

**CONNECTED  
RIVERS**

International seminar on scaling up dam  
removal as a river restoration tool in Europe.



**U LISBOA**

UNIVERSIDADE  
DE LISBOA



**INSTITUTO  
SUPERIOR D  
AGRONOMIA**  
*Universidade de Lisboa*

# Dammed Fish

Paulo Branco



University of  
**Kent**

**FCT**  
Fundação para a Ciência e a Tecnologia  
MINISTÉRIO DA CIÊNCIA, TECNOLOGIA E ENSINO SUPERIOR



**Dammed Fish:** Impact of structural and functional river network connectivity losses on fish biodiversity – Optimising management solutions



Teresa Ferreira



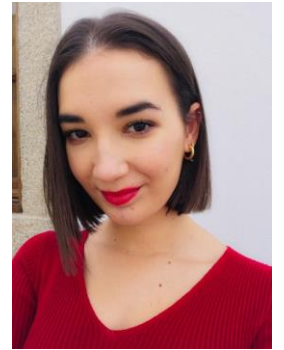
Pedro Segurado



José Maria Santos



Gonçalo Duarte



Tamara Leite



Rui Figueira



Florian Borgwardt



Jesse O'Hanley



## Main goal

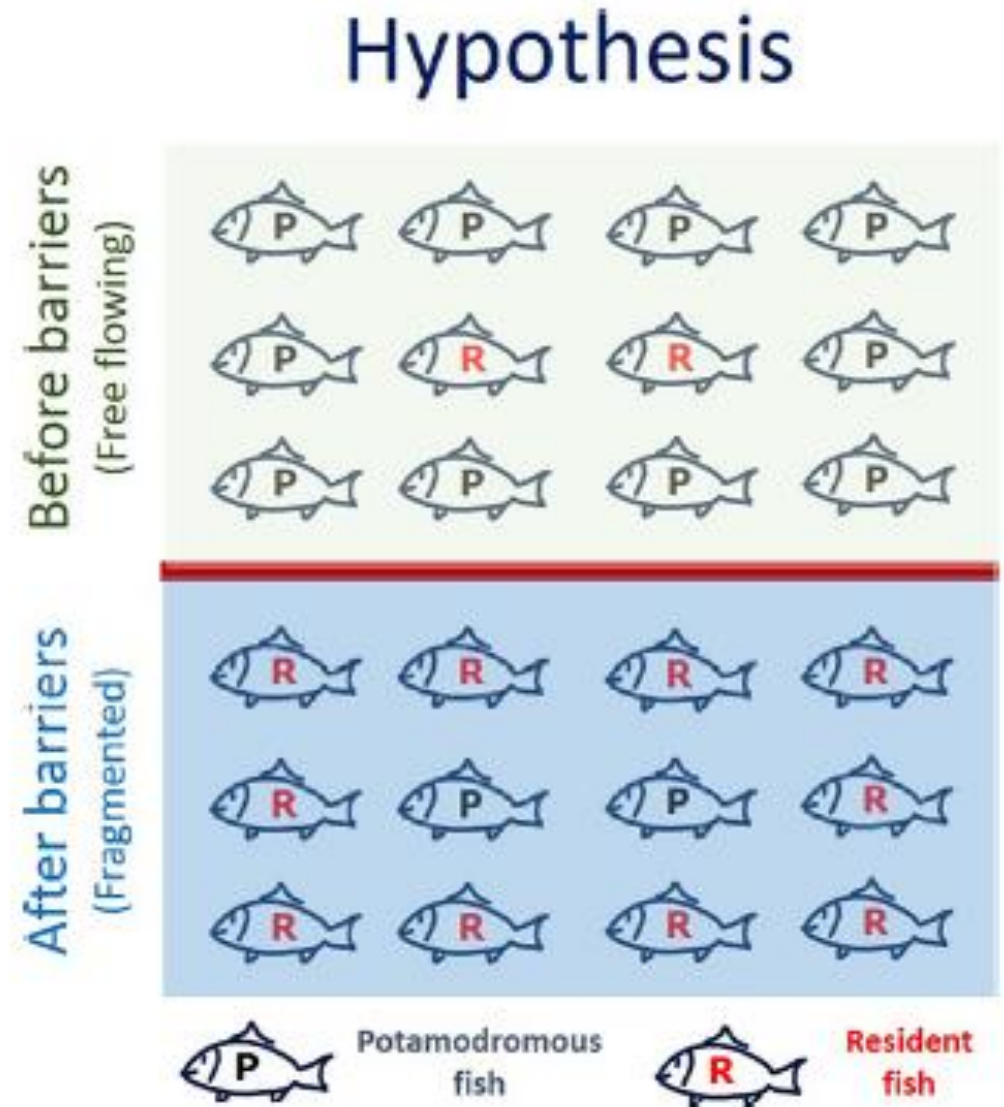
**Evaluate river network structural and functional connectivity and propose tools to facilitate management to improve biodiversity and biotic quality of European rivers.**

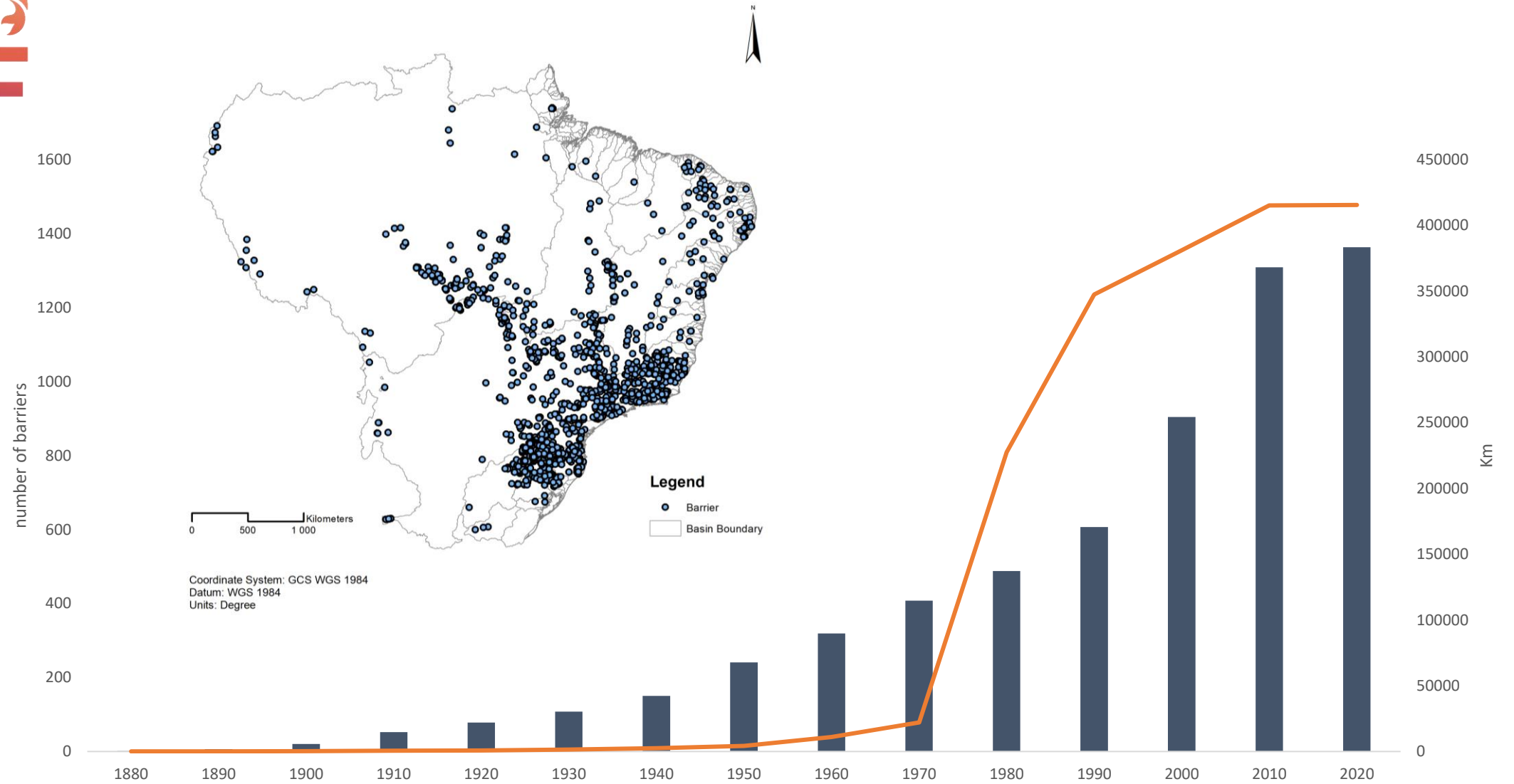
**Dammed**  **Fish**

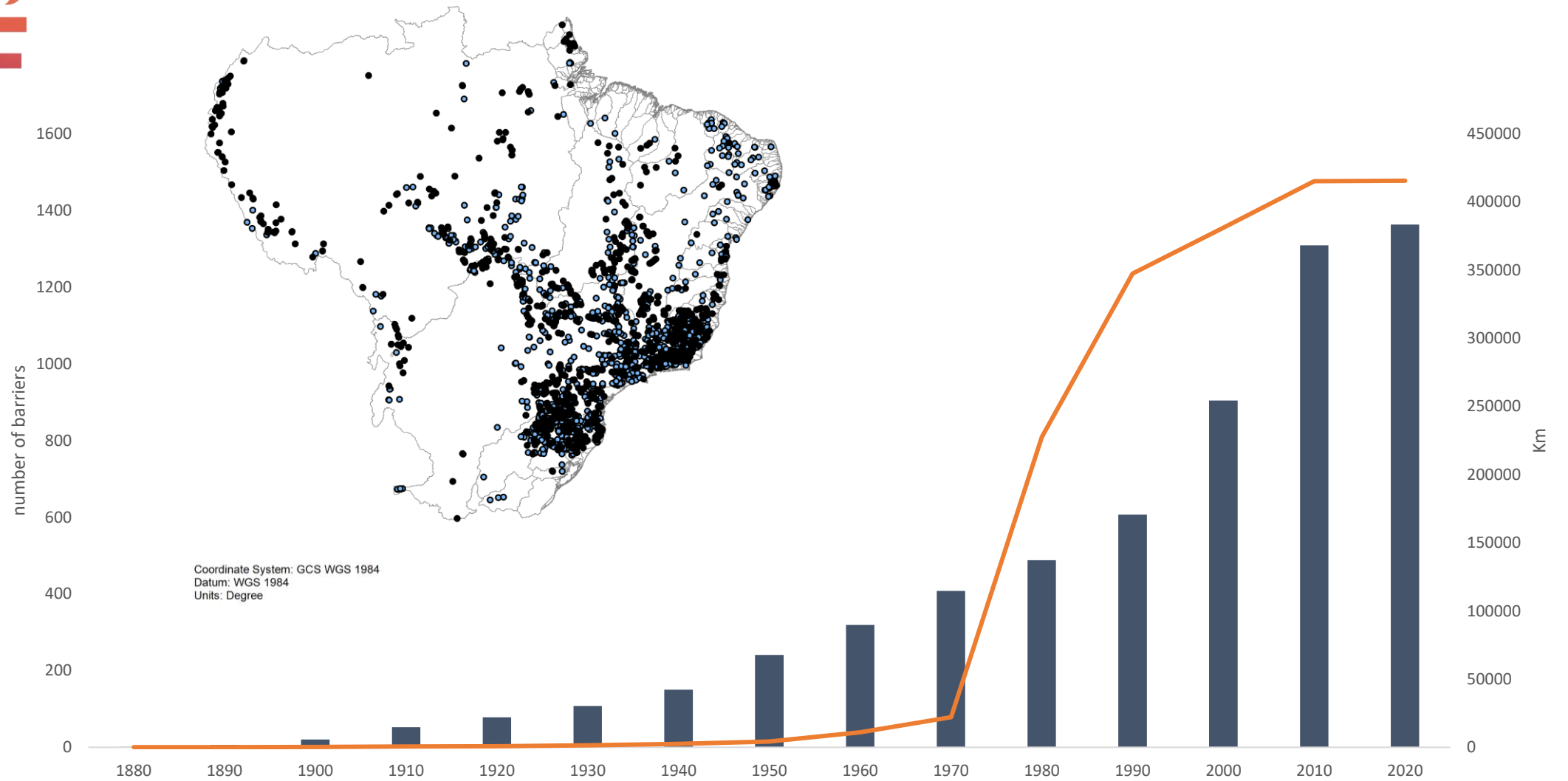


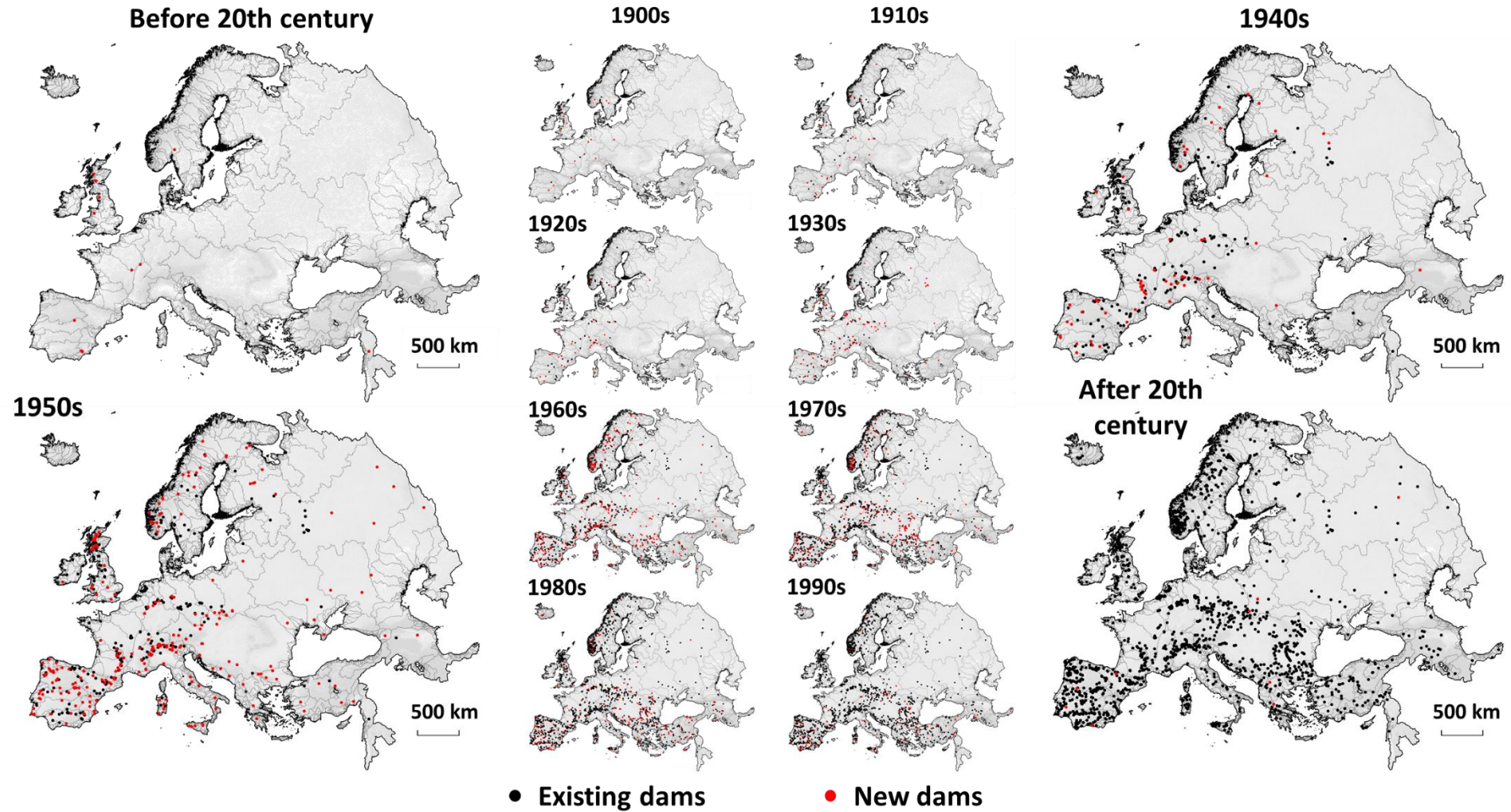
## Barriers promote the selection of the non-migrant behavioural phenotype

Branco, P., Amaral, S. D., Ferreira, M. T., & Santos, J. M. (2017). Do small barriers affect the movement of freshwater fish by increasing residency?. *Science of the Total Environment*, 581, 486-494.

