

Assessing the spillover: metabarcoding reveals contrasting non-indigenous species dynamics inside and outside a port

Adrià Antich

Zarcero, J., Mingote, M. G., Wangenstein, O., Palacín, C., Rius, M. & Turon, X.

IS THIS SCENE FAMILIAR TO YOU?

One day
at work...

I saw recently on
Instagram that
Tom went to Crete...

Three
days
latter...

visit
Crete...

Find the
best prices
here...

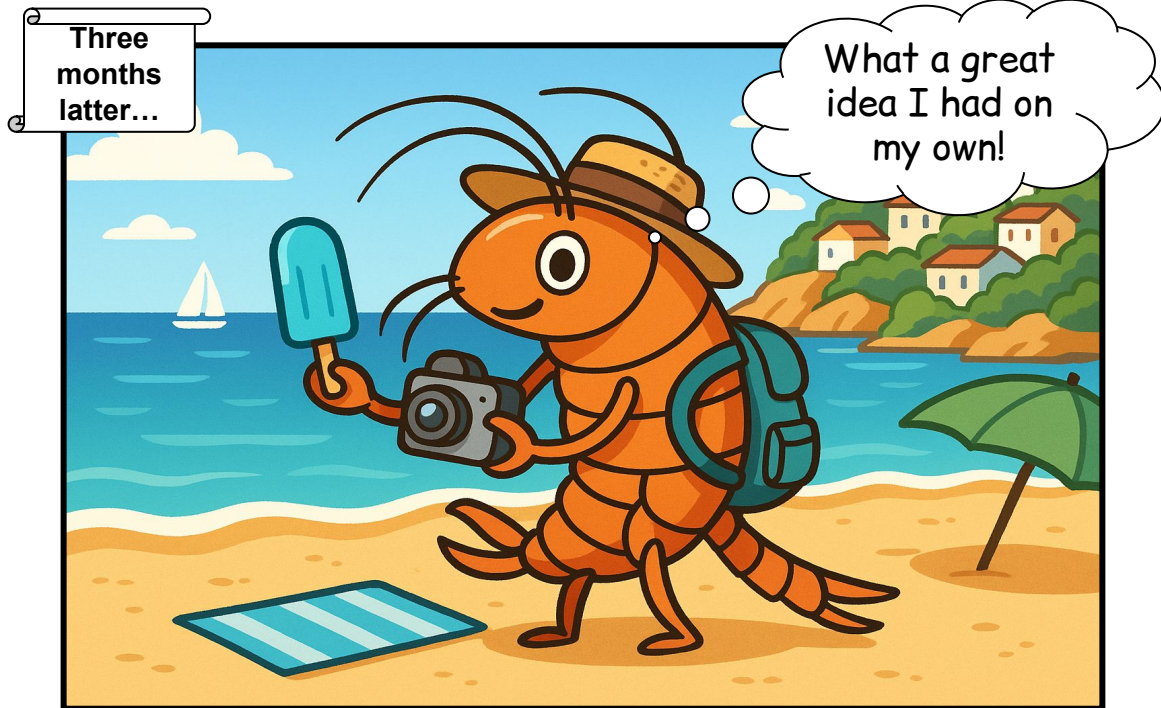
Find the best
apartment for
you...

I deserve
some
holidays!

IS THIS SCENE FAMILIAR TO YOU?



IS THIS SCENE FAMILIAR TO YOU?



GLOBALISATION

Global market
Keep us connected
Travel around the world

IS THIS SCENE FAMILIAR TO YOU?

Three months later...



*But we
don't travel
alone...*

GLOBALISATION

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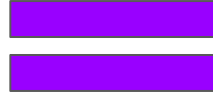
GLOBALISATION



MORE
NIS

(Non Indigenous Species)

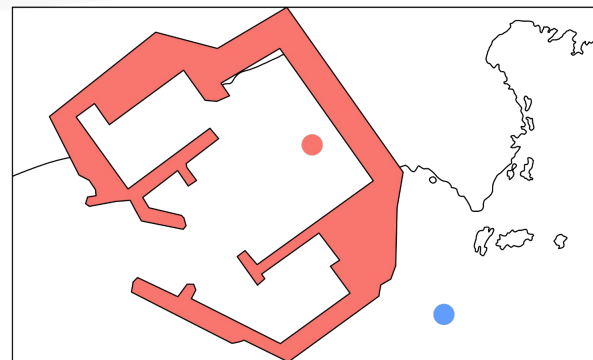
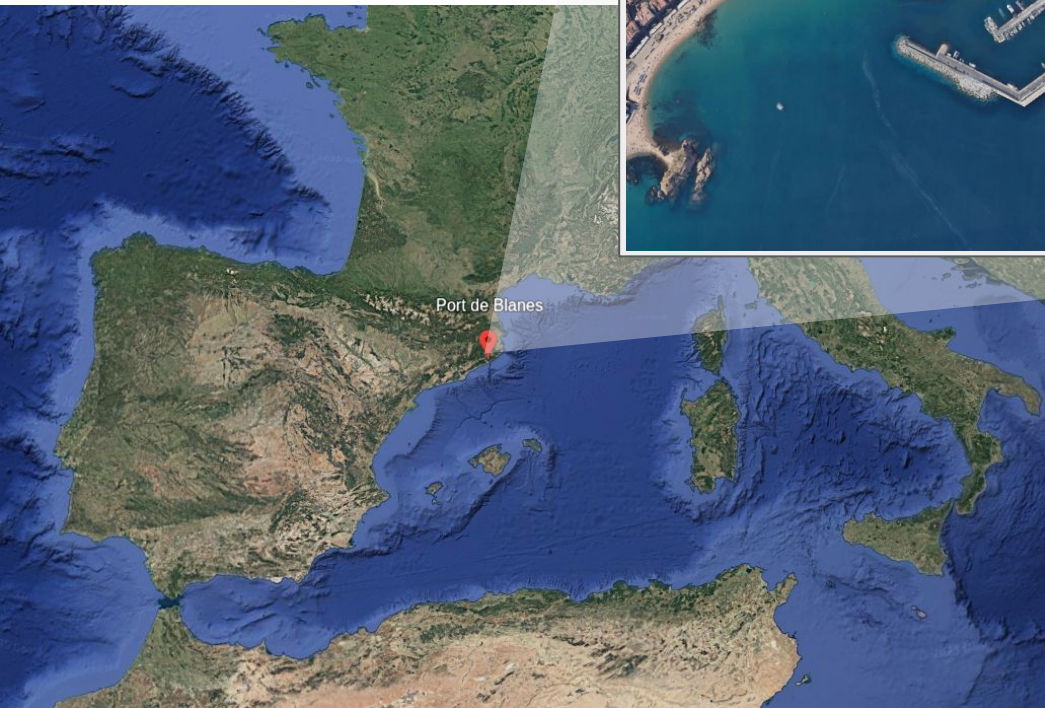
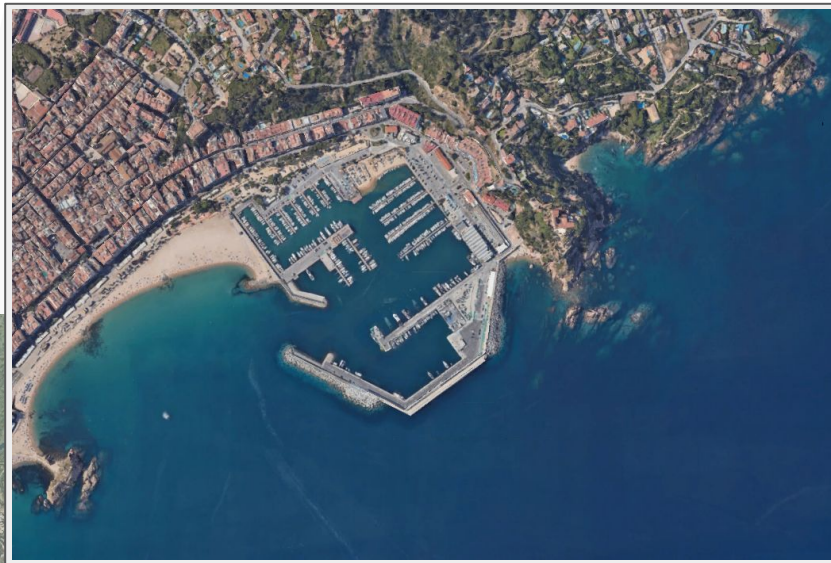
GLOBALISATION



