolates were recovered from water and wild birds, mainly comprising priority *Enterobacterales* and selected *Pseudomonadales*. Putative ESBL and arsenic tolerant phenotypes predominated, while carbapenem resistance was more frequent among water-derived isolates; zinc tolerance occurred rarely.

The same sampling framework also captured water-borne *Vibrio* spp. During the 2024 *Vibrio* season (06/24–10/24), 330 isolates were collected and sequenced to resolve phylogenetic diversity and screen for resistance and virulence determinants. Preliminary screening identified genes assigned to tetracycline and beta-lactam resistance classes, alongside efflux and lipid A modification markers. In parallel, residue analysis detected fluoroquinolone and tetracycline concentrations exceeding PNEC levels year-round in WWTP effluents.

Together, these data confirm environmental AMR occurrence and support phylogeny-aware One Health risk assessment in the Baltic Sea region.

Keywords

Antimicrobial resistance; heavy metal tolerance; Baltic Sea; environmental surveillance; surface water; wild birds; *Enterobacterales*; *Pseudomonadales*; *Vibrio* spp.

Registration ID

OHS26-119

Professional Status of the Speaker

PhD Student

Junior Scientist Status

Yes, I am a Junior Scientist.

Autor: SITTNER, Max

Vortragende(r): SITTNER, Max

Track Klassifizierung: AMR

Typ des Beitrags: Oral presentation

Eingereicht von SITTNER, Max <max.sittner@helmholtz-hioh.de> am Montag, 22. Juni 2026