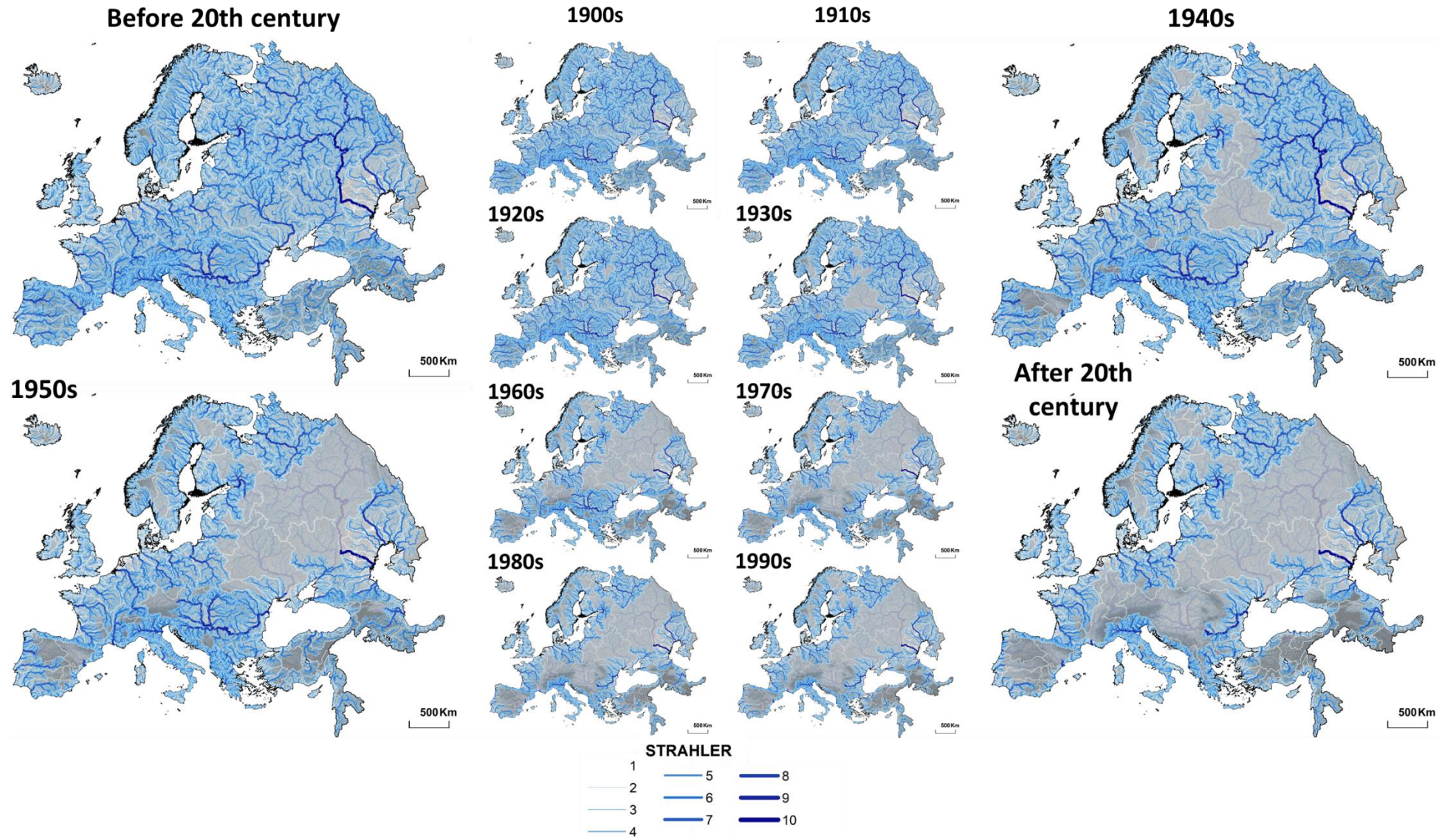




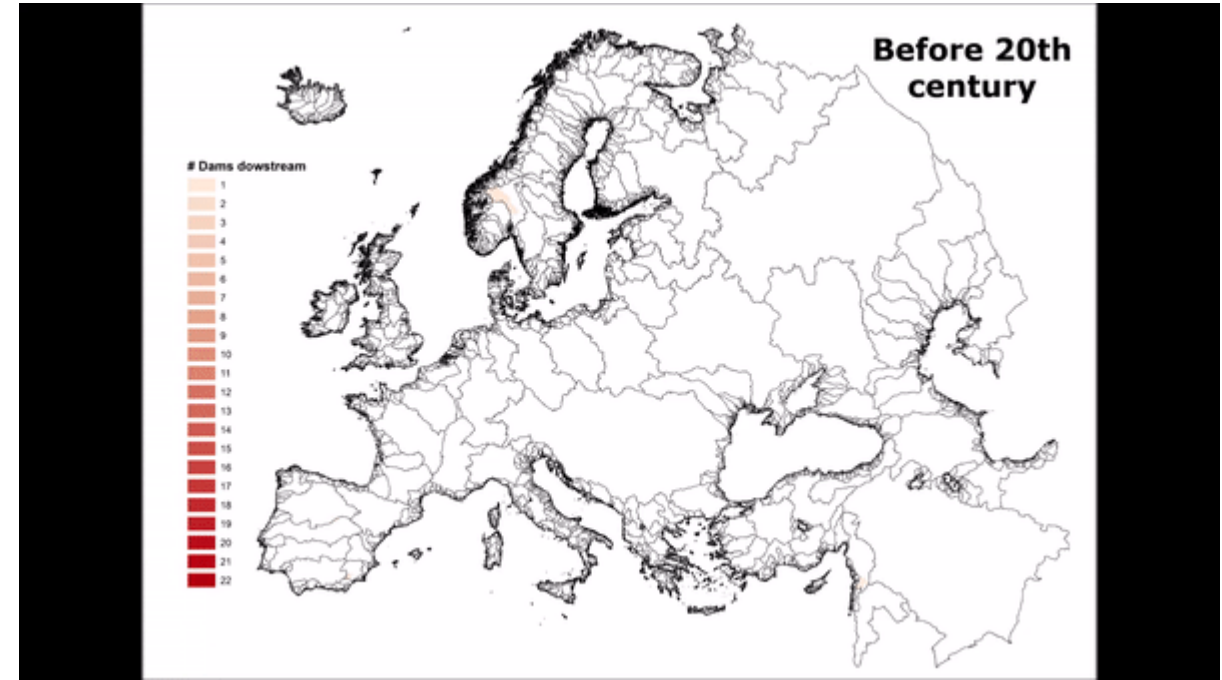
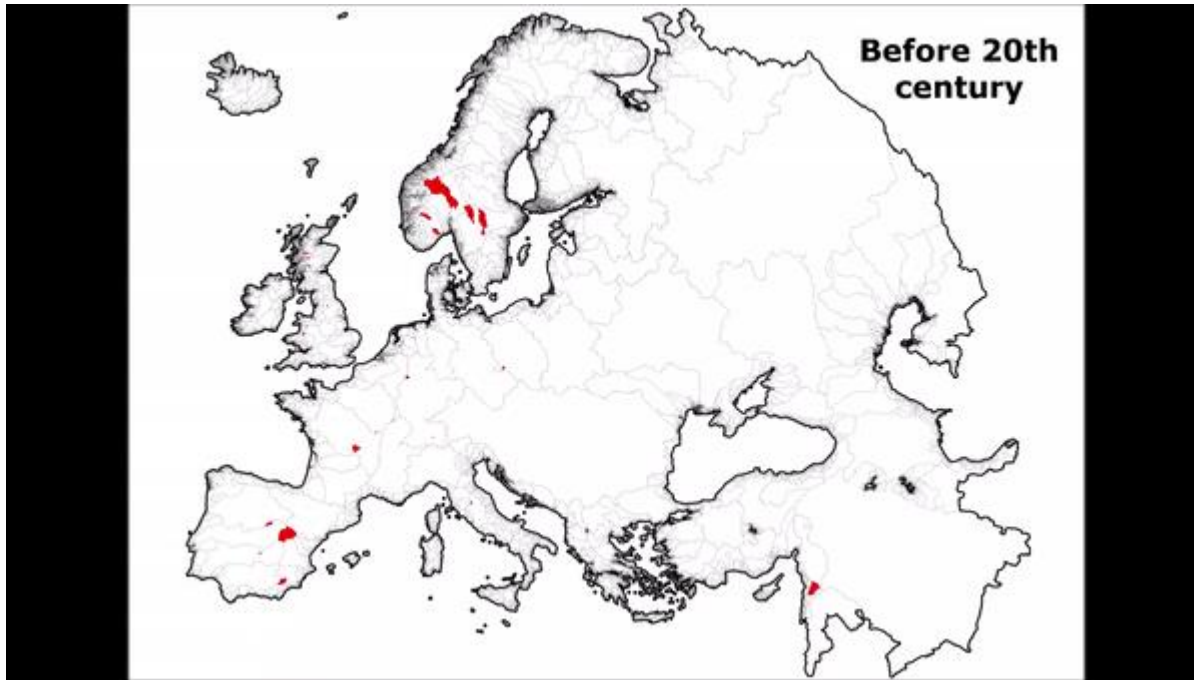




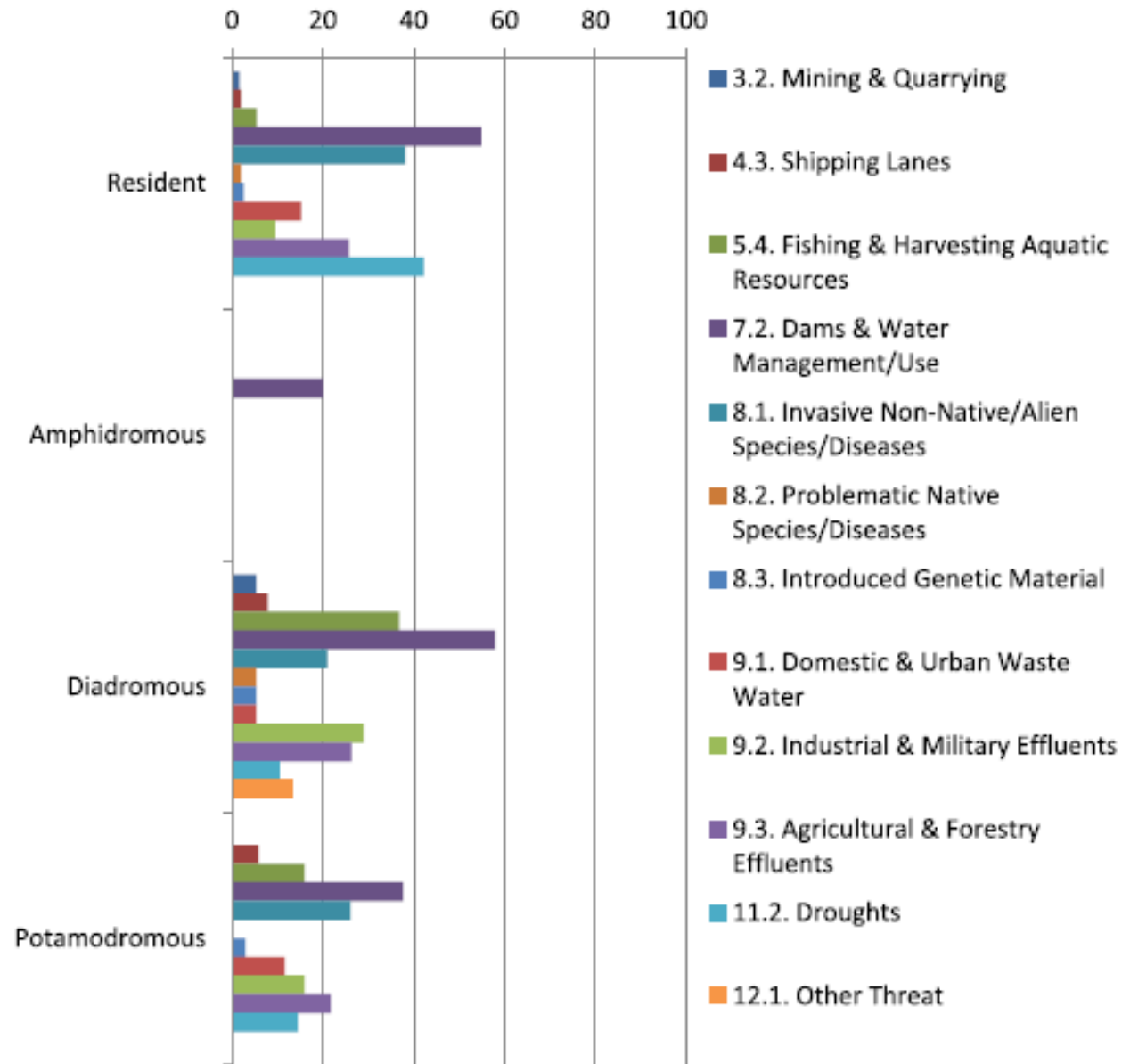
Duarte, G., Segurado, P., Haidvogel, G., Pont, D., Ferreira, M. T., & Branco, P. (2021). Damn those damn dams: Fluvial longitudinal connectivity impairment for European diadromous fish throughout the 20th century. *Science of The Total Environment*, 761, 143293.



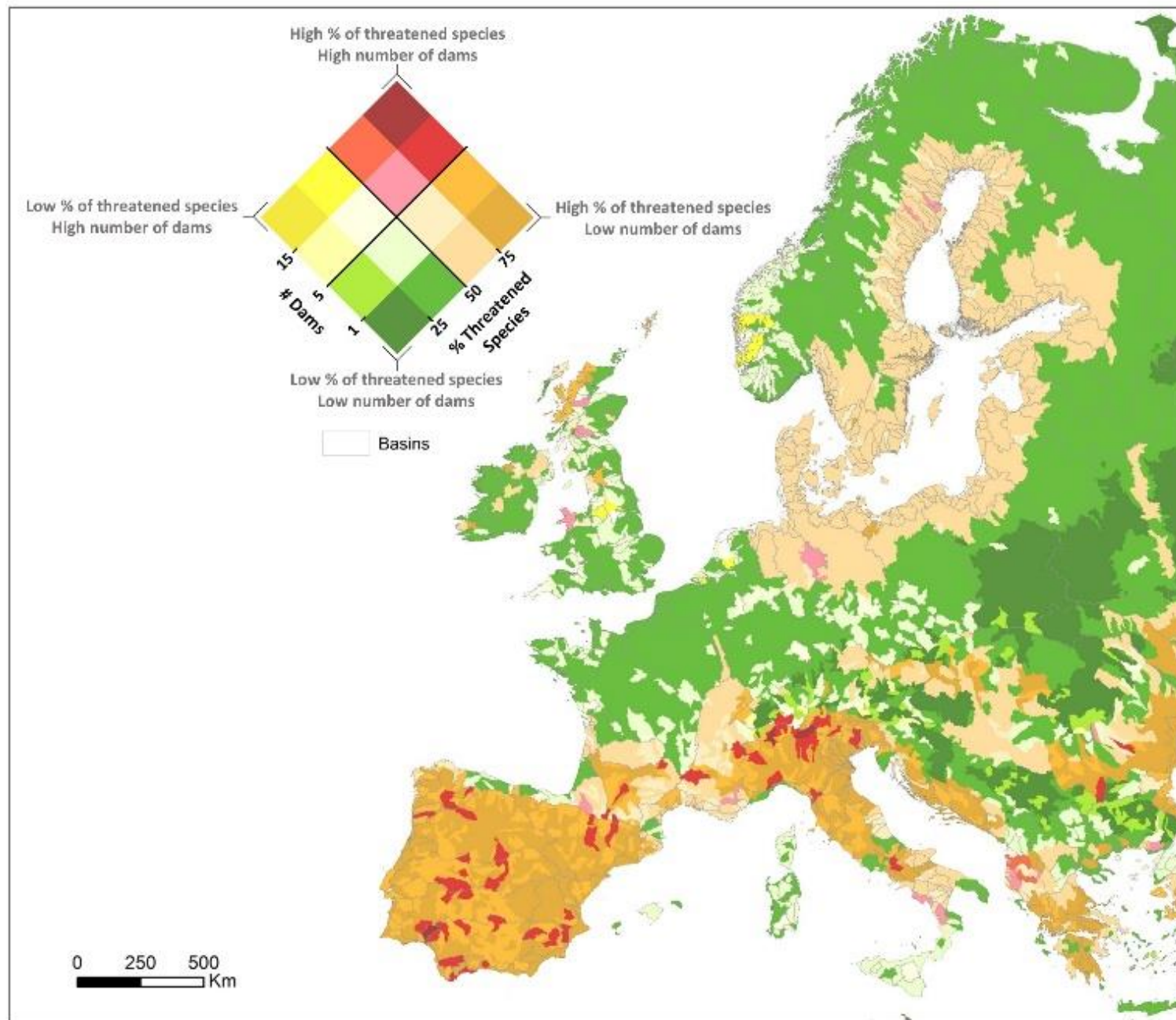
Duarte, G., Segurado, P., Haidvogel, G., Pont, D., Ferreira, M. T., & Branco, P. (2021). Damn those damn dams: Fluvial longitudinal connectivity impairment for European diadromous fish throughout the 20th century. *Science of The Total Environment*, 761, 143293.