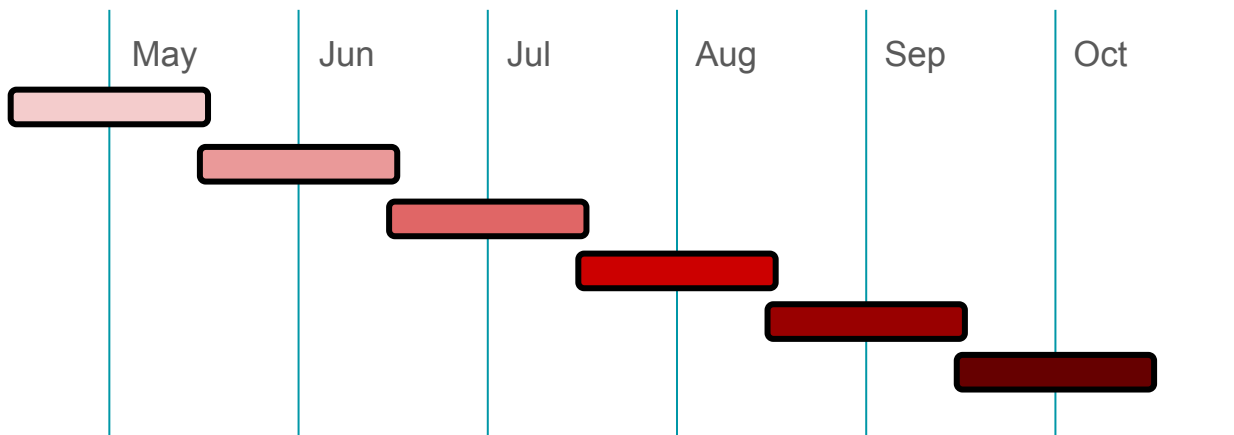
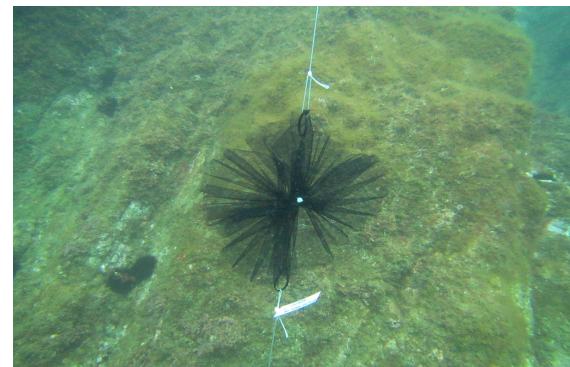
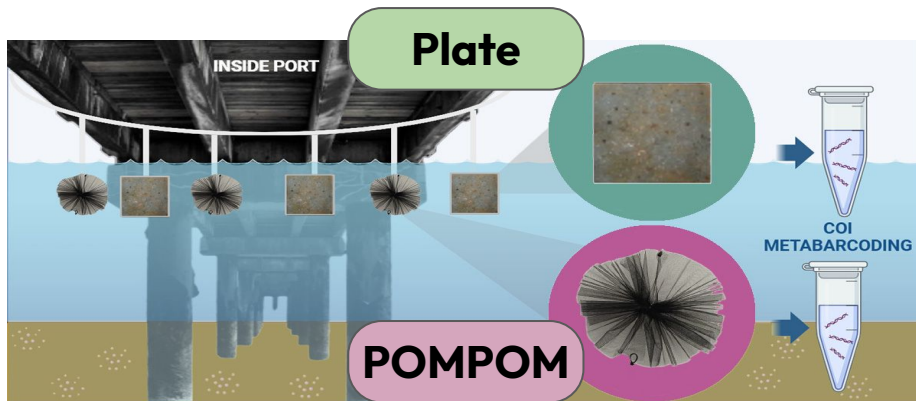
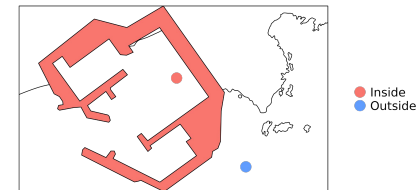
MORE
NIS

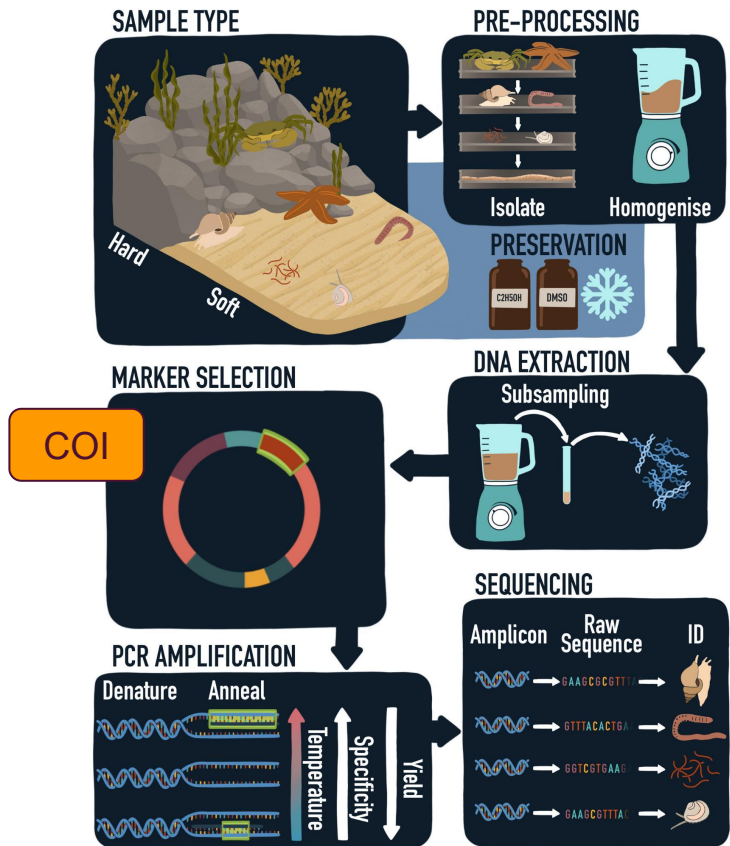
(Non Indigenous Species)

How do they propagate?

