

## CONCLUSIONS

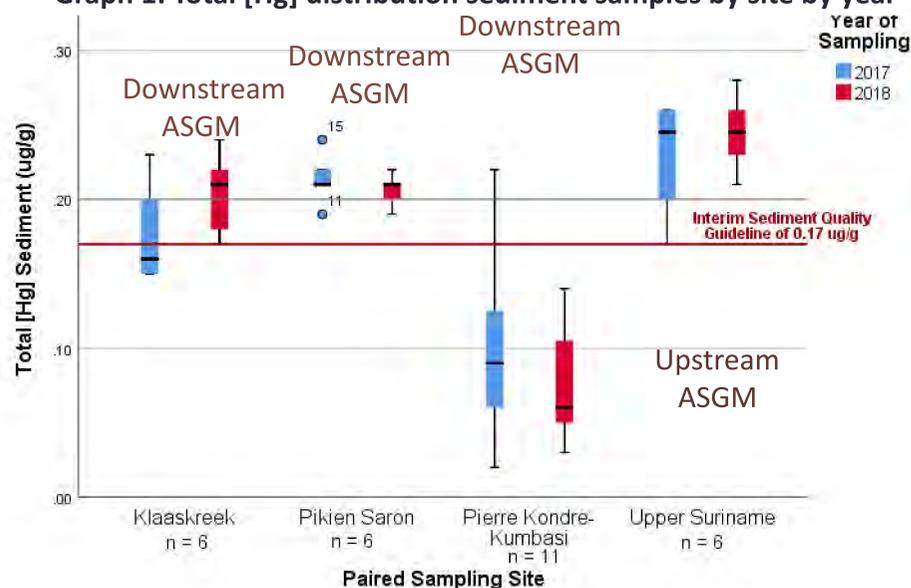
There were no differences in total mercury concentration in fish and sediment between 2017 and 2018. However, in 2018, one site showed total mercury concentrations in fish higher than the recommended US EPA & EU standards for human consumption.

## BACKGROUND

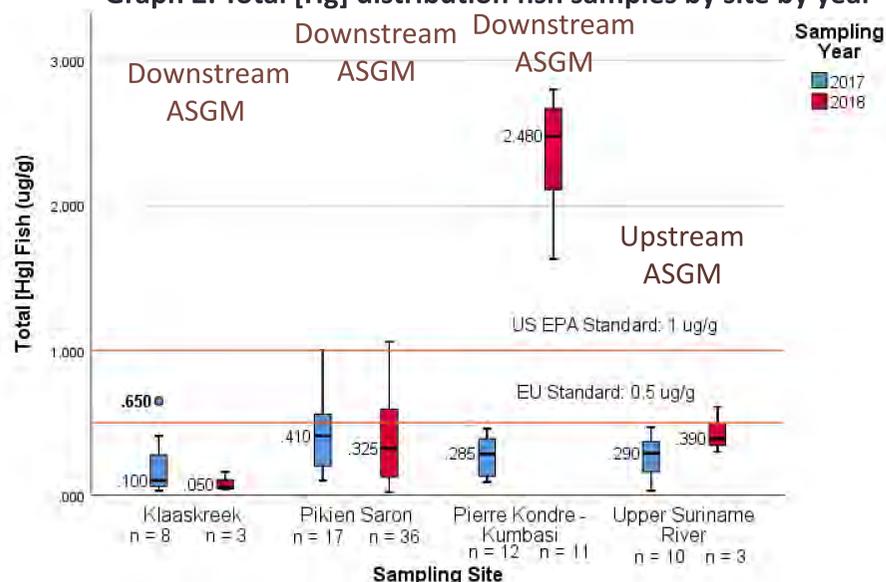
- Suriname has an extensive **Artisanal and Small-scale Gold Mining (ASGM)** sector.
- The heavy metal mercury (Hg) is used in the ASGM sector as a gold binding agent, resulting in an amalgam.
- This amalgam is later heated, releasing Hg vapor into the environment.
- During the mining process, a sludge/water/Hg mixture is formed, which enters adjacent waterways (creeks, rivers).
- The goal of this study is to assess total mercury concentrations in freshwater fish and riverine sediments in the living area of indigenous and tribal communities, upstream and downstream of ASGM activities.

## RESULTS

Graph 1: Total [Hg] distribution sediment samples by site by year



Graph 2: Total [Hg] distribution fish samples by site by year



## METHODS

- Fish & paired sediment sampling took place at six sites: three downstream of ASGM, two upstream of ASGM, one site with no known ASGM upstream or downstream.
- Sediment samples were collected in duplicate, either scooped up by hand using a clean sealable plastic bag or a grab sampler. Fish were collected with nets. Individual fish were identified, weighed and measured. Tissue muscle was subsequently collected.
- Sampling took place between October 2017 – August 2019
- Statistical analysis presented are for four sites, as not all data are available yet for analysis.



Fig.1: Sediment Grab Sampler



Fig.2: Typical fish catch

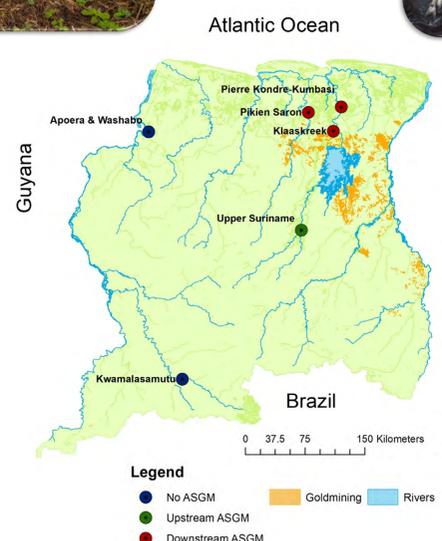


Fig.3: Map of Suriname

## DISCUSSION

- Higher than recommended mercury concentrations in sediment upstream of ASGM activities could be due to: 1) naturally occurring [Hg] in riverine sediment, 2) gaseous elemental Hg emitted from ASGM activities to the northeast of the Upper Suriname River region is transported by the NE trade winds and deposited locally, or both.
- Limitations in this study include trophic level of fish species caught, the availability (season) and chance of catching fish as part of repeated sampling. Species of fish caught in 2017 and 2018 (at Pierre Kondre site) differed in trophic level (2018 included more predatory fish), in addition to all fish species being larger in size (**Supplementary material**). The data from 2017 and 2018 indicate that bioaccumulation has occurred: the larger/older the fish, the higher total Hg concentration.

## ACKNOWLEDGEMENTS

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Supplementary Material



SCAN ME