

microCT imaging of threespine stickleback

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Abstract

Introduction

- Embedded into [Alaska Stickleback Restoration Project](#), [Genomics axis](#) where Katie Peichel, Ben Sulser and Sheila Christen are affiliated.

Materials & Methods

Sample preparation

microtomographic imaging

- Scanned on a [Bruker SkyScan 2214](#)
- Sample holder generated with [OpenSCAD](#), available online at [GitHub](#) [1]
 - Scanning several fish together to efficiently use machine time
 - Full in Bruker workflow
 - Results in PNG stacks on disk

Data analysis

- [Jupyter notebooks](#) [2]
 - Efficiently loading data from disk with [dask](#) [3]
 - Extract position of single fish (all scanned together), based on the MIP of the scan
 - Crop out each fish (with a buffer) and write to cropped dataset
 - Cropped datasets are saved to discrete folders for easy handling. In both original gray-scale plus as thresholded dataset, e.g. binarized into bone and “not bone”. These are saved out as [zarr](#) [[wiki:Zarr ?\(data_format\)](#)] and [nrrd](#) files.

Results

Discussion

Conclusion

Author Contributions

[Contributor Roles Taxonomy \(CRediT\)](#), as defined in [4]:

- [Data curation](#): David Haberthür
- [Formal analysis](#): David Haberthür
- [Investigation](#): David Haberthür
- [Methodology](#): David Haberthür
- [Project administration](#): David Haberthür
- [Software](#): David Haberthür
- [Validation](#): David Haberthür
- [Visualization](#): David Haberthür
- [Writing – original draft](#): David Haberthür
- [Writing – review & editing](#): David Haberthür

Competing Interest

| Author | Competing Interests | Last Reviewed |
|------------------|---------------------|---------------|
| David Haberthür | None | 2026-01-14 |
| Ben Sulser | | |
| Sheila Christen | | |
| Katie Peichel | | |
| Ruslan Hlushchuk | | |

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