Duarte, G., Segurado, P., Haidvogel, G., Pont, D., Ferreira, M. T., & Branco, P. (2021). Damn those damn dams: Fluvial longitudinal connectivity impairment for European diadromous fish throughout the 20th century. *Science of The Total Environment*, 761, 143293.



Costa, M. J., Duarte, G., Segurado, P., & Branco, P. (2021). Major threats to European freshwater fish species. *Science of The Total Environment*, 797, 149105.



The background features a repeating pattern of light blue geometric shapes, specifically stylized 'N' and 'V' characters, arranged in a staggered, interlocking fashion.

**RVT**ool



Takes full **advantage of river network databases** like the CCM

**Straightforward linkage** between environmental and river network data

**User-friendly** & straightforward implementation

**No topological restrictions** as it is database driven

**Dynamic outputs** over time

**Fast performance** even with large datasets

**Universal applicability**

Works with **segment or sub-basin** as a basic **analysis unit**

A set of **ready-to-use libraries**

**Dammed** \  **Fish**



## Main goal

**Evaluate river network structural and functional connectivity and propose tools to facilitate management to improve biodiversity and biotic quality of European rivers.**

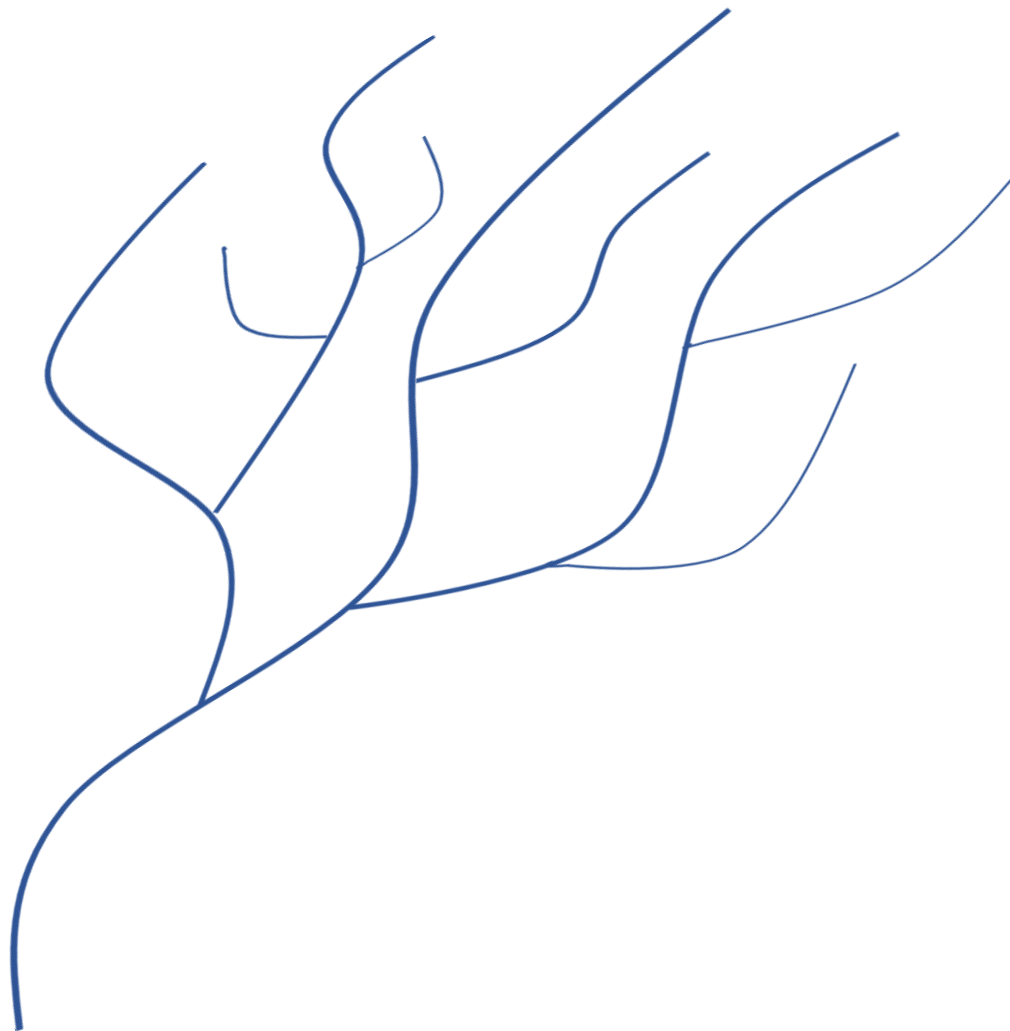


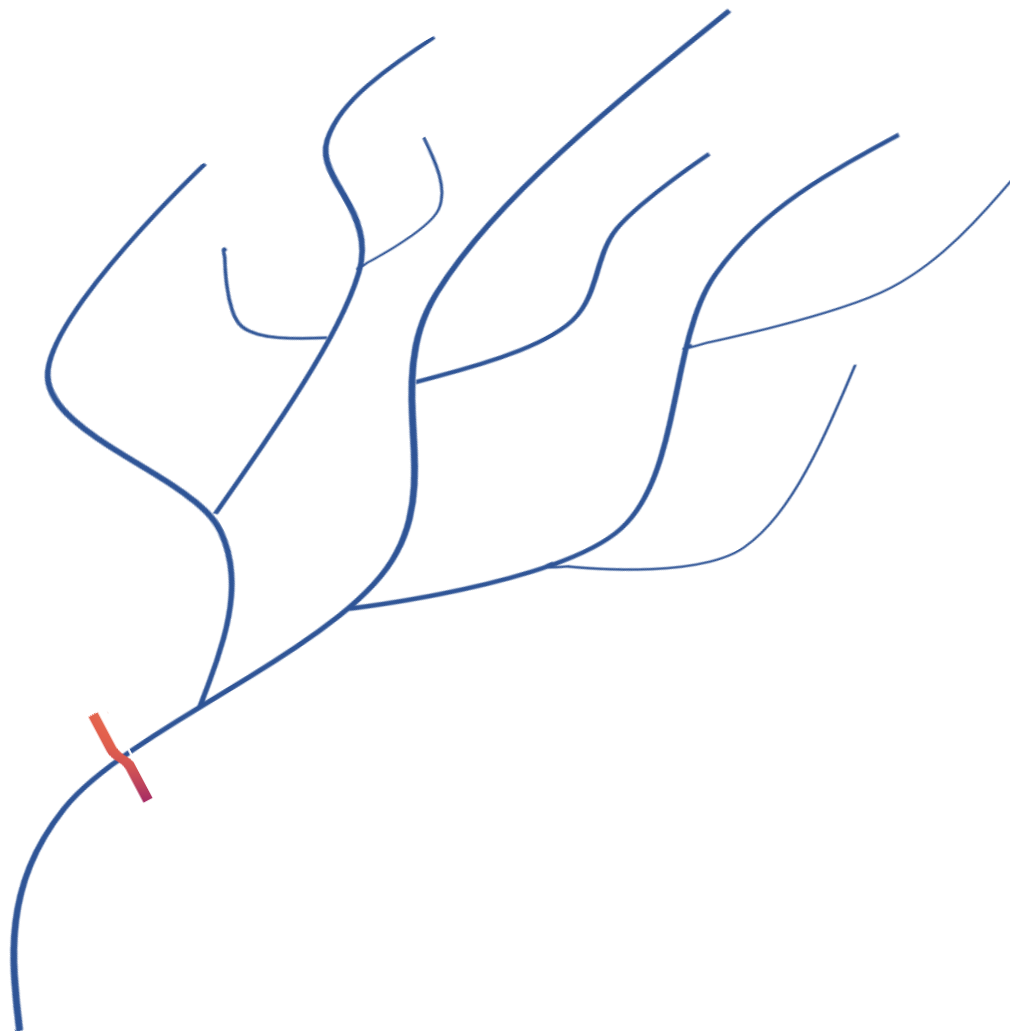
## Main goal

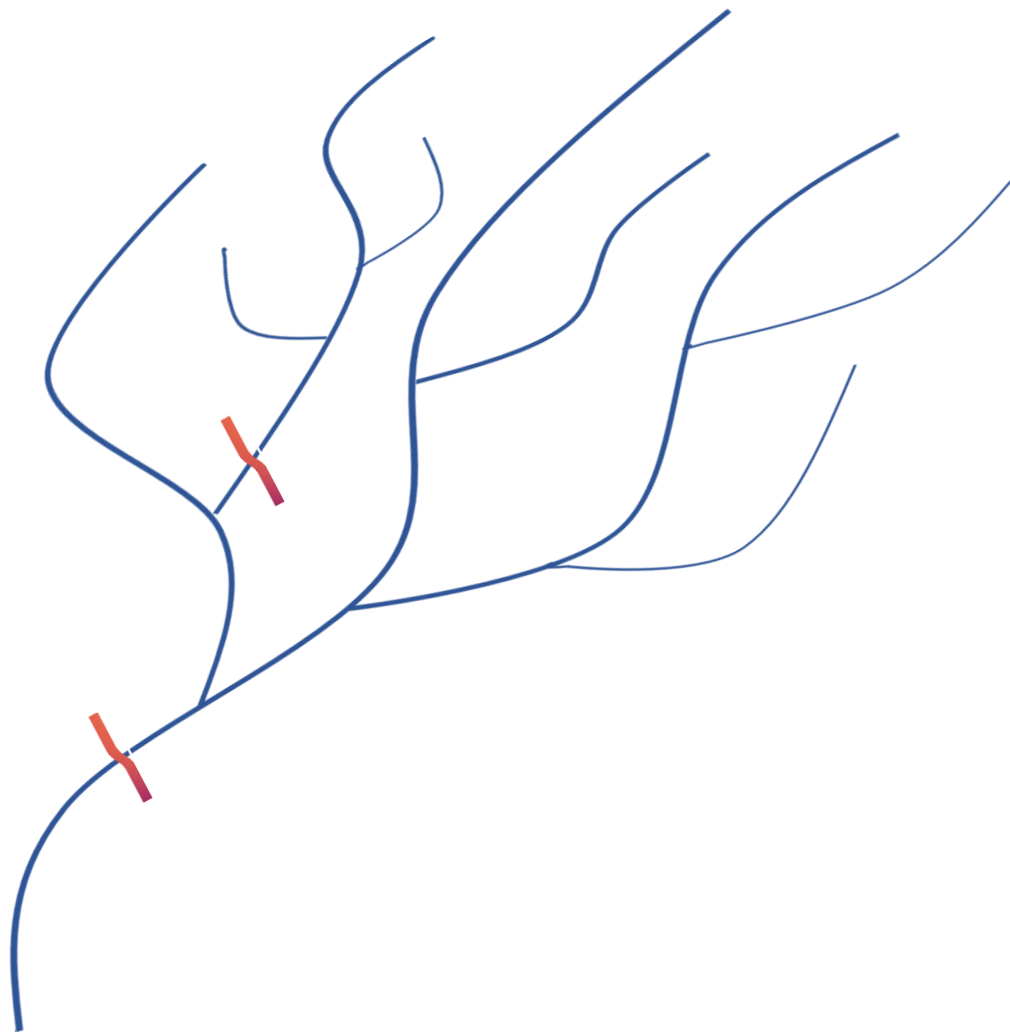
**Evaluate river network structural and functional connectivity and propose tools to facilitate management to improve biodiversity and biotic quality of European rivers.**

