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Extent of microplastics in Pacific Sand Lance burying habitat in the Salish Sea

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Extent of microplastic contamination in Pacific Sand Lance burying habitat in the Salish Sea

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Microplastic History & Physiology

- Microplastics vs macroplastics
- Microplastics are any plastics <5mm
- Come from a variety of sources.
- Are a relatively recent environmental issue





- Pacific sand lance (*Ammodytes personatus*) makes its habitat in coarse sediments along the coast of the Pacific Northwest



- They feed in the water column during the day and burrow in seafloor sediment at night to sleep

Their Adverse effects on Ecosystems

- Accumulate in an organism's digestive tract
- Act as transporters of toxins
- Contain antibacterial compounds that can suppress bacterial processes



Methodologies of Collection



In the Field

- Beach combing
- Sediment sampling
- Marine trawls
- Biological sampling

In the lab

- Microscopes
- Dyes
- Spectroscopy
- Saline solution





My Direction of Research

- To quantify the abundance of microplastics in Pacific Sand Lance habitat in the Salish sea
- To correlate patterns of microplastic abundance with various environmental factors

Research Questions

01

Does microplastic abundance differ among sediment types?

02

Does microplastic abundance differ by ocean depth? Other environmental factors?

03

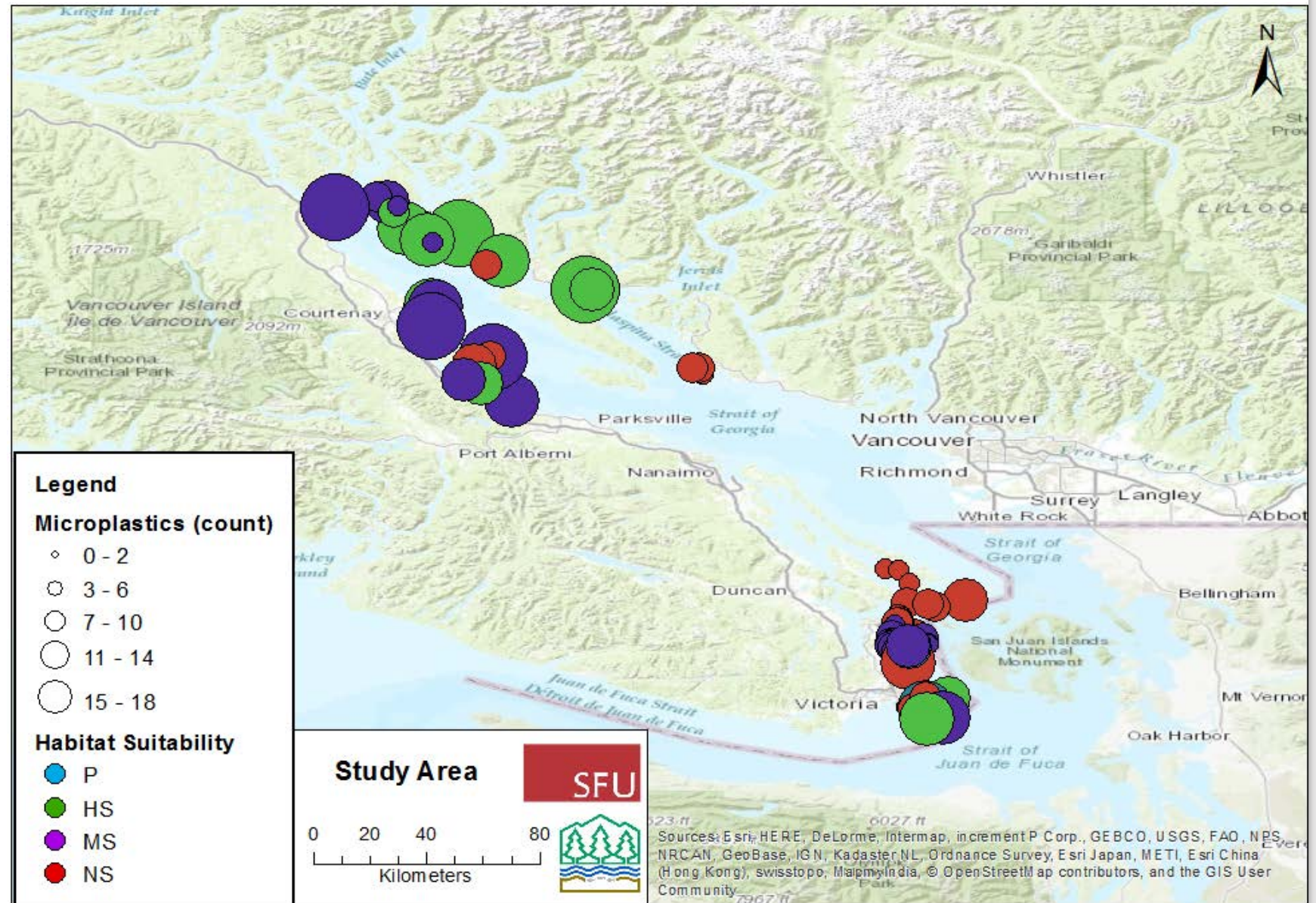
Are microplastics significantly pervasive in suitable Pacific Sand Lance habitat?