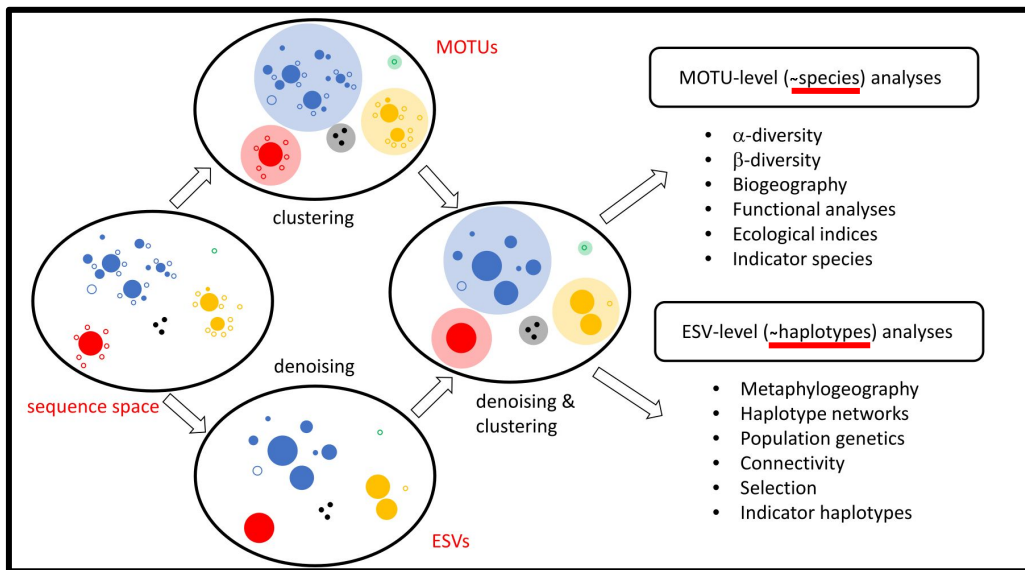


● Inside
● Outside

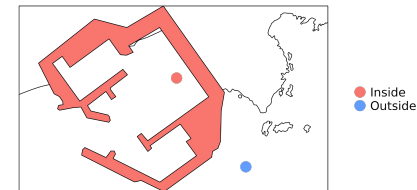




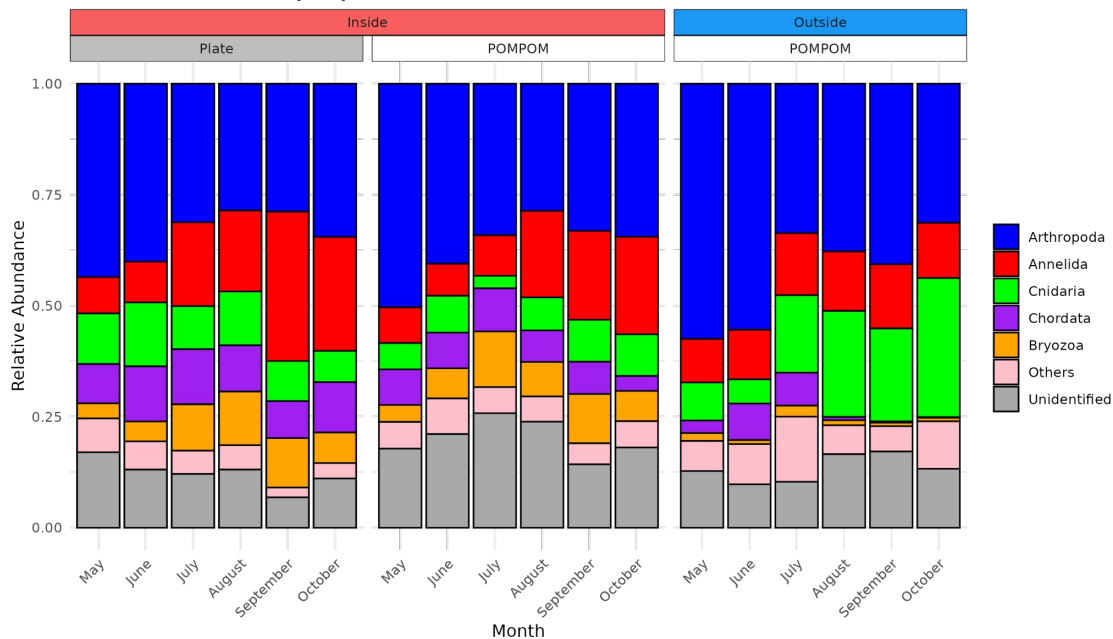
DNA Metabarcoding



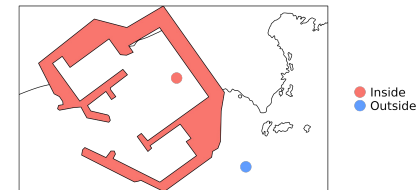
~ 1.8 K Species (MOTUs)