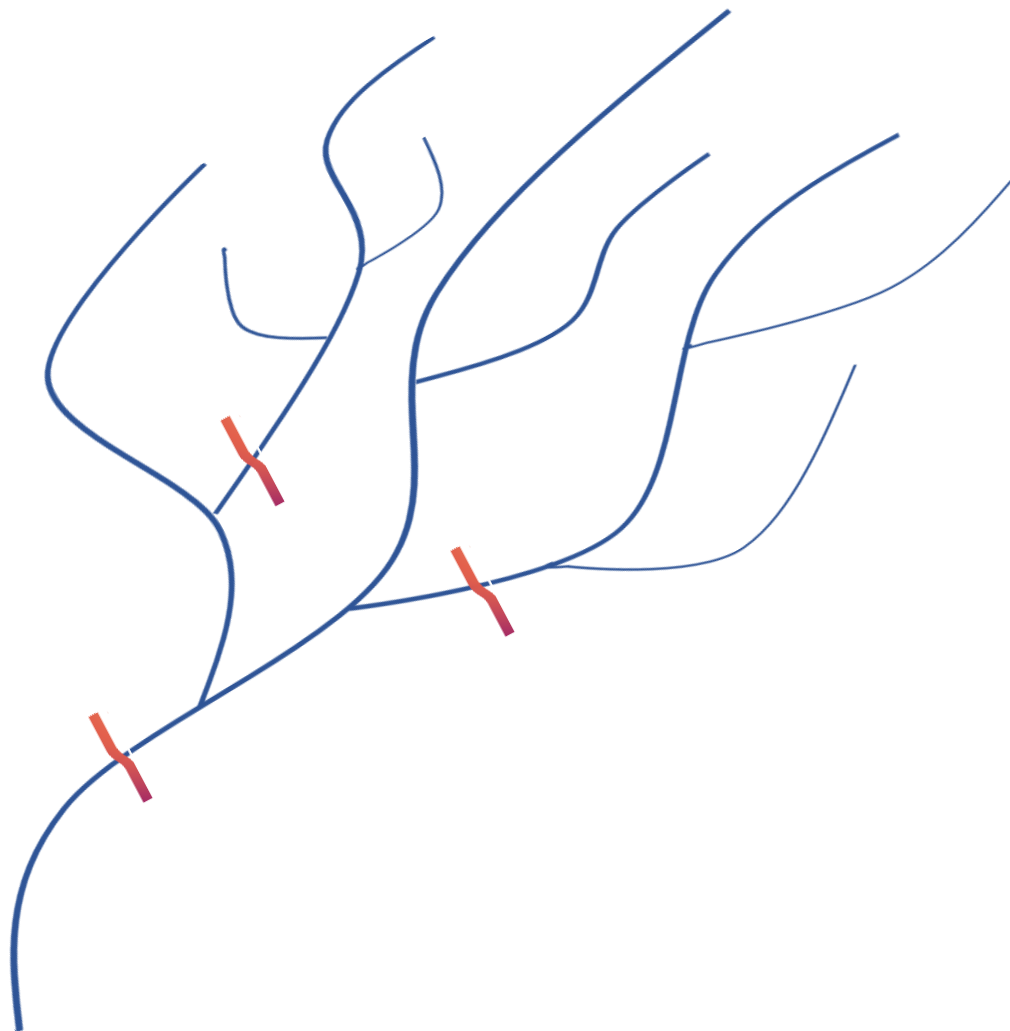


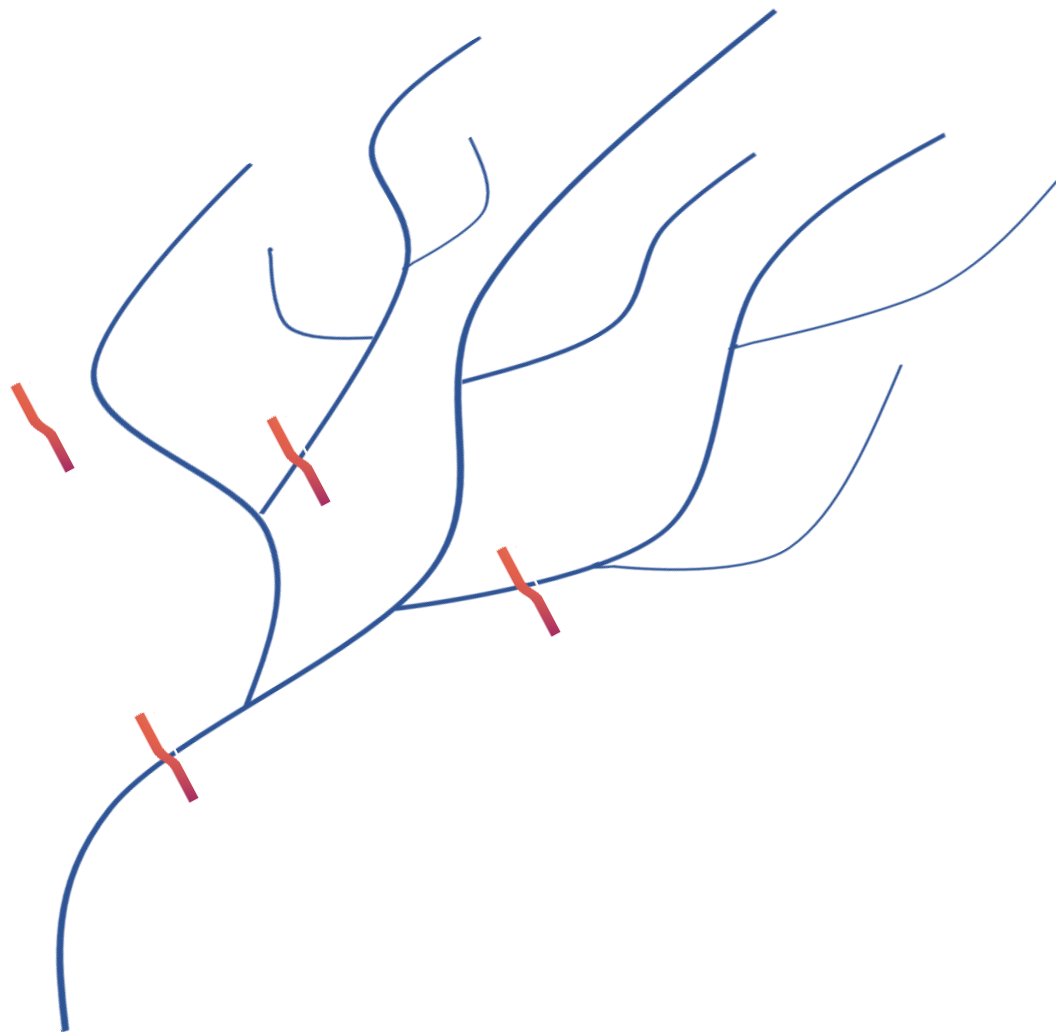


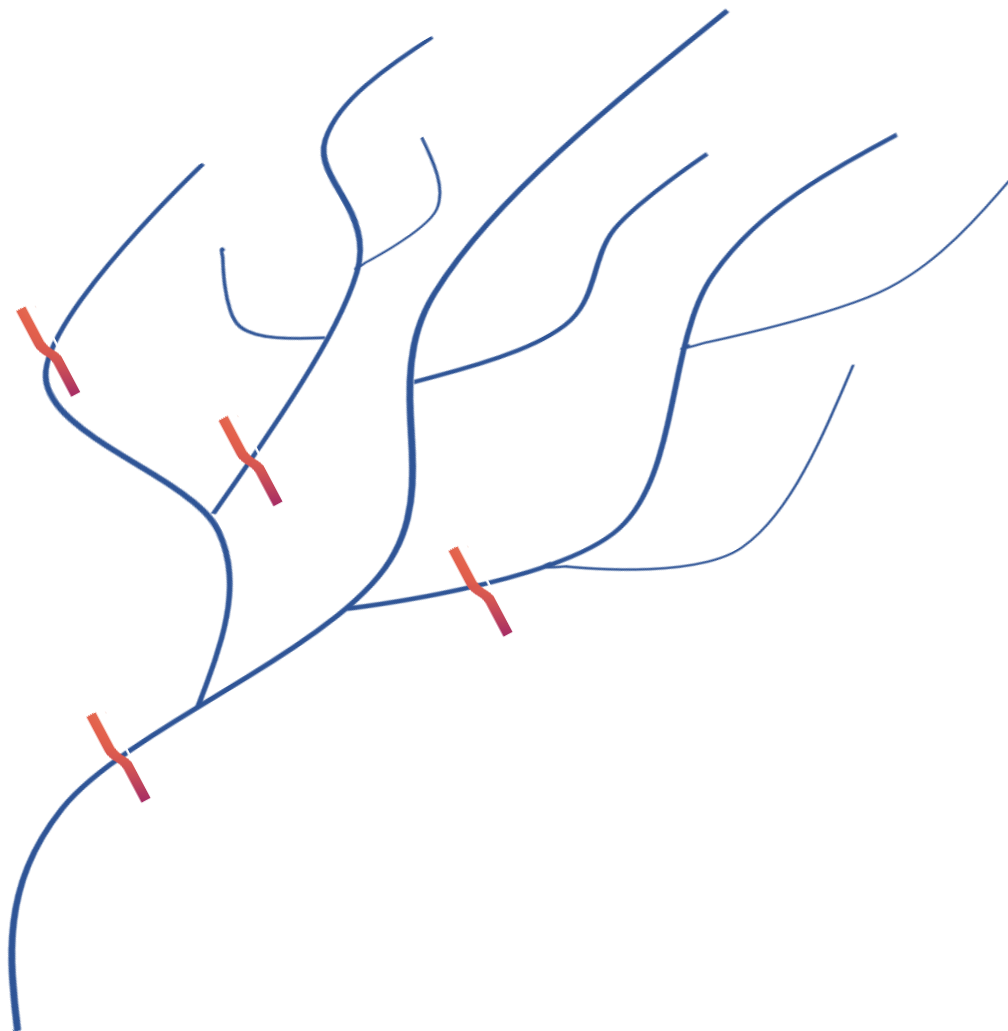


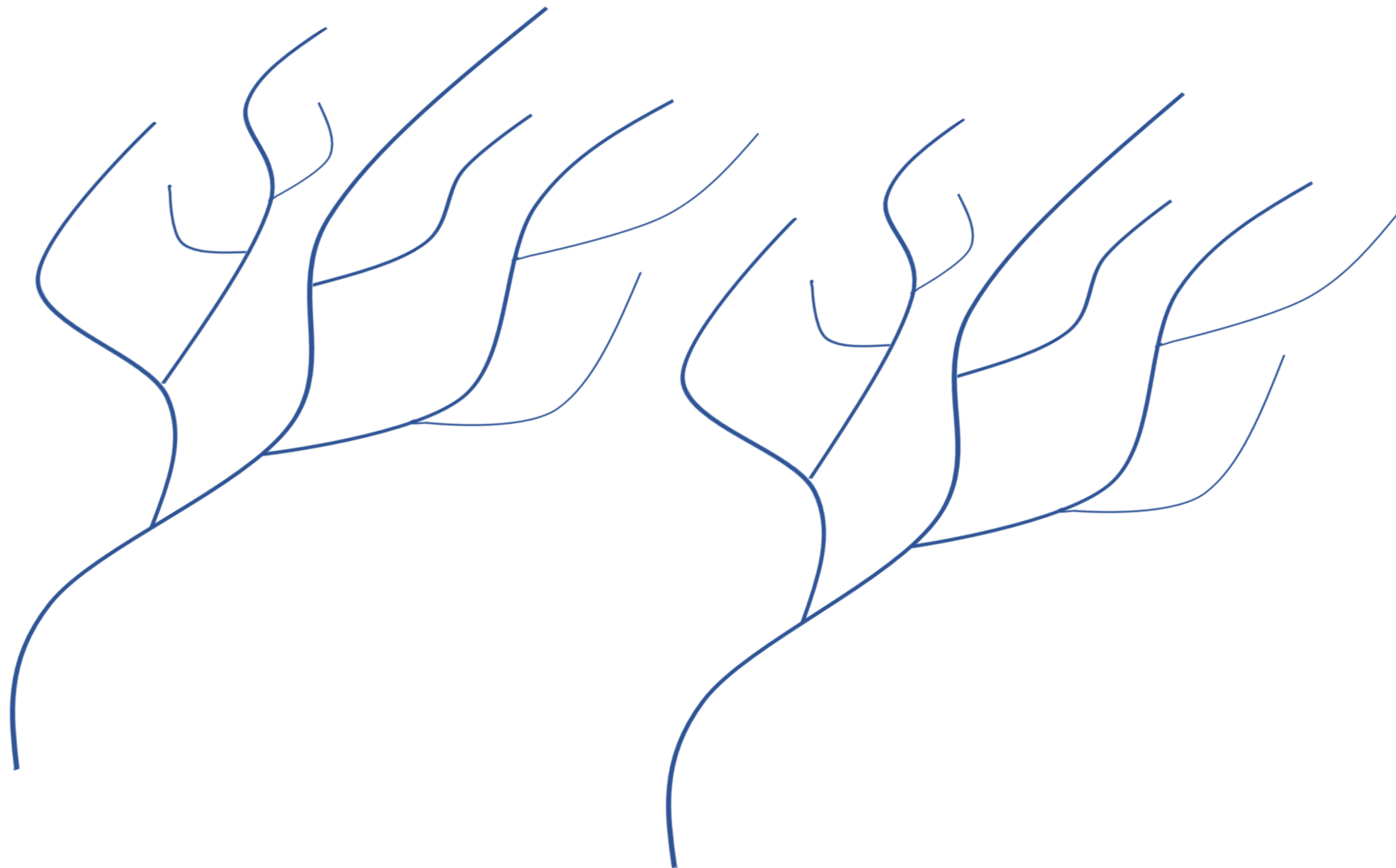


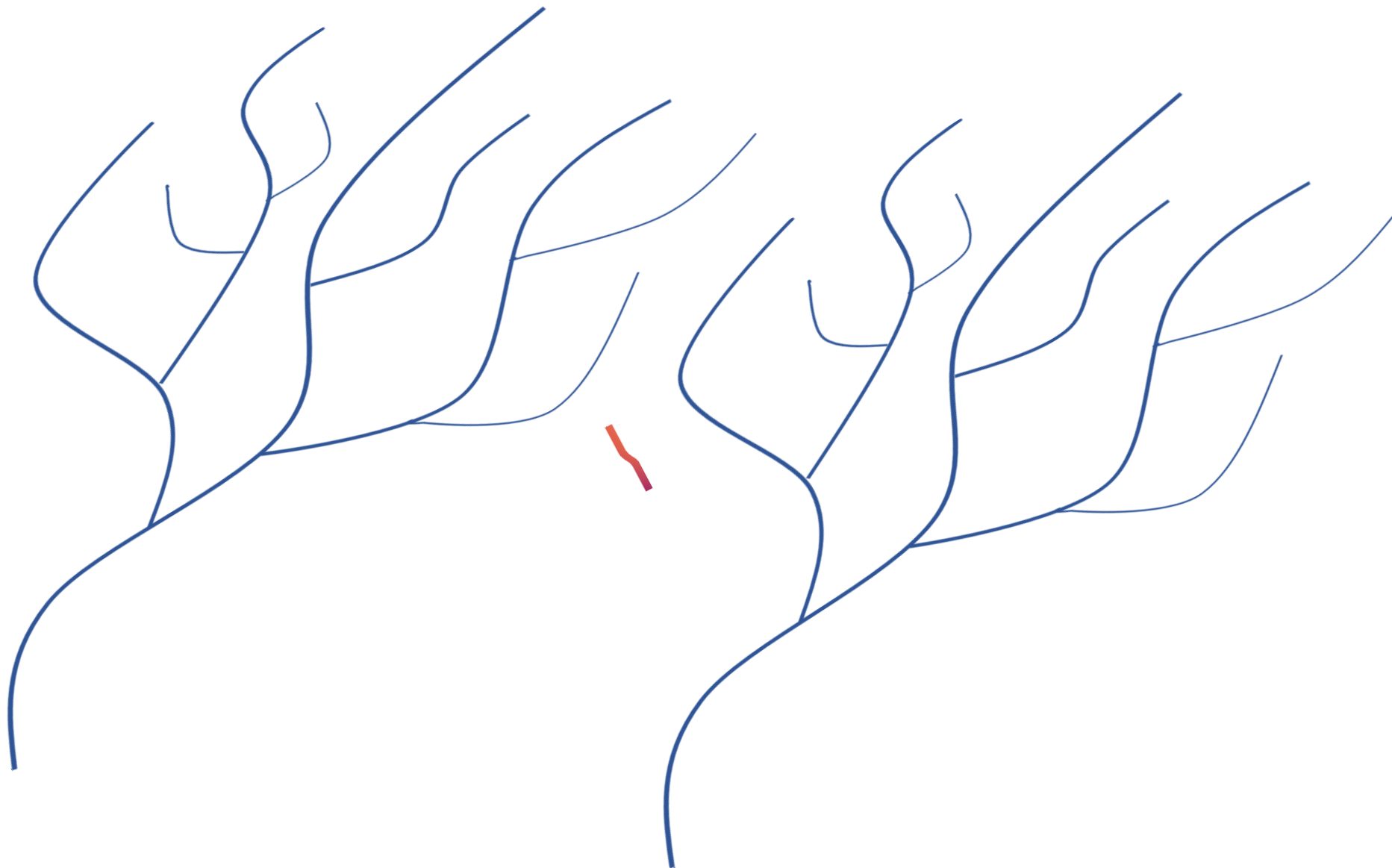


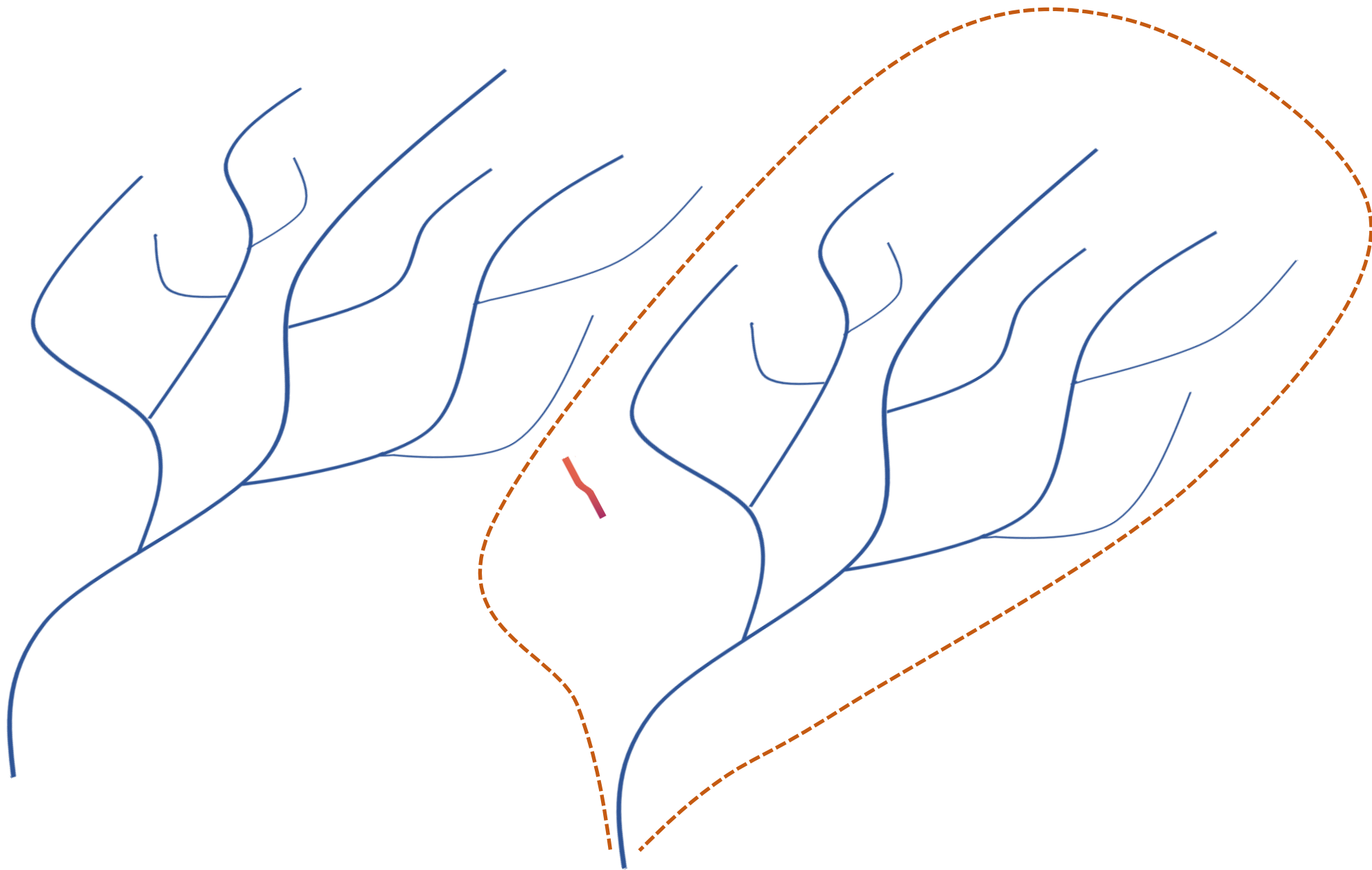


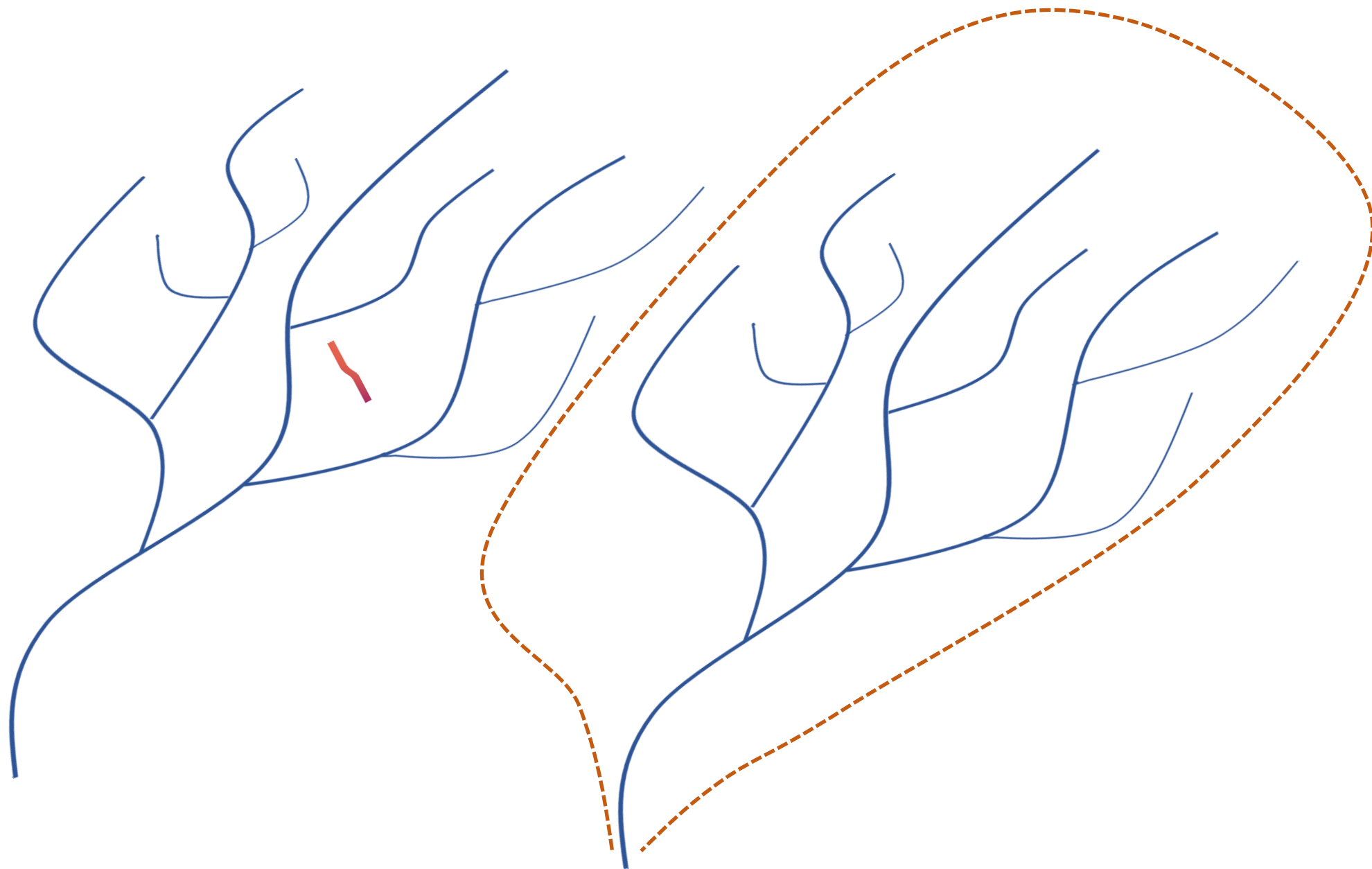


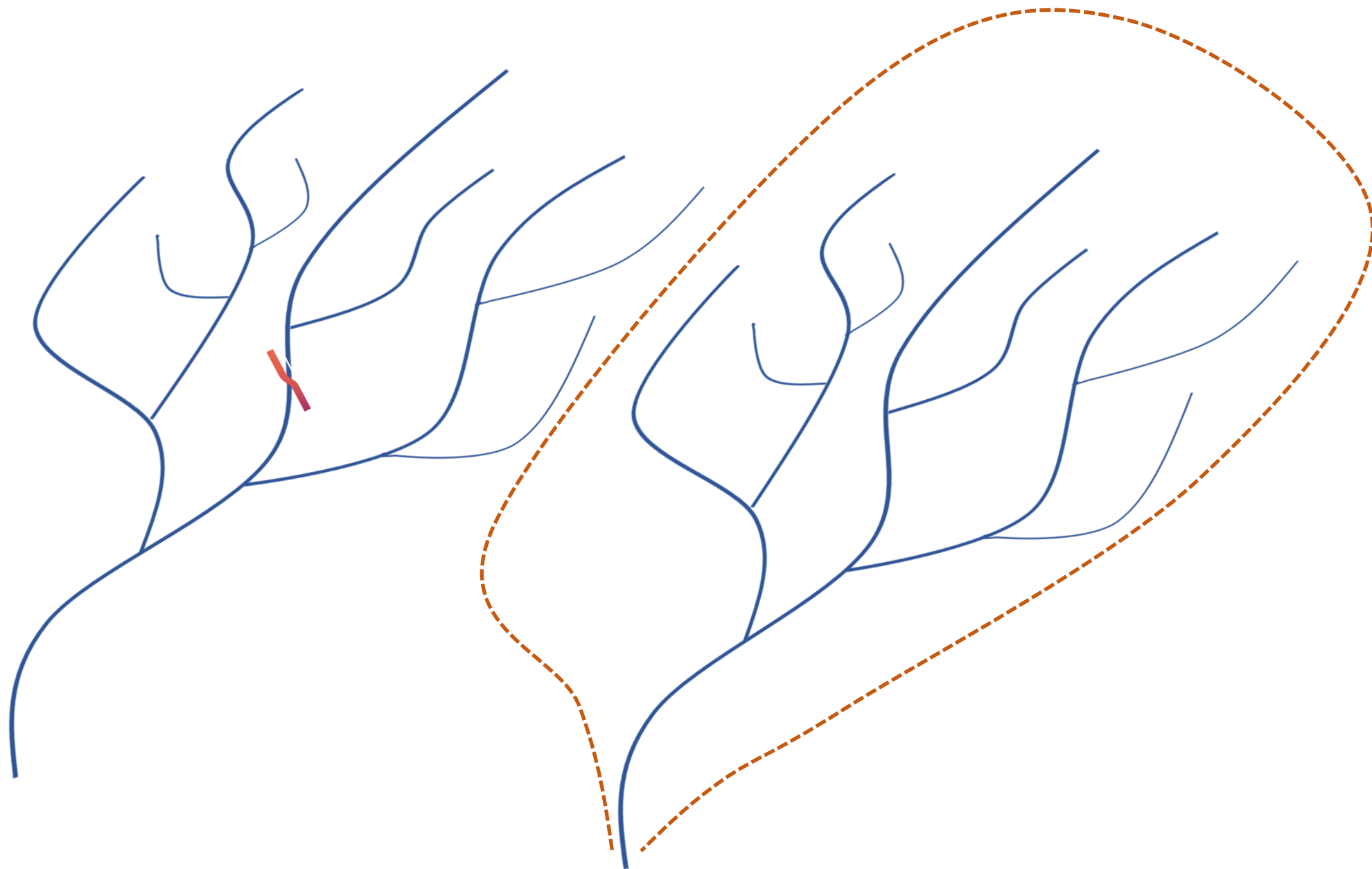