Defining Pacific Sand Lance (PSL) habitat

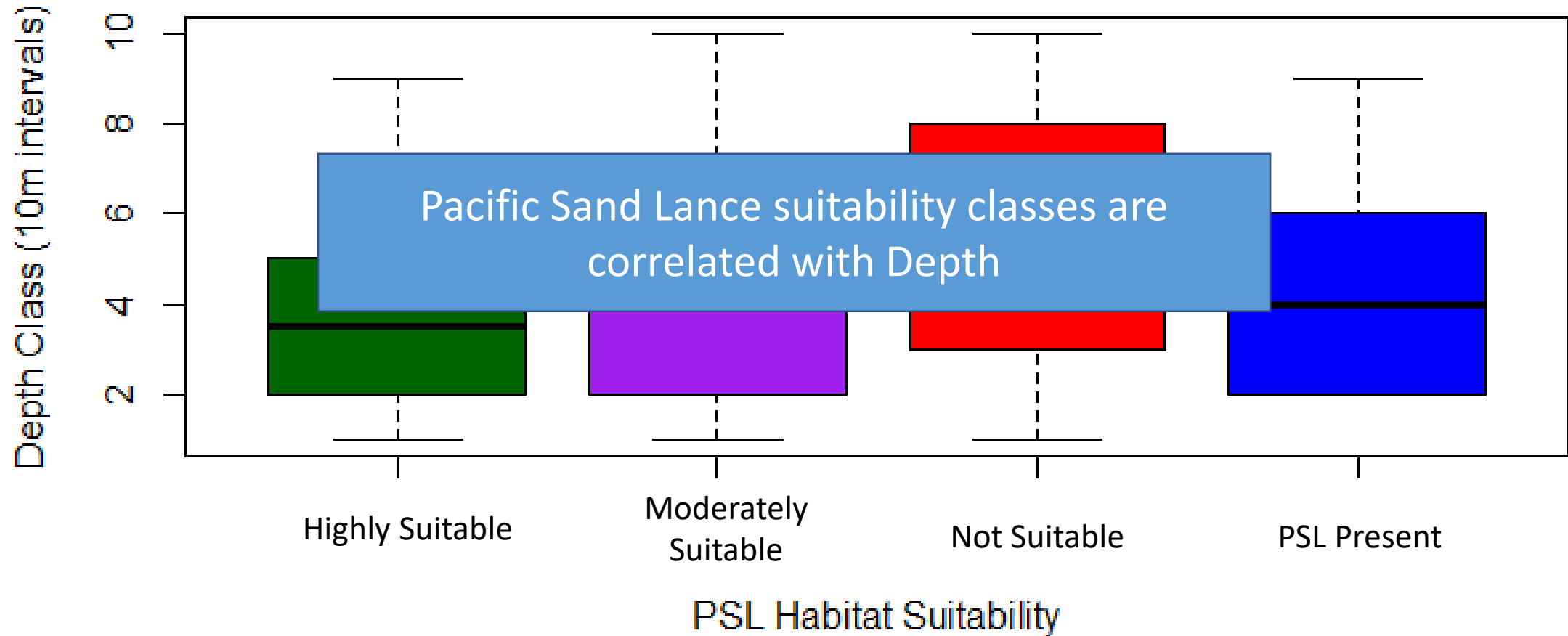
PSL present	Pacific Sand Lance (PSL) caught
Highly Suitable Habitat	PSL not caught; Fines (0.125mm) <15.5% AND silts (<0.063mm) < 0.8%
Moderately Suitable Habitat	PSL not caught; Fines (0.125mm) >15.5% BUT silts (<0.063mm) < 0.8%
Not Suitable Habitat	PSL not caught; Fines (0.125mm) <15.5% AND silts (<0.063mm) > 0.8%