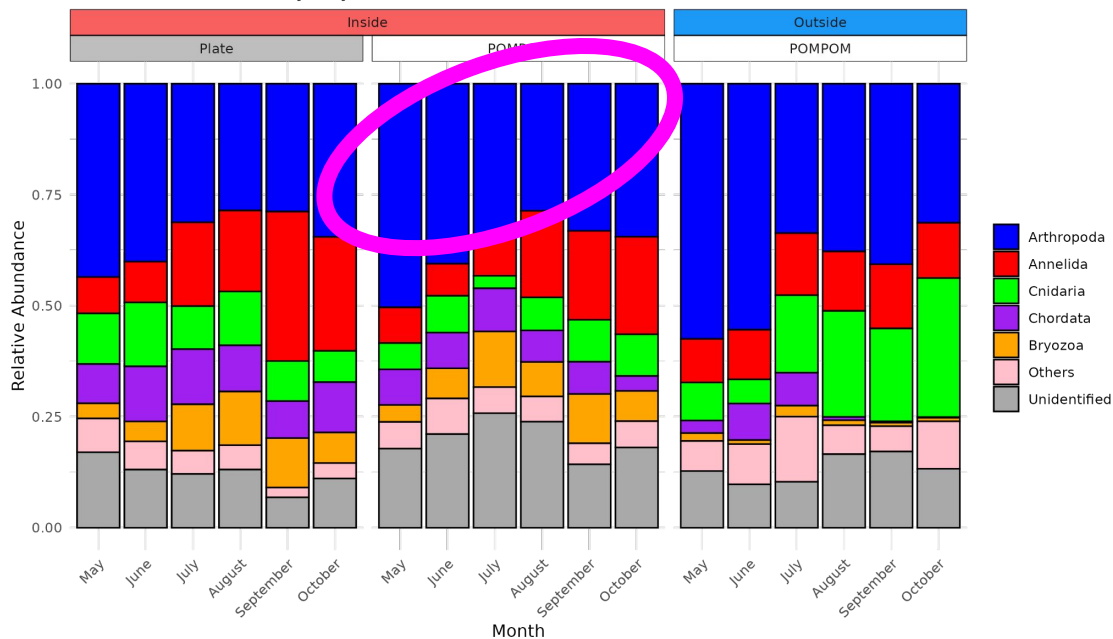
Relative Abundance by Phylum



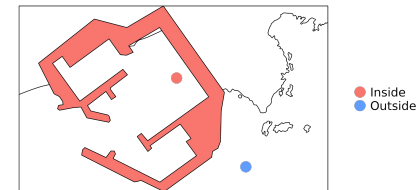
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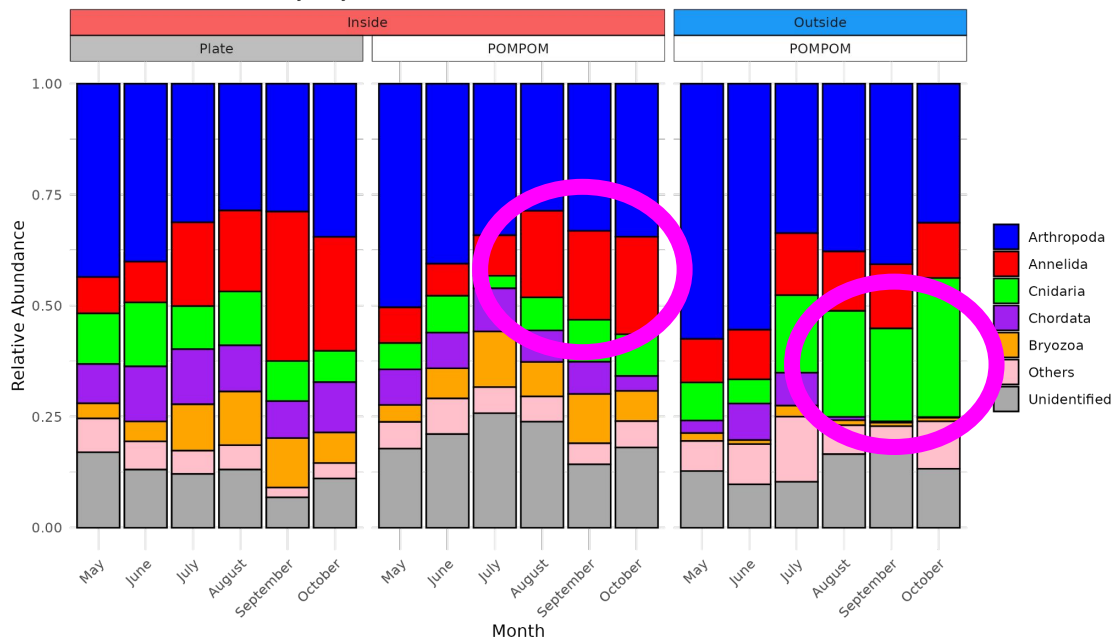
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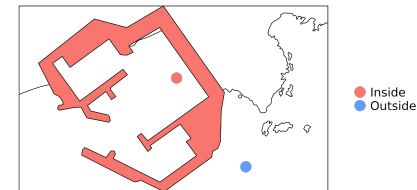
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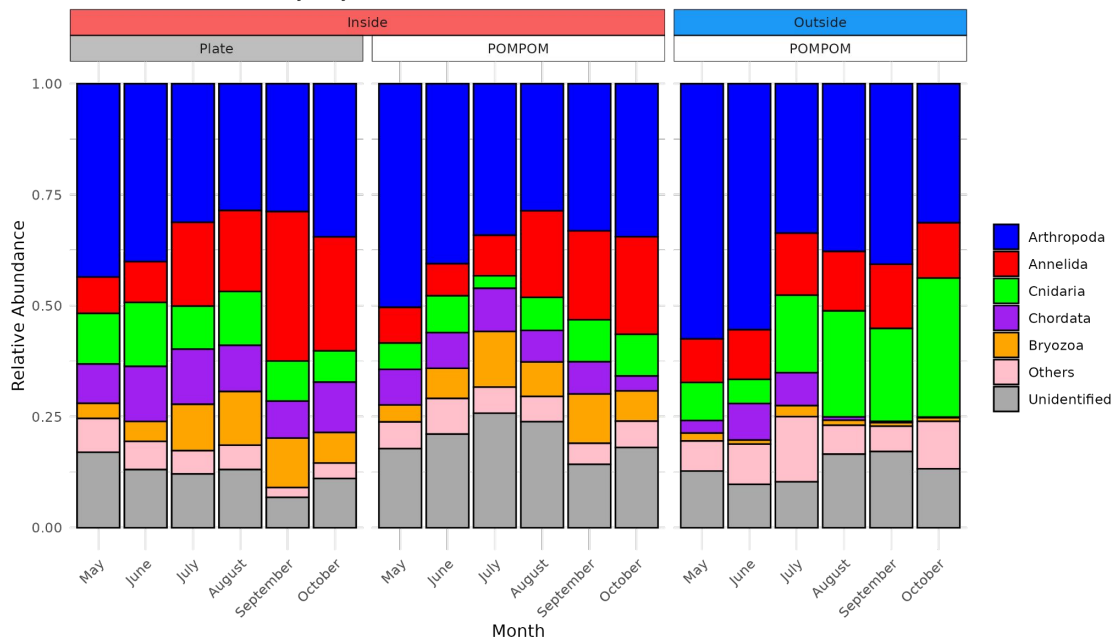
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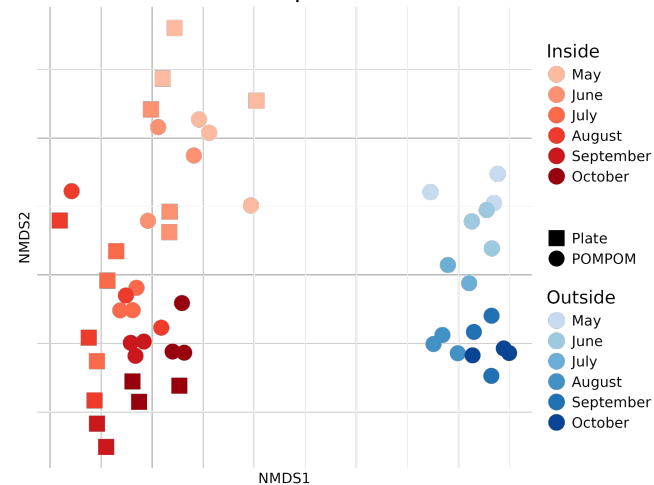
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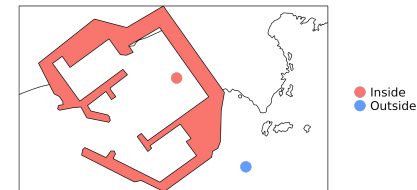
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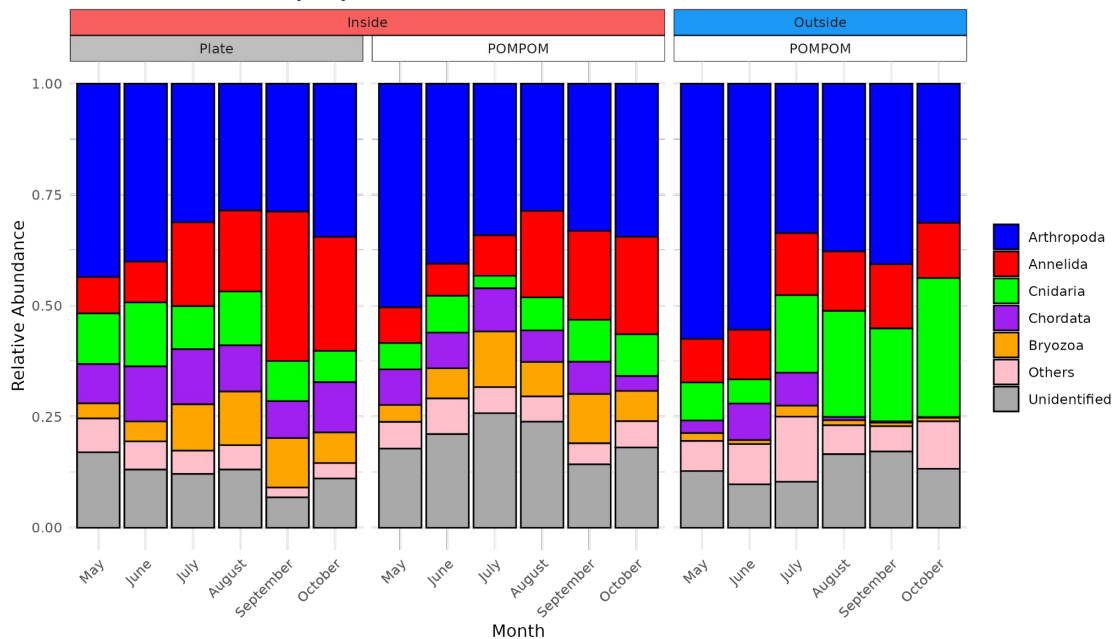
nMDS of MOTU samples