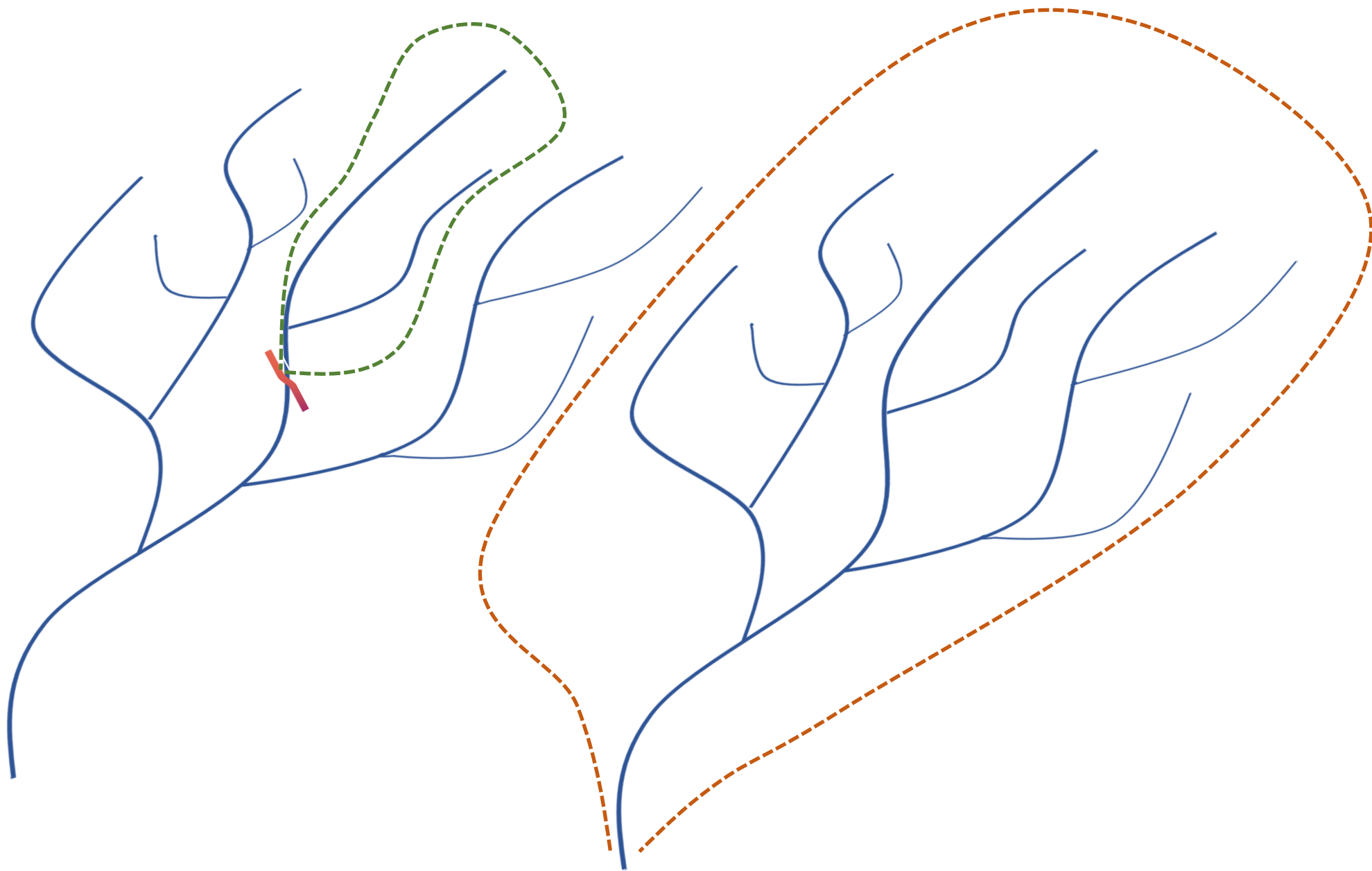


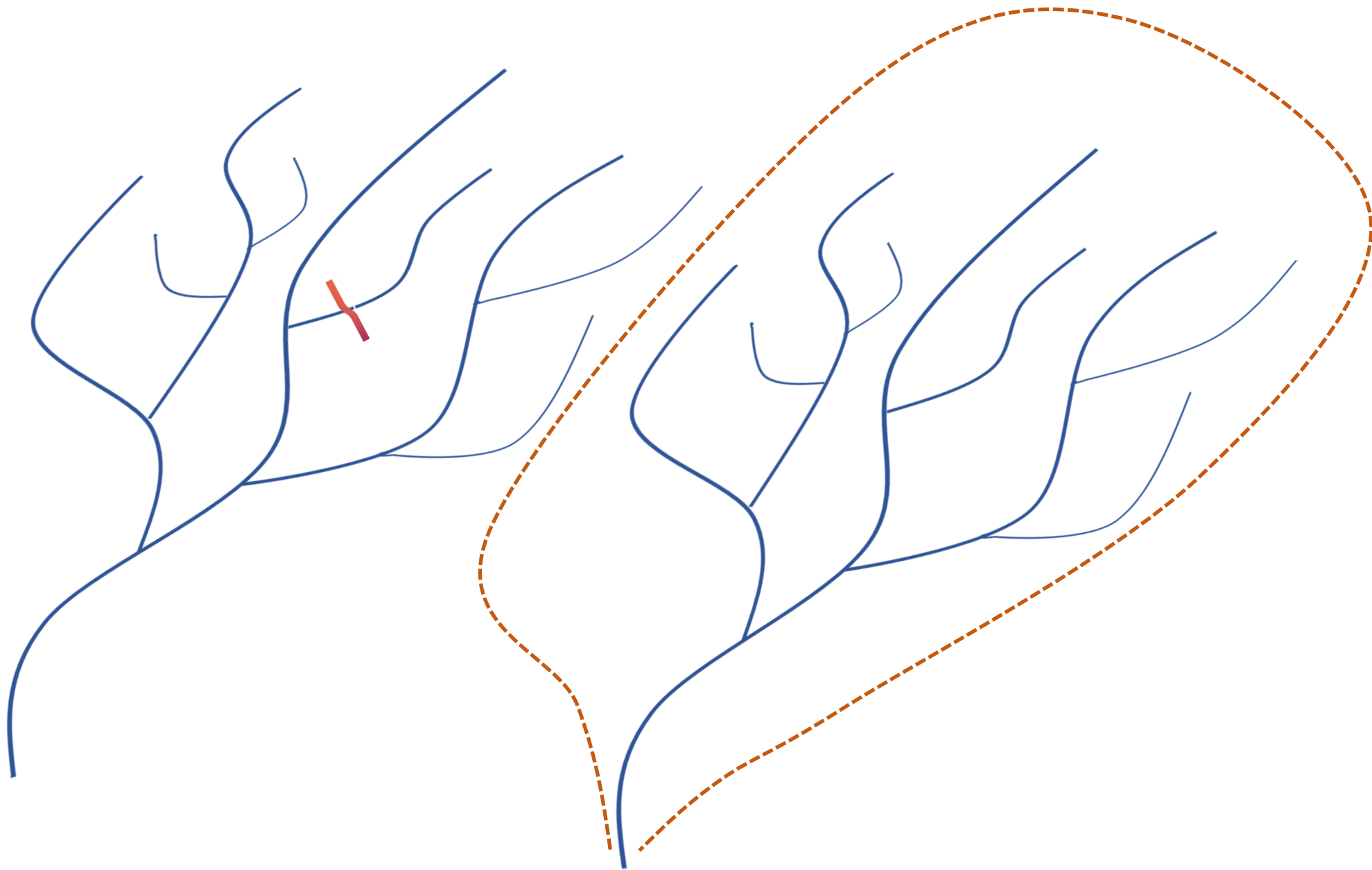


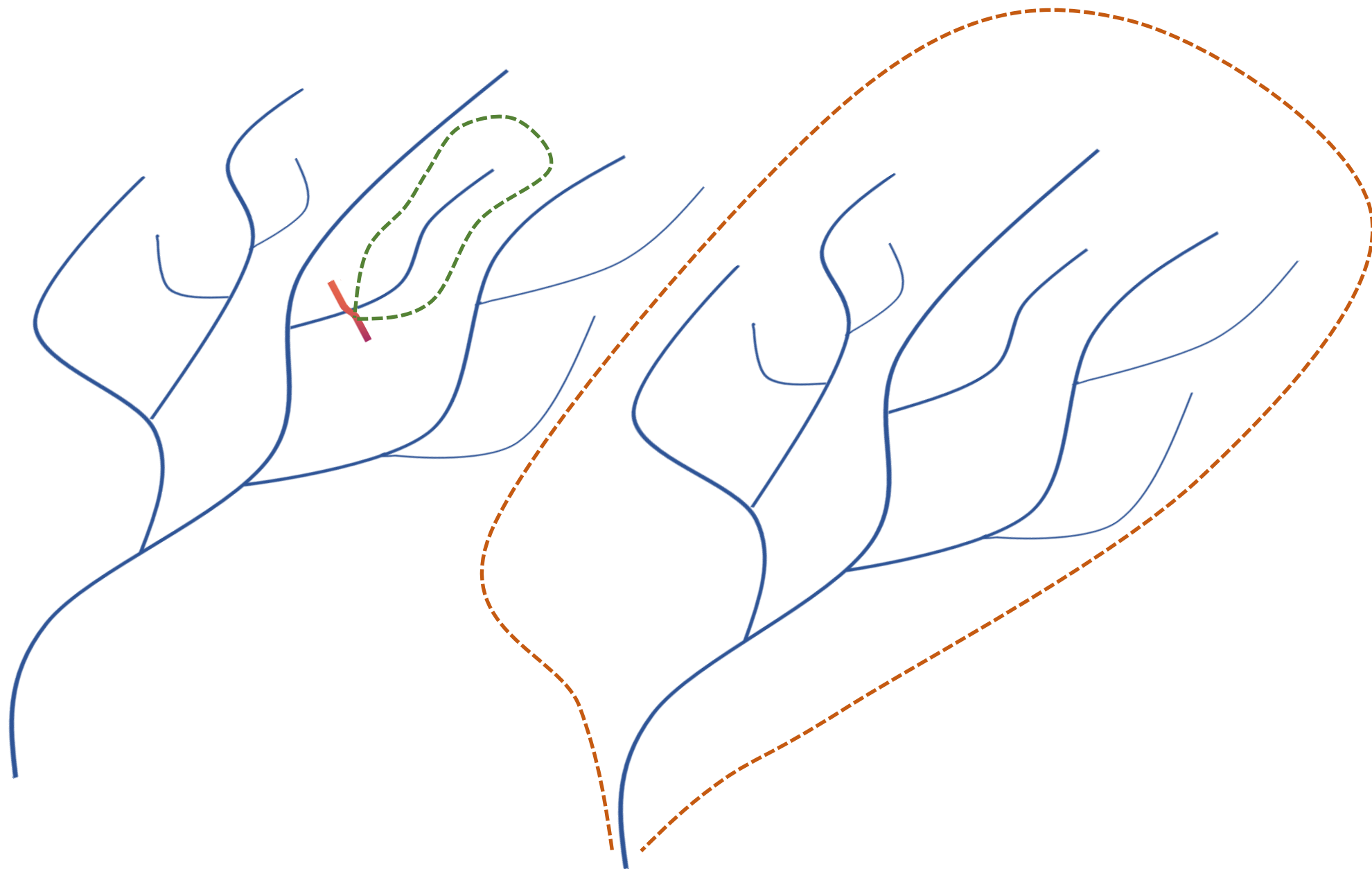


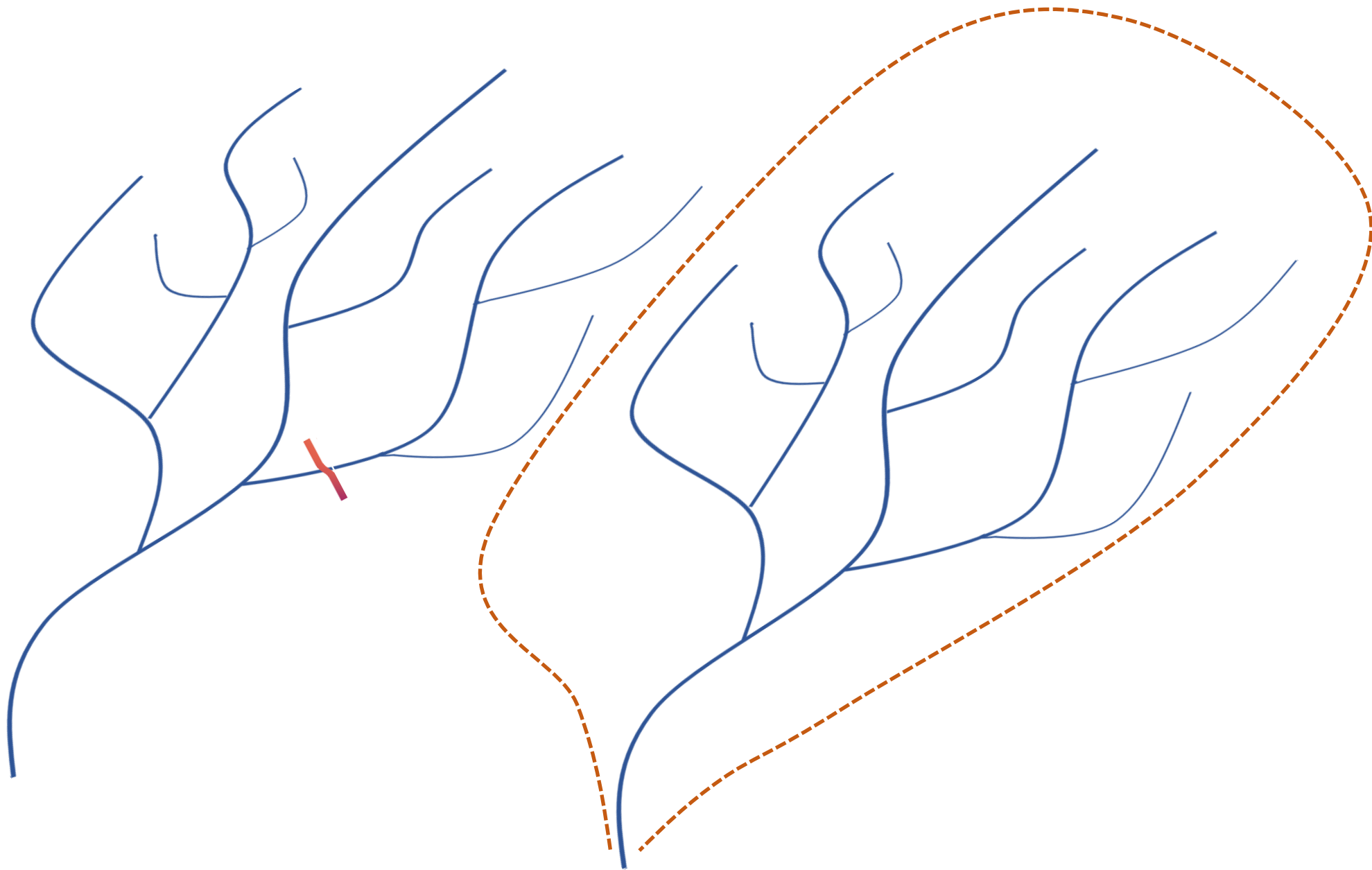


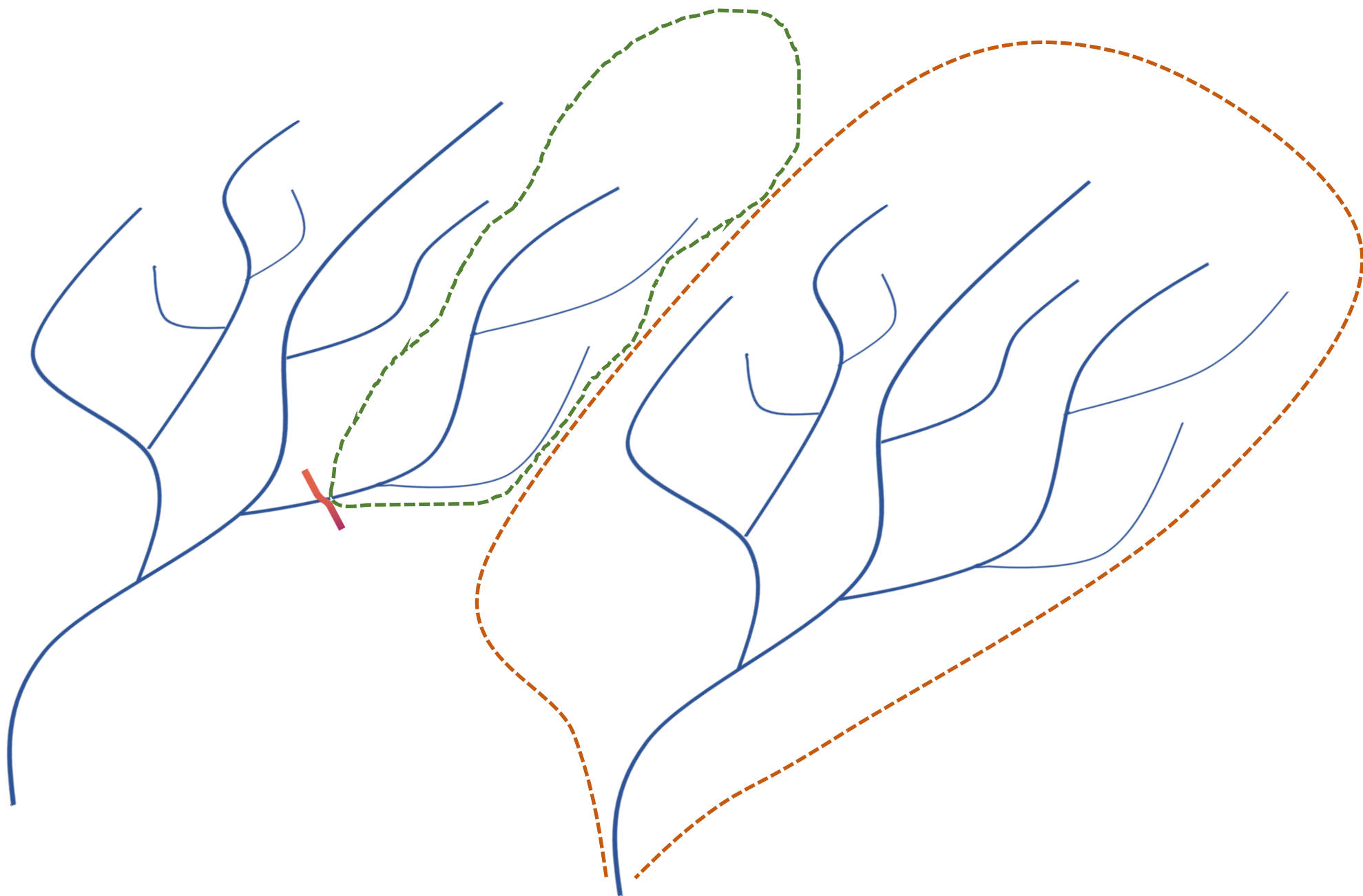




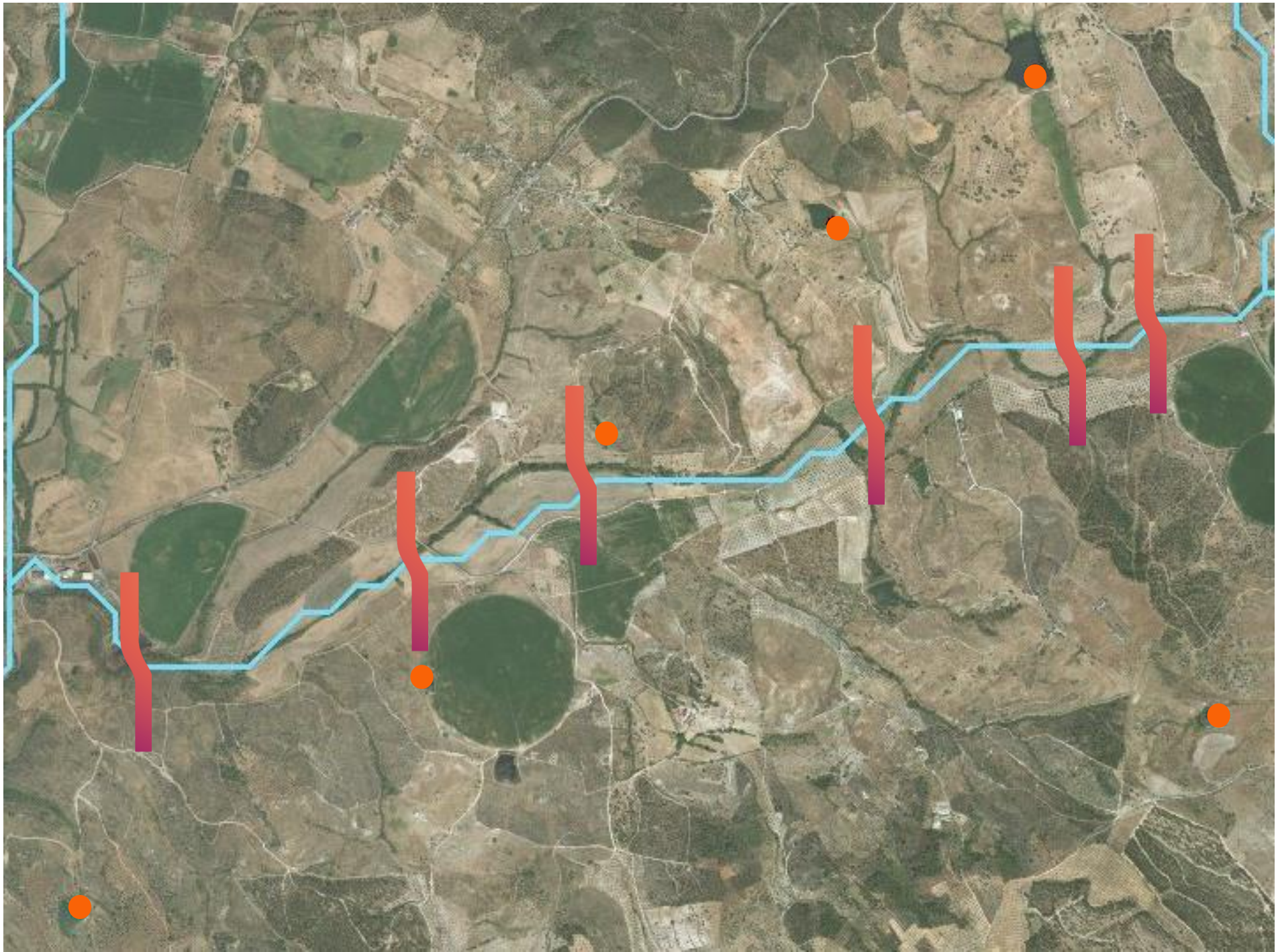












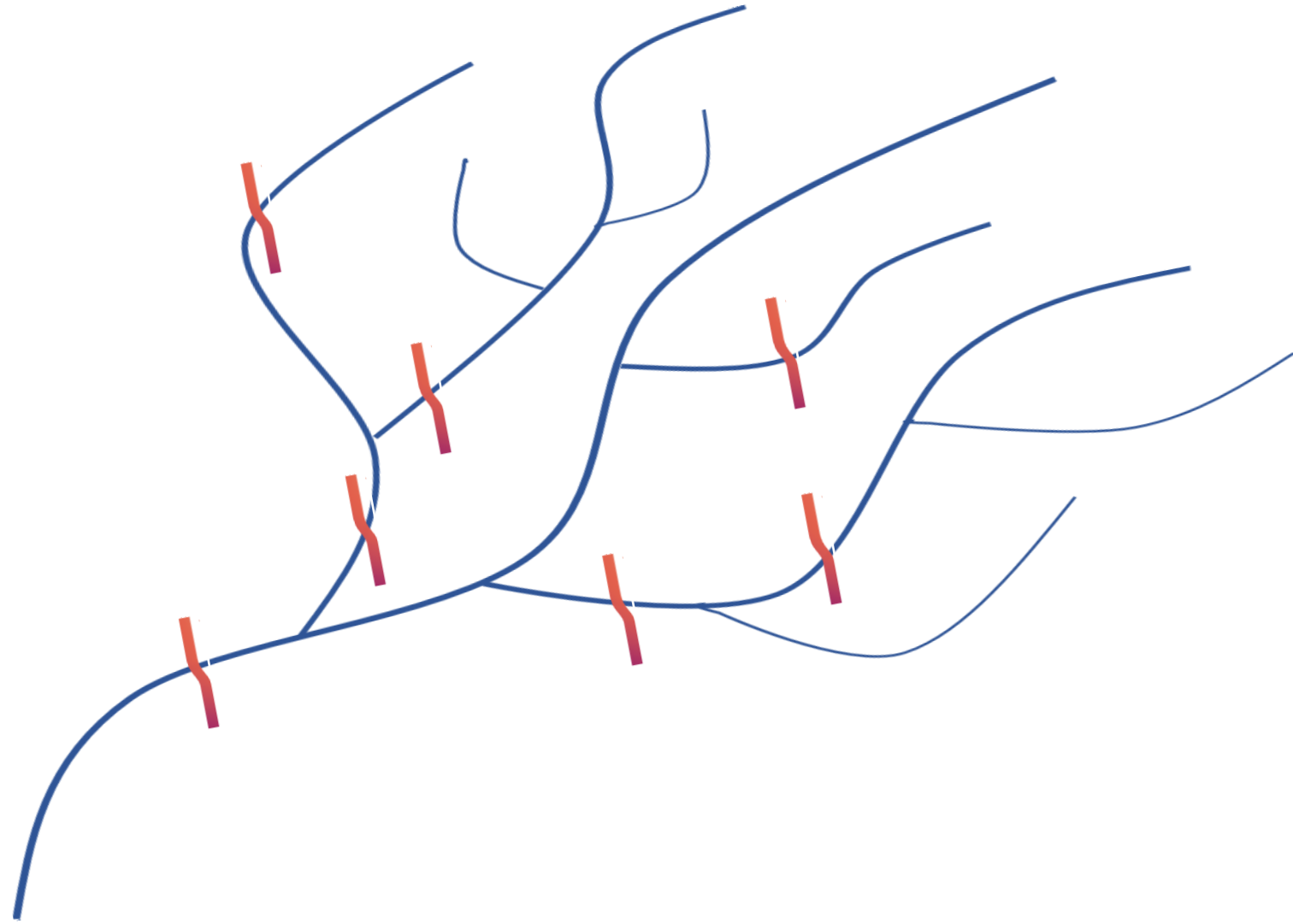
The background of the image features a repeating pattern of light blue, stylized geometric shapes. These shapes are composed of horizontal and vertical lines, creating a series of interconnected, angular forms that resemble a modern, abstract architectural or digital motif. The pattern is distributed evenly across the entire frame, providing a textured and dynamic backdrop for the central text.