Microplastic abundance appear to increase as you move northward through the Salish Sea.

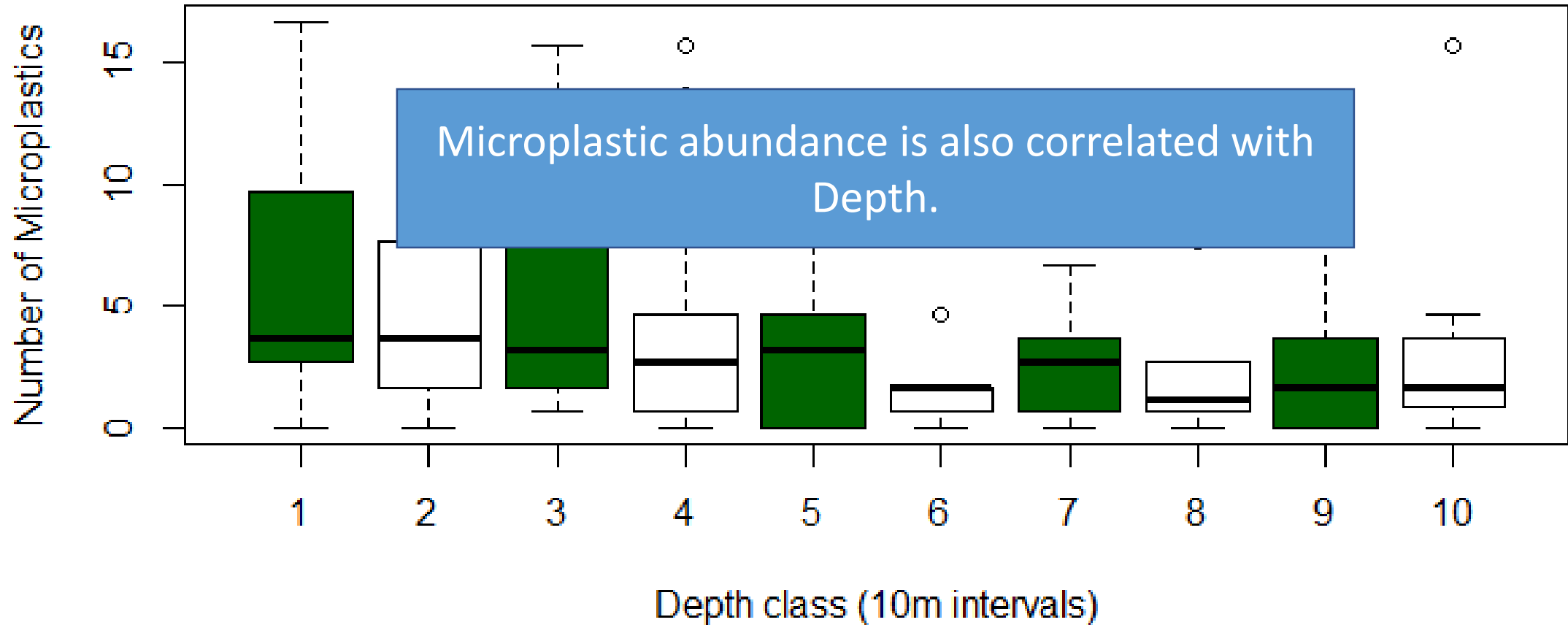
They appear to be more prevalent in highly and moderately suitable Pacific Sand Lance habitat.