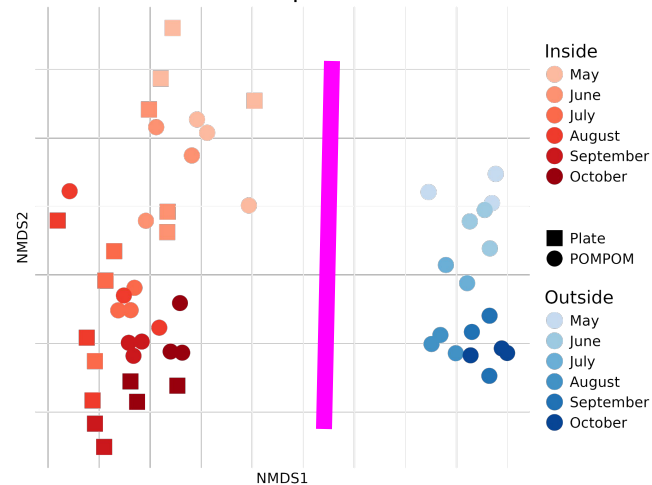
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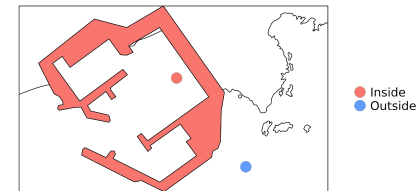
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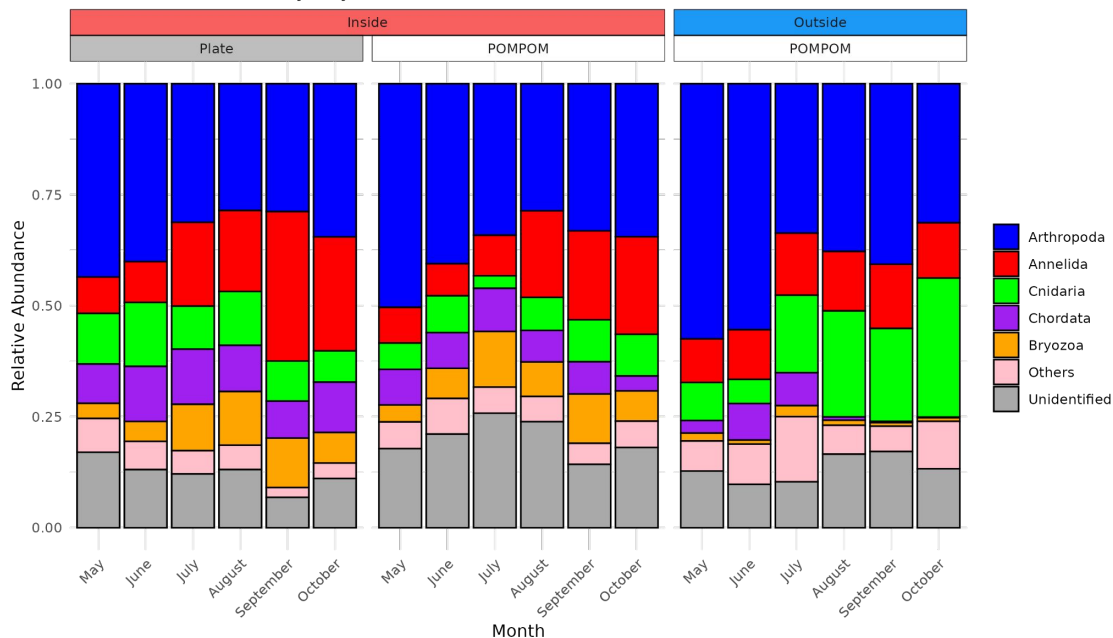
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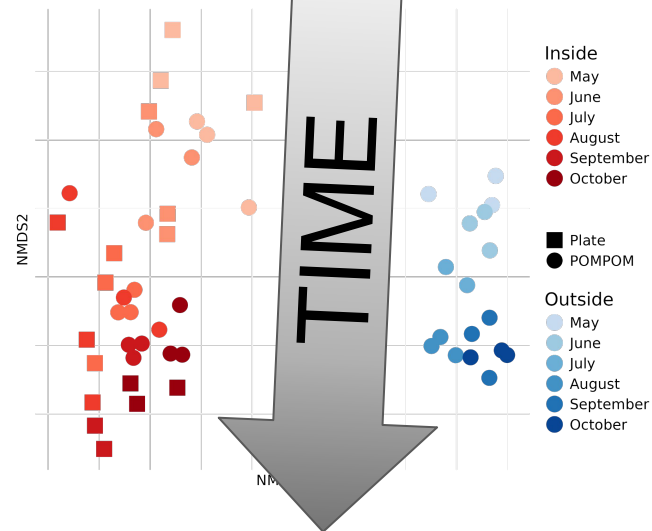
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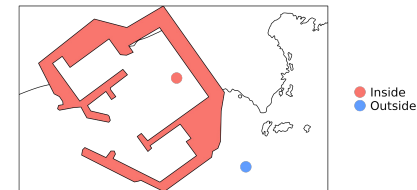
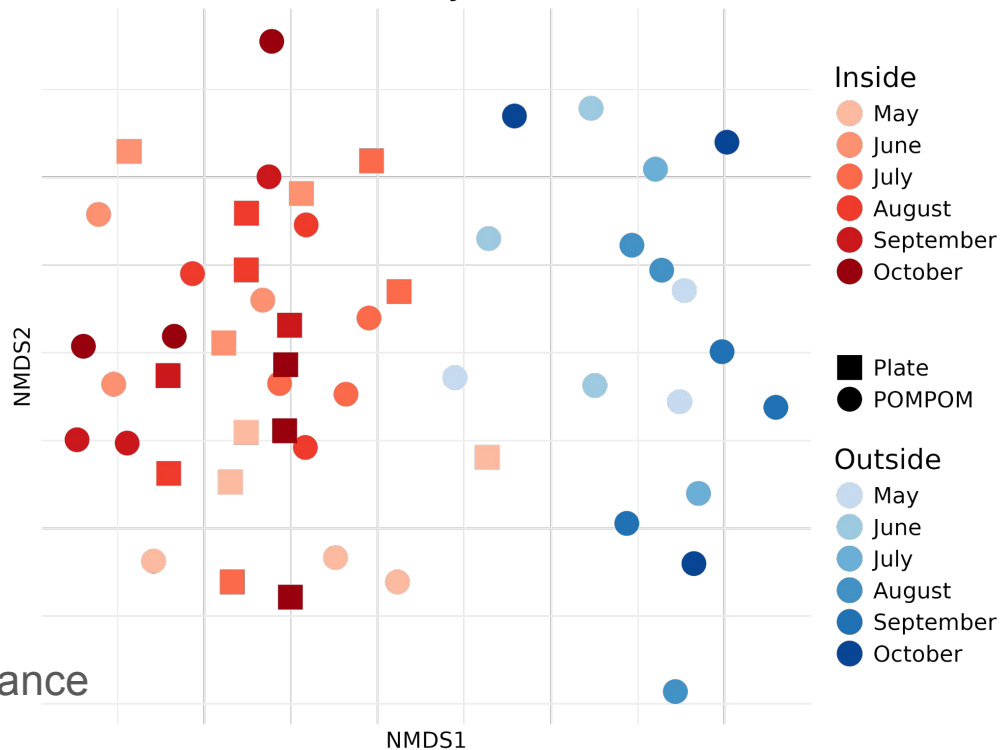
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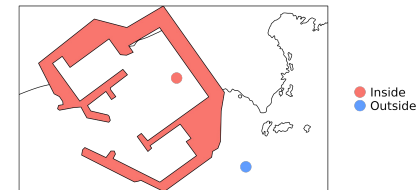
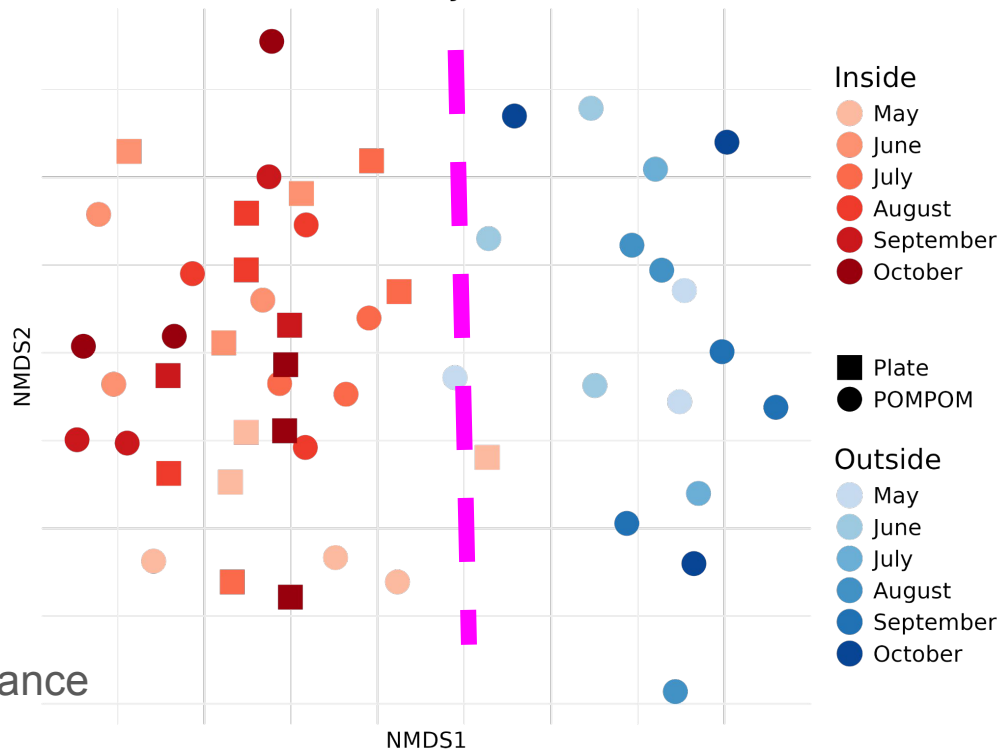