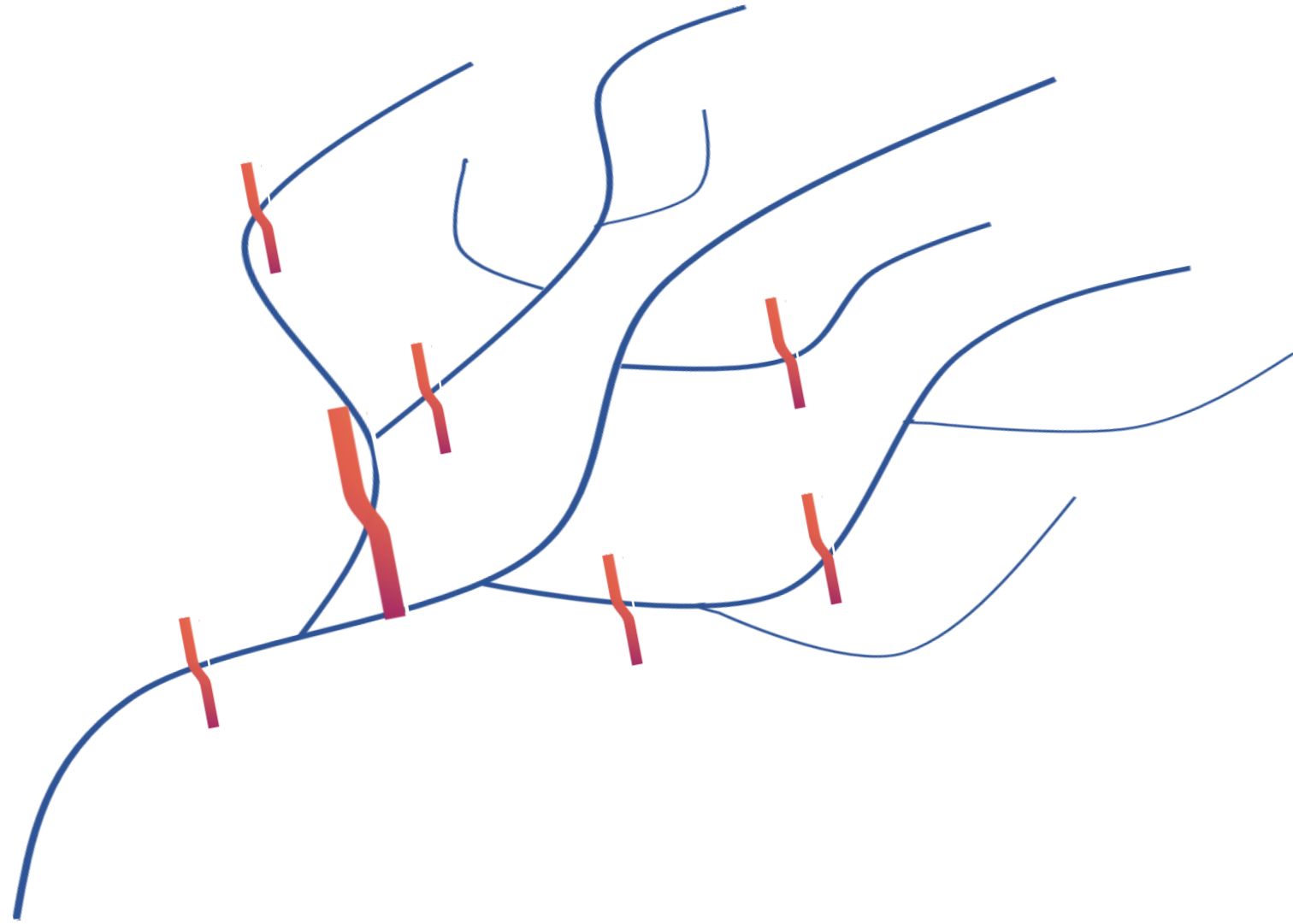
**RVT**ool



RnVTool

RnVConnect







RnVTool

RnVConnect



## Main goal

**Evaluate river network structural and functional connectivity and propose tools to facilitate management to improve biodiversity and biotic quality of European rivers.**

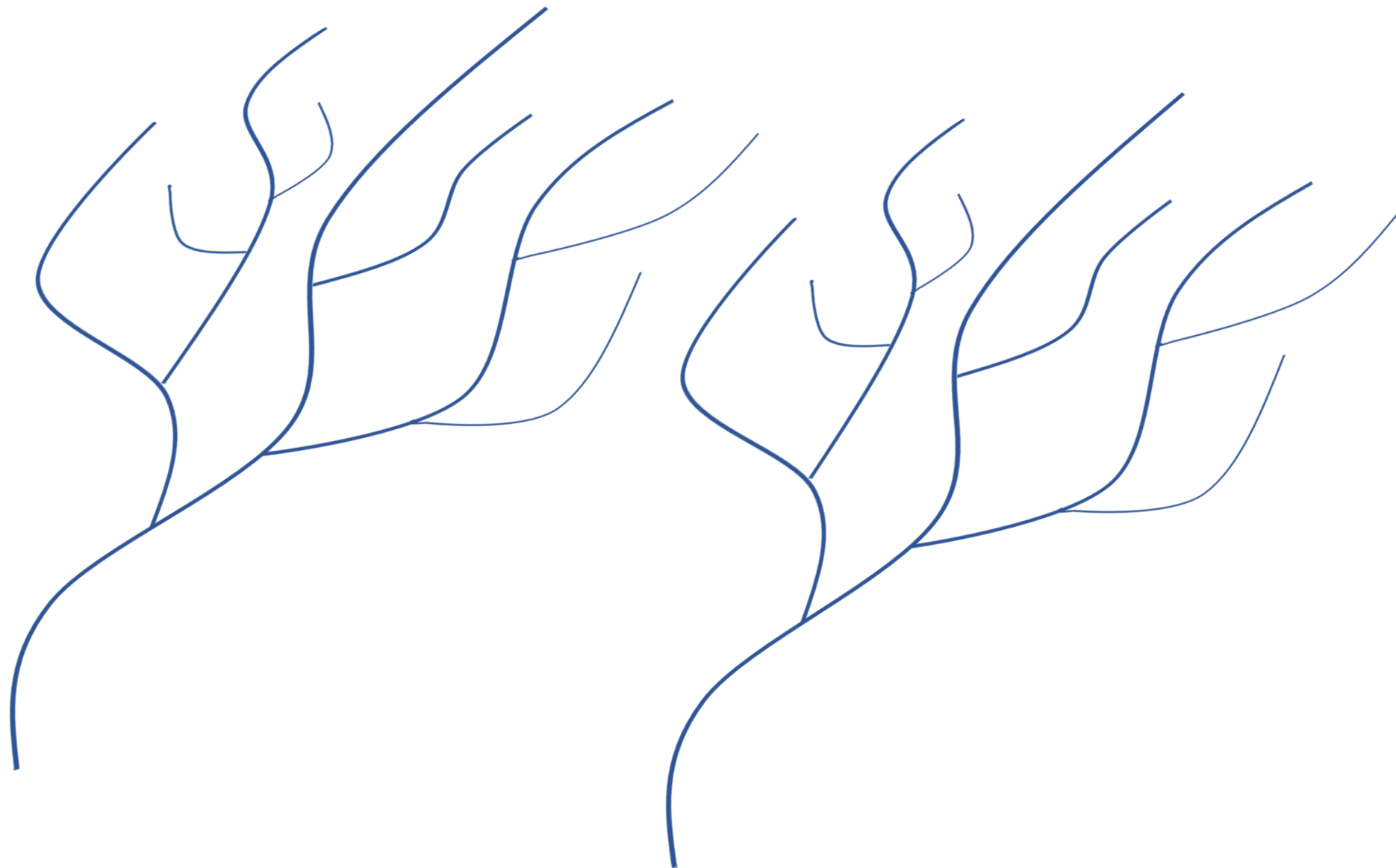


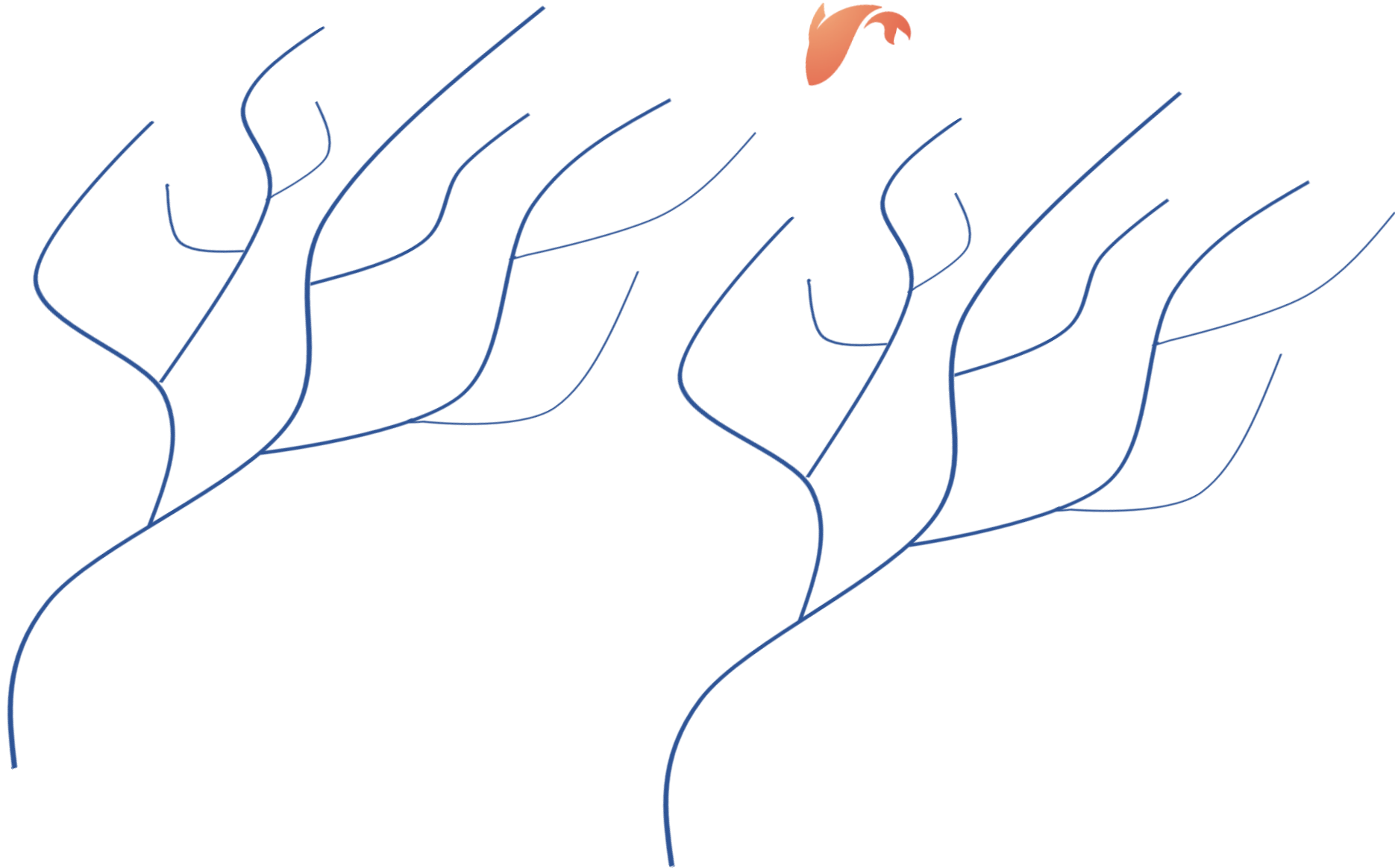
## Main goal

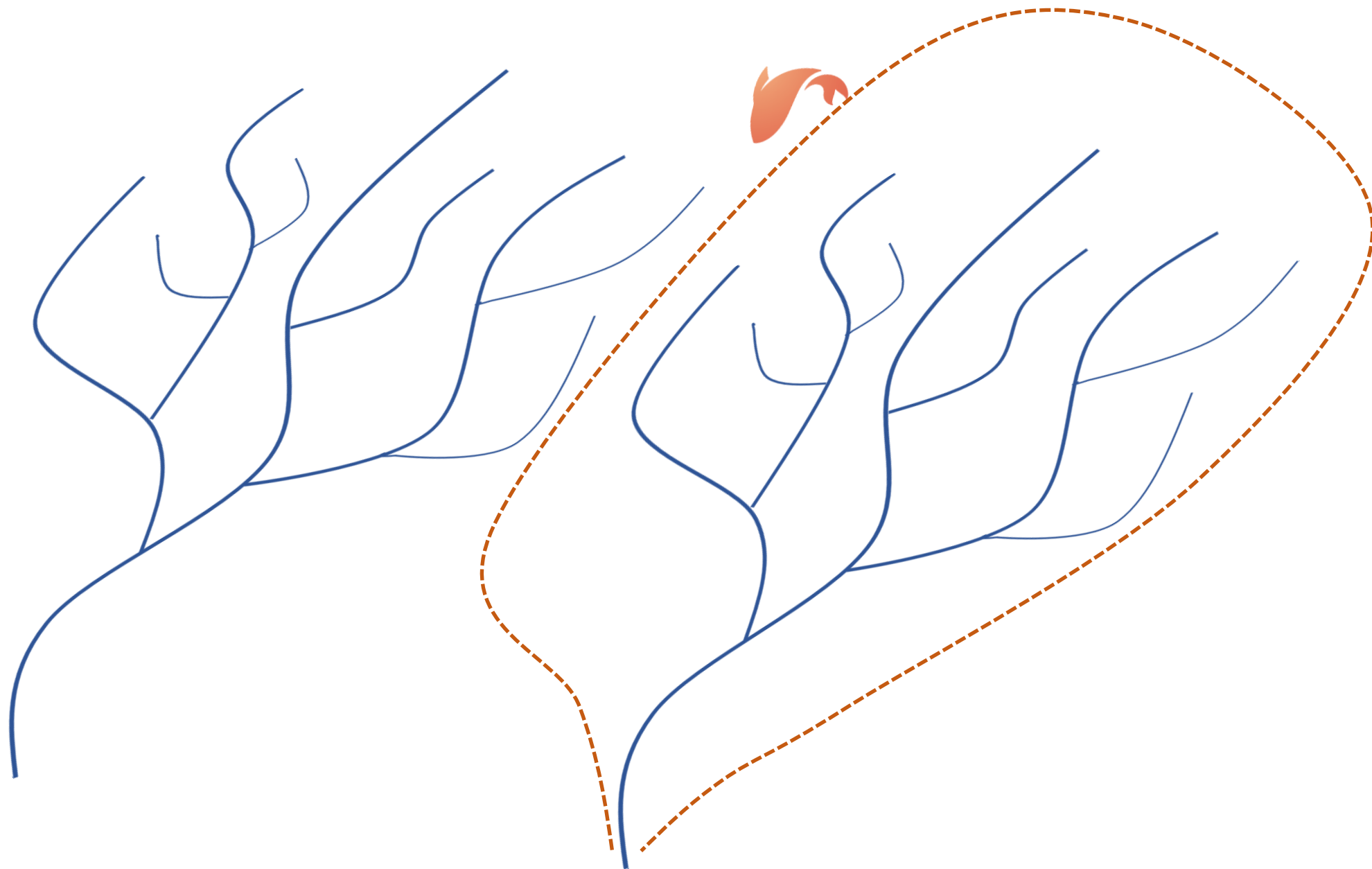
Evaluate river network structural and **functional** connectivity and propose tools to facilitate management to improve biodiversity and biotic quality of European rivers.













