Beitrag ID: **16** Typ: **Presentation**

Rapid segmentation and measurement of an abundant mudsnail: Applying superpixels to scale accurate detection of growth response to ocean warming

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Advances in computer vision are applicable across aquatic ecology to detect objects from images, ranging from plankton and marine snow to whales. Analyzing digital images enables quantification of fundamental properties (e.g., species identity, abundance, size, and traits) for richer ecological interpretation. Yet less attention has been given to imaging fauna from coastal sediments, despite these ecosystems harboring a substantial fraction of global biodiversity and whose members are critical for nitrification, cycling carbon, and filtering water pollutants. In this work, we apply a superpixel segmentation approach—grouped representations of underlying colors and other basic features—to automatically extract and measure abundant hydrobiid snails from images and assess size-distribution responses to experimental warming treatments. Estimated length measurements were assessed against >4500 manually measured individuals, revealing high accuracy and precision across samples. This method expedited hydrobiid size measurements tremendously, tallying >40k individuals, reducing the need for manual measurements, limiting human measurement bias, generating reproducible data products that could be inspected for segment quality, and revealed species growth response to ocean warming.

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