nMDS of based on Djost distances



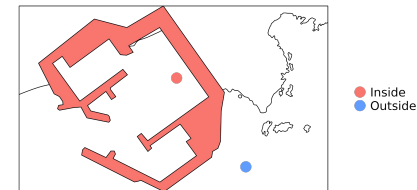
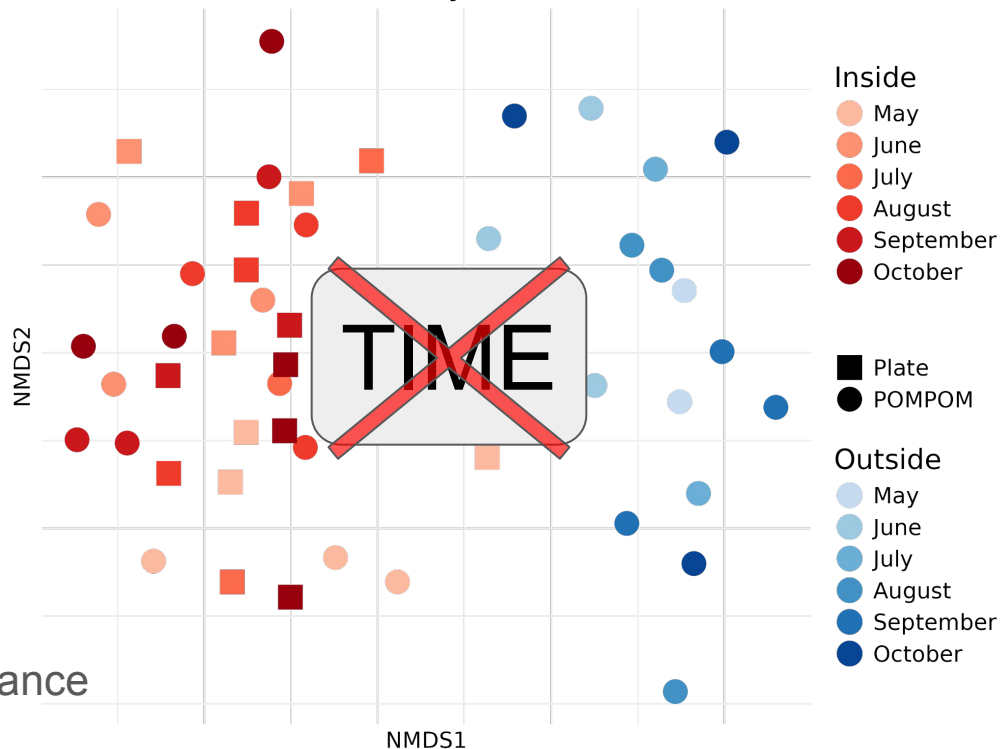
* Merge of all the distance matrix based on haplotypes in one single matrix