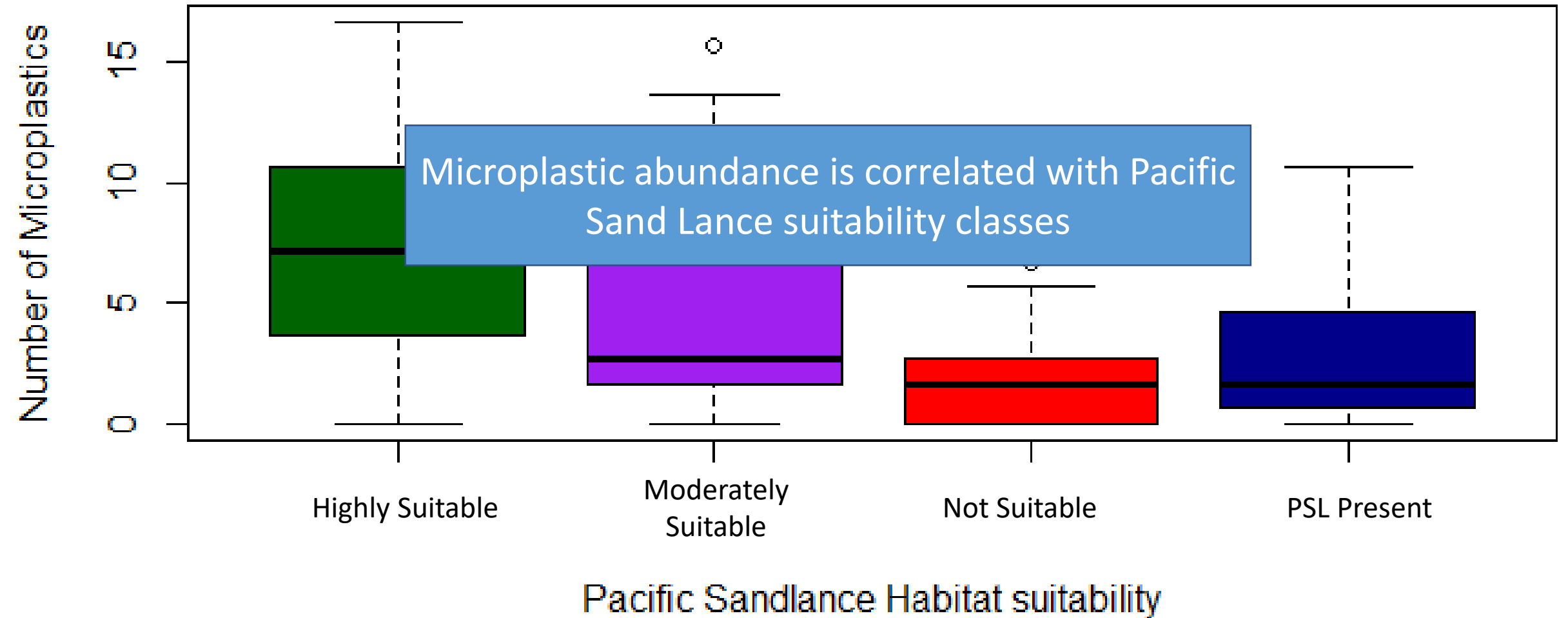
Pacific Sandlance habitat suitability in relation to ocean depth



Number of microplastics found at different depths



Number of Microplastics in the four Pacific Sandlance habitat classifications



Results

Microplastics are more abundant in shallower water (0-50m).

Microplastics are more abundant in coarse, sandy sediment than in fine, muddy sediment.

The most common type of microplastic are blue fibres

Microplastic abundance seem to be highest in the Northern Georgia Straight



Implications of Research

Marbled Murrelet (*Brachyramphus marmoratus*) is an endangered species under threat from the adverse effects of microplastics.

Fisheries and aquaculture in the Strait of Georgia could also be negatively impacted.



Thank-you!

Questions?