RnVTool

RnVFish



## Main goal

**Evaluate river network structural and functional connectivity and propose tools to facilitate management to improve biodiversity and biotic quality of European rivers.**



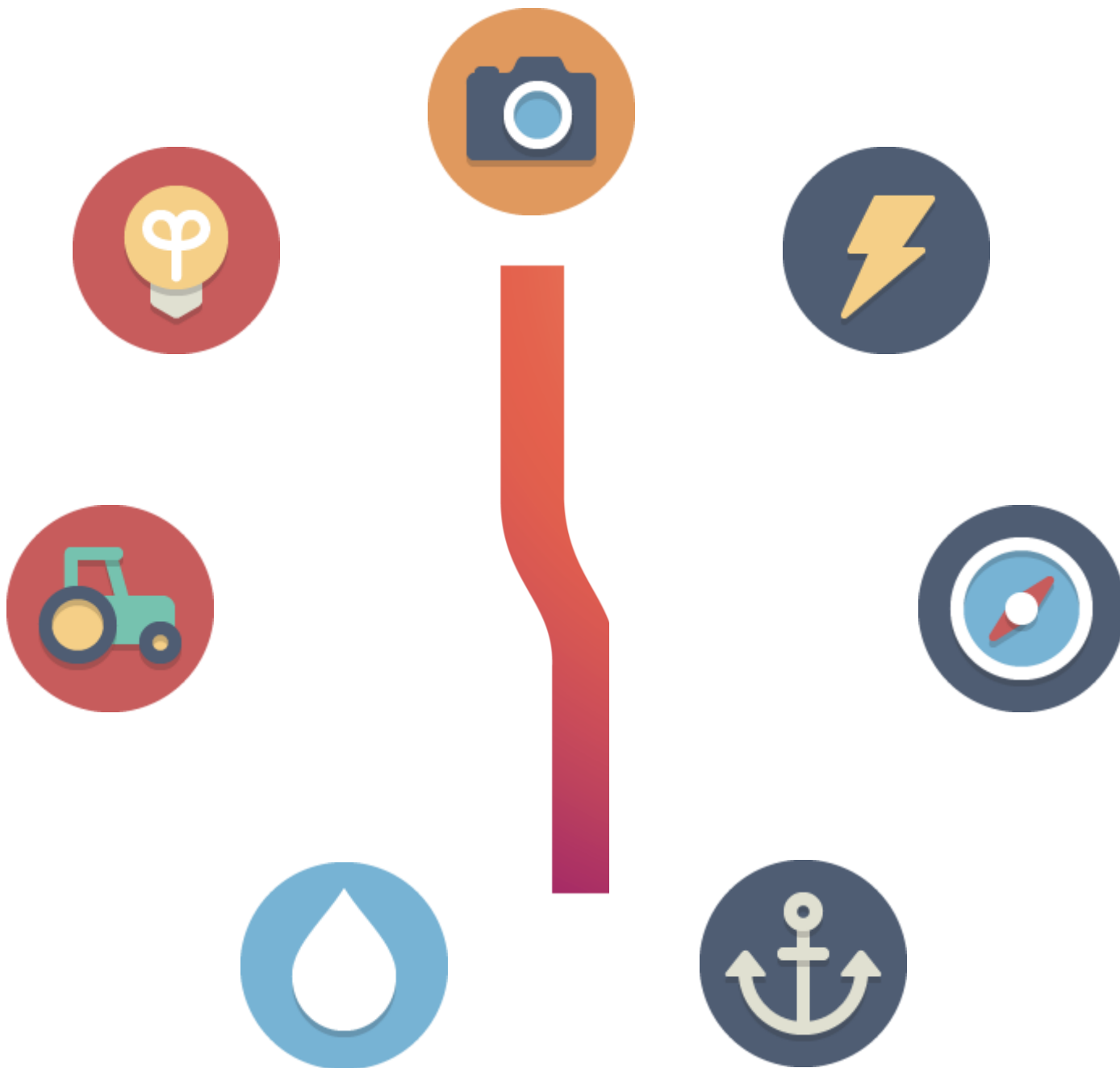
## Main goal

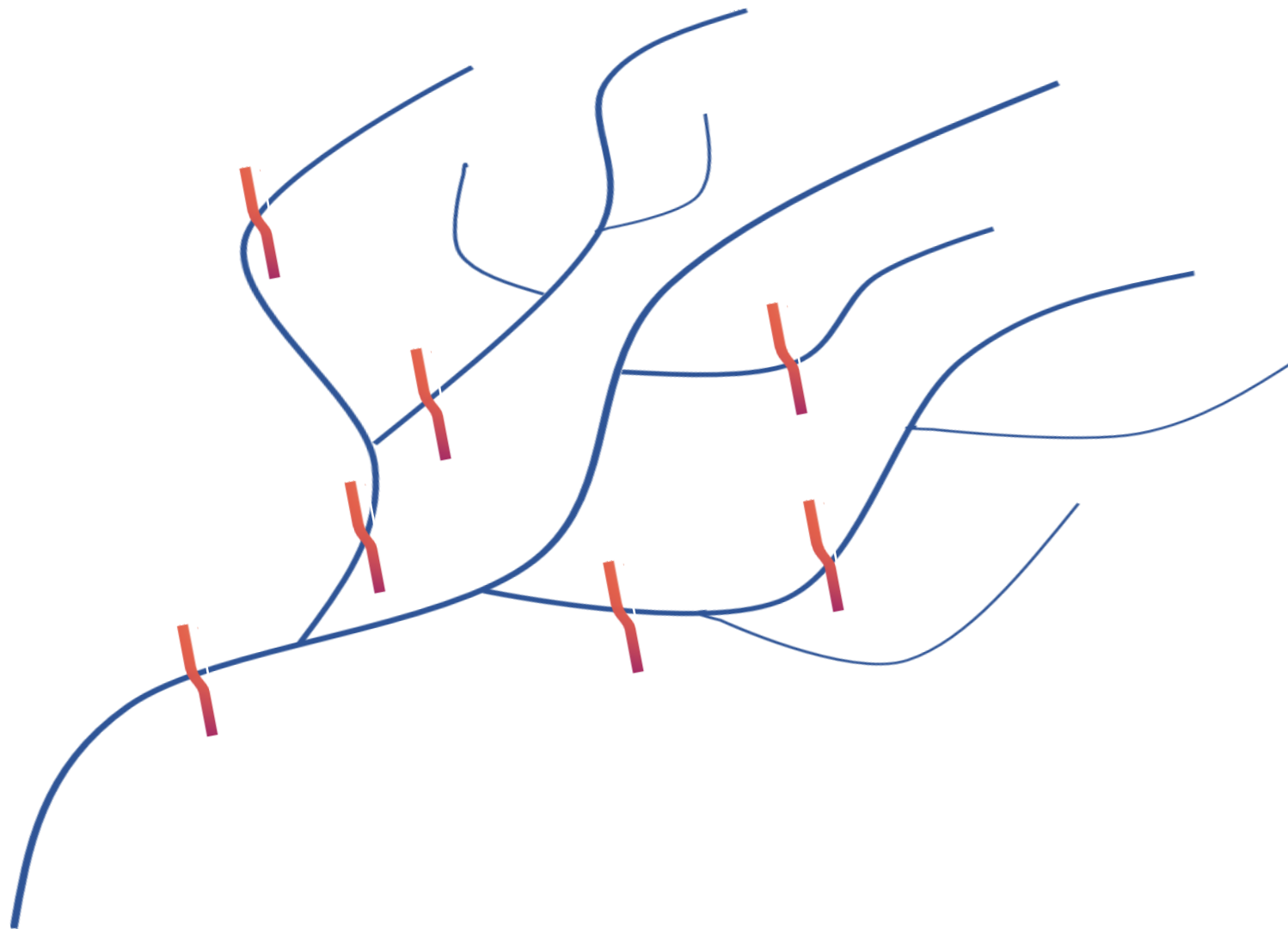
**Evaluate river network structural and functional connectivity and propose tools to facilitate management to improve biodiversity and biotic quality of European rivers.**











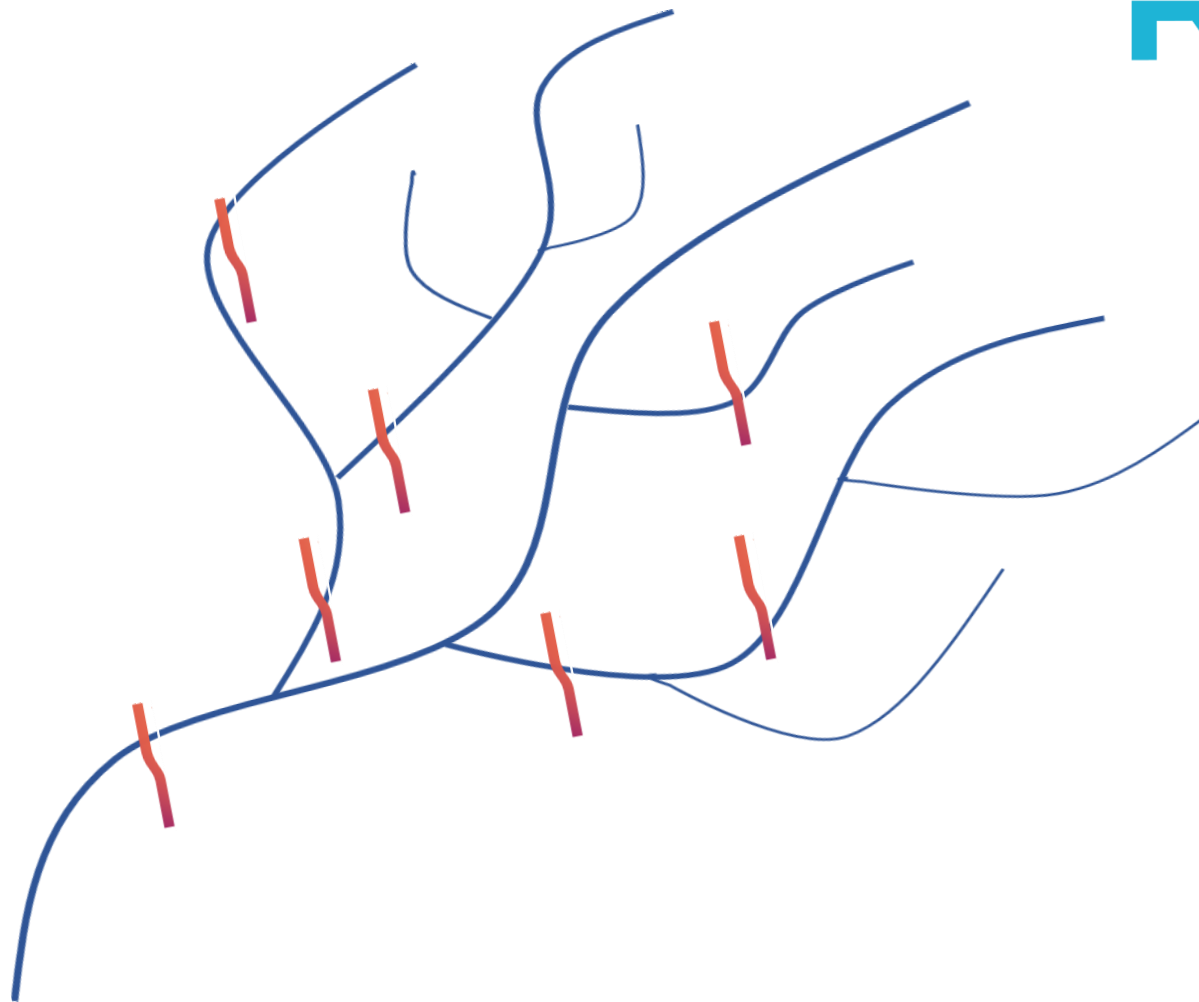


RnVTool

RnVOpt

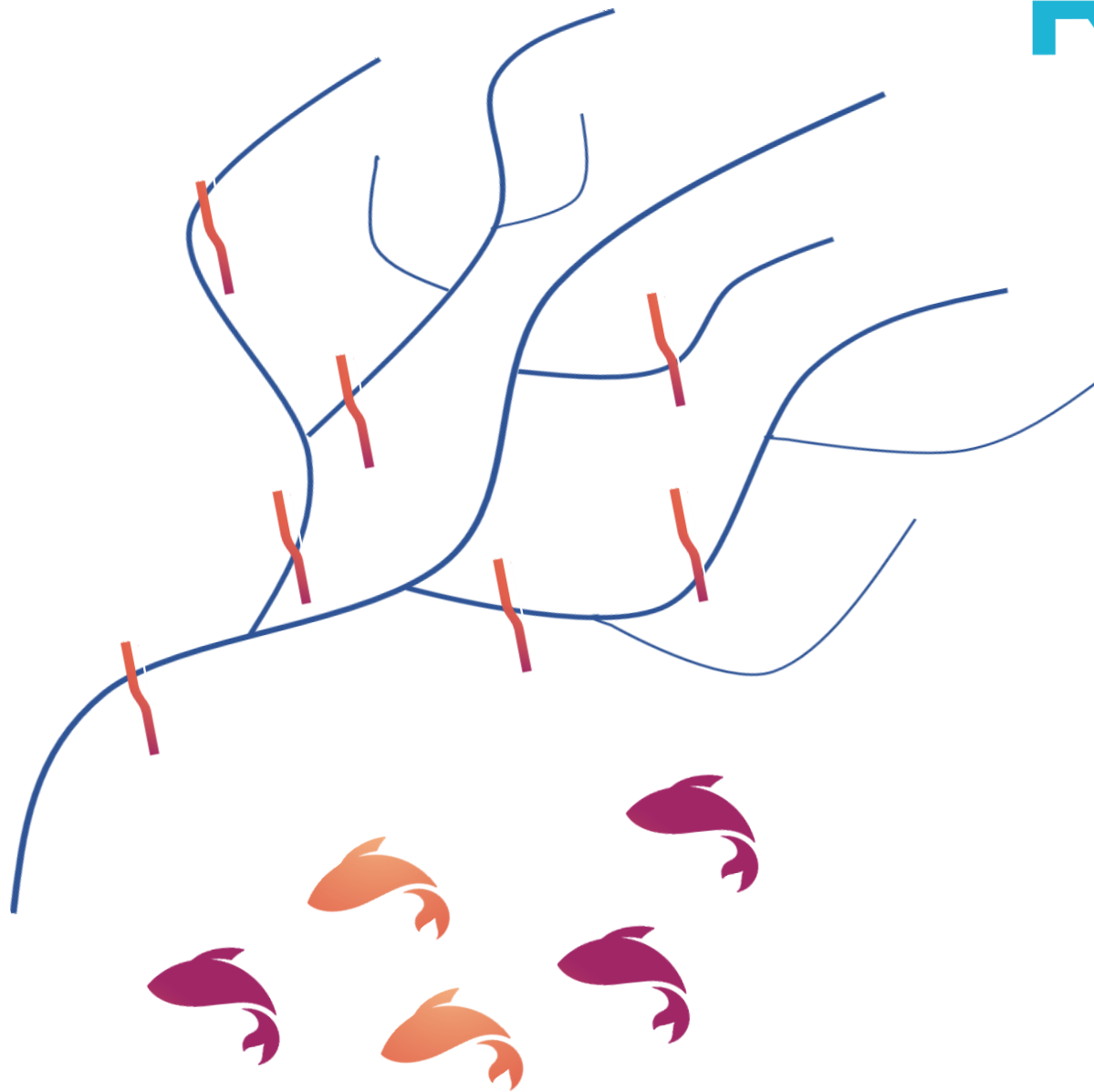


RvOpt



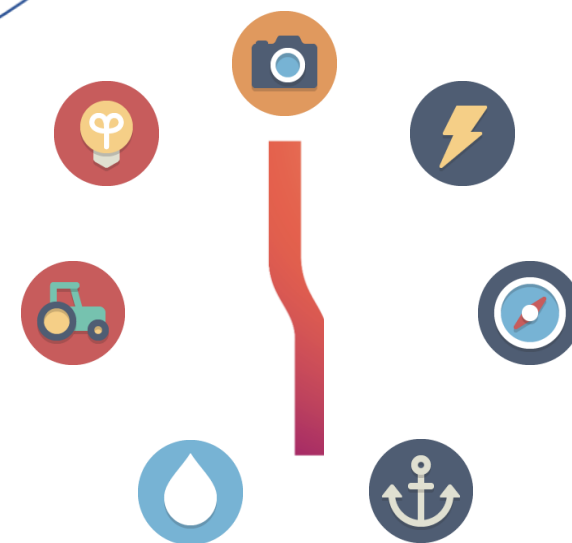