nMDS of based on Djost distances



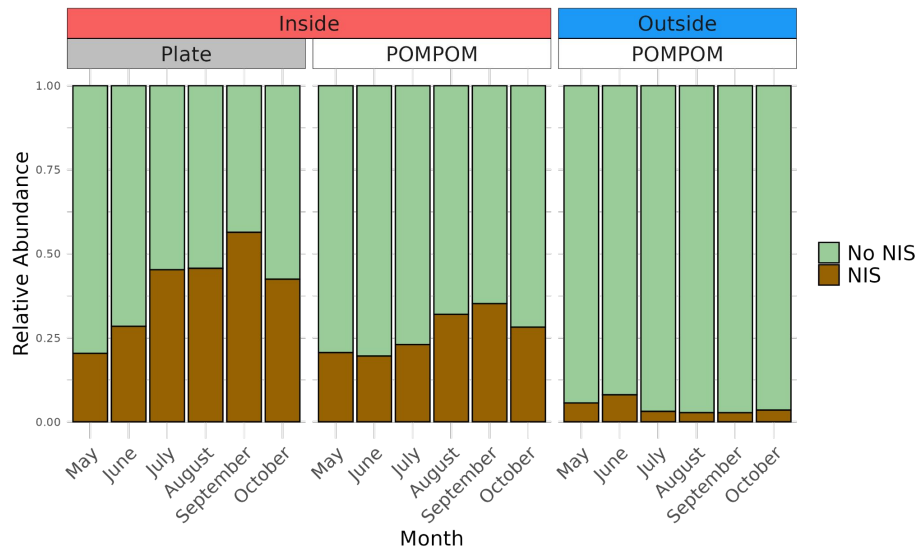
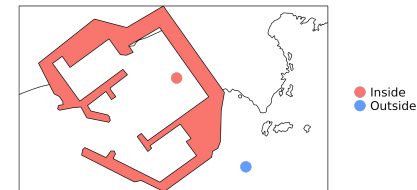
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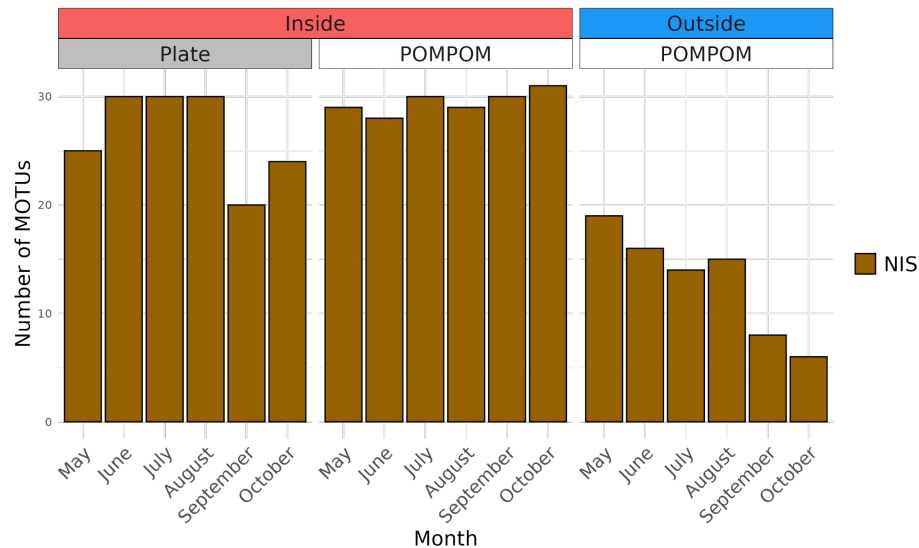
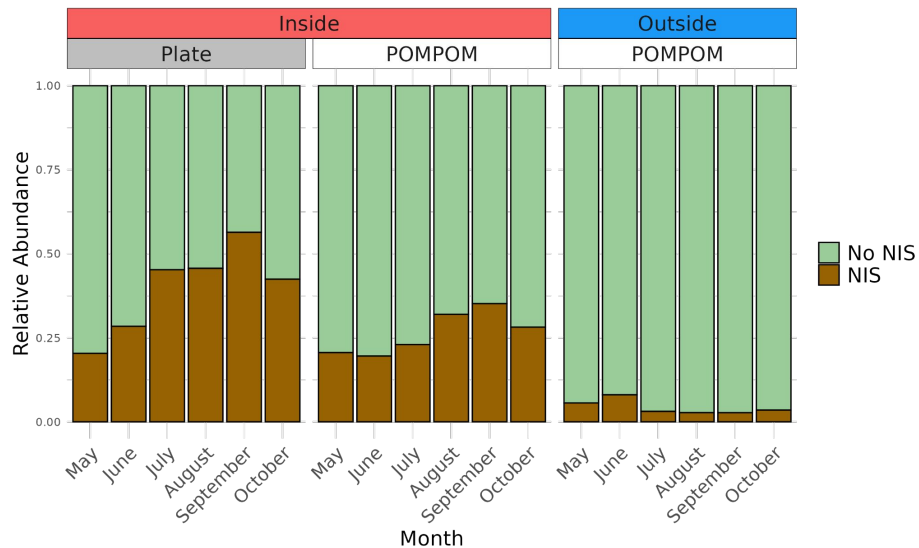
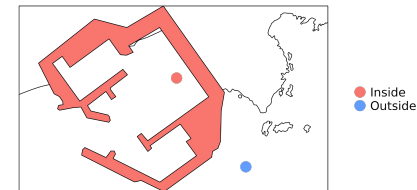
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57 NIS (MOTUs) ~ 3.2%

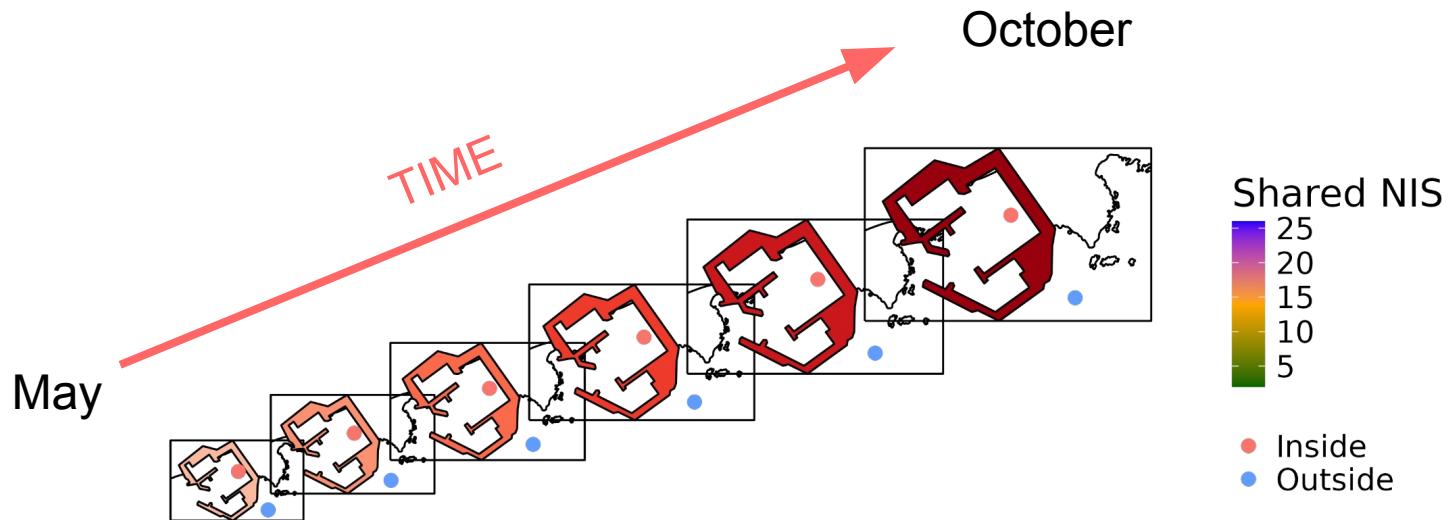


(Non Indigenous Species)

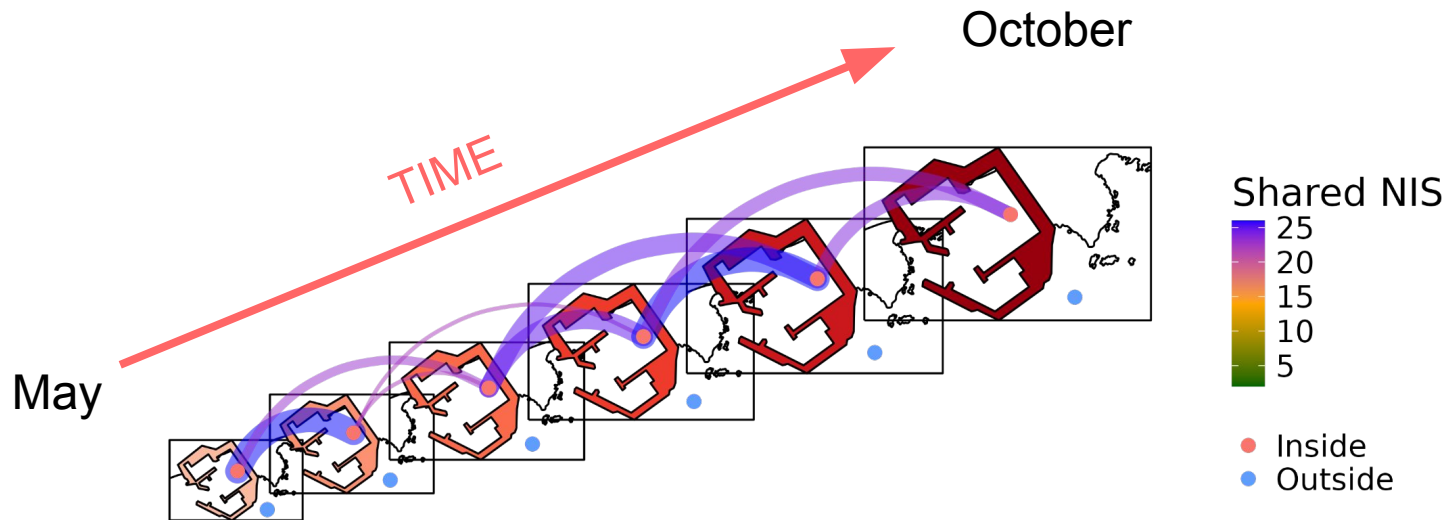
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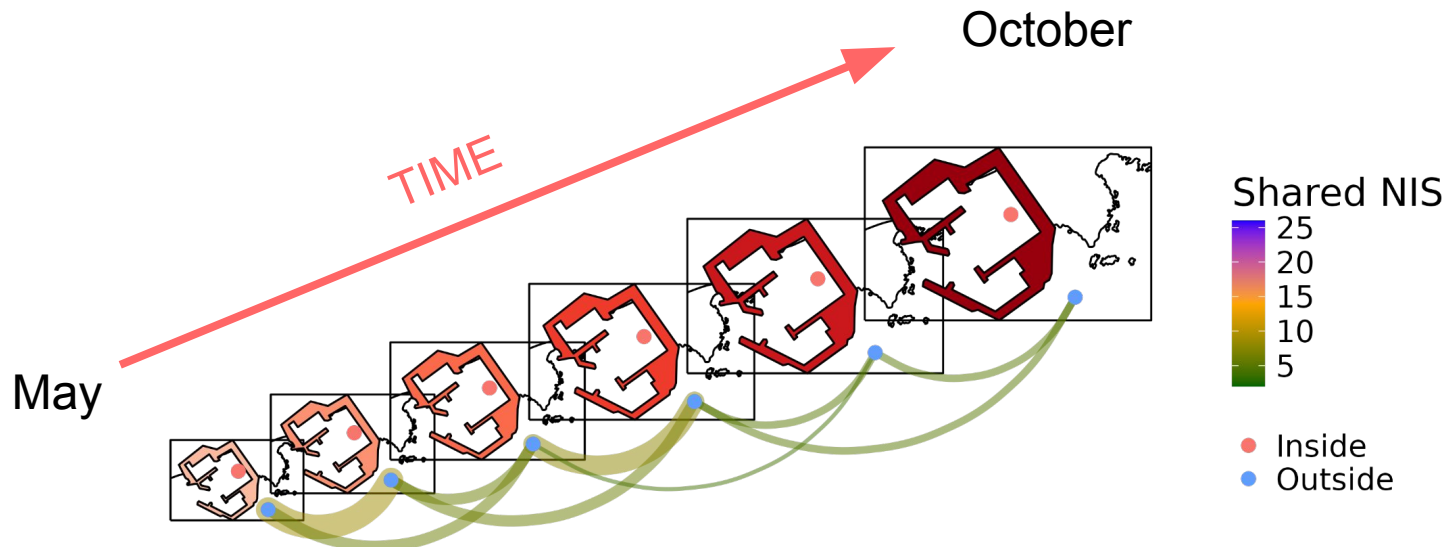
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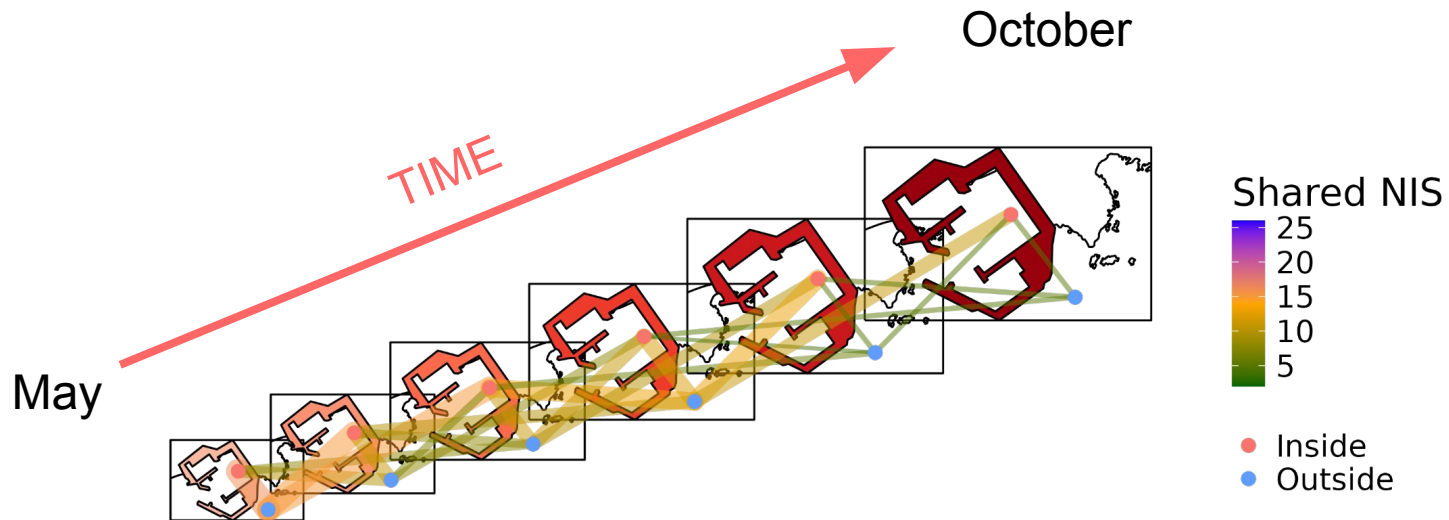
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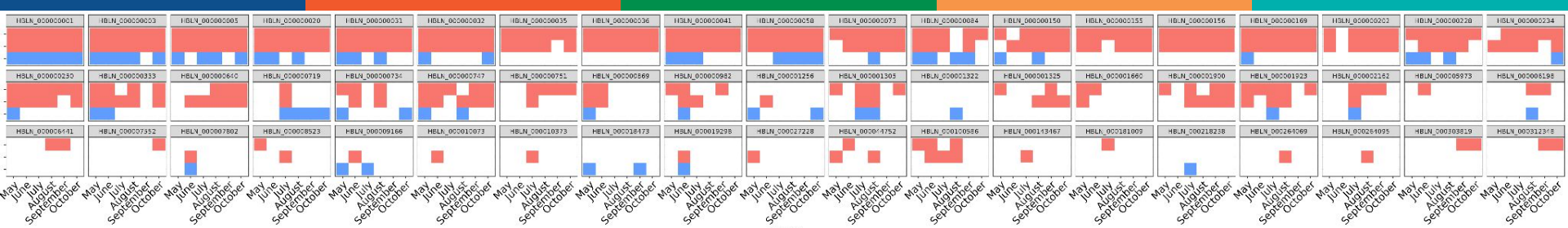
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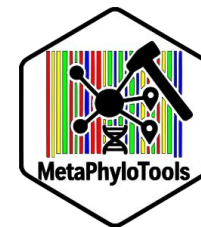
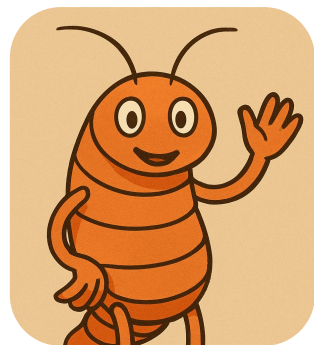


(Non Indigenous Species)



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Take-home messages

1. Non-Indigenous Species spread from harbours to the surroundings but not all of them remain established

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4. Species have different spatio-temporal dynamics, NIS are an example of this



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Take-home messages

1. Non-Indigenous
surround
2. Metabarcoding
informa
3. R package
intra-MC
4. Species
an exar



NIS-tagram



Thank you!

Questions?
a.antich@ceab.csic.es



BEEs

The LifeWatch ERIC Biodiversity & Ecosystem
eScience Conference



Heraklion, 30 June - 3 July 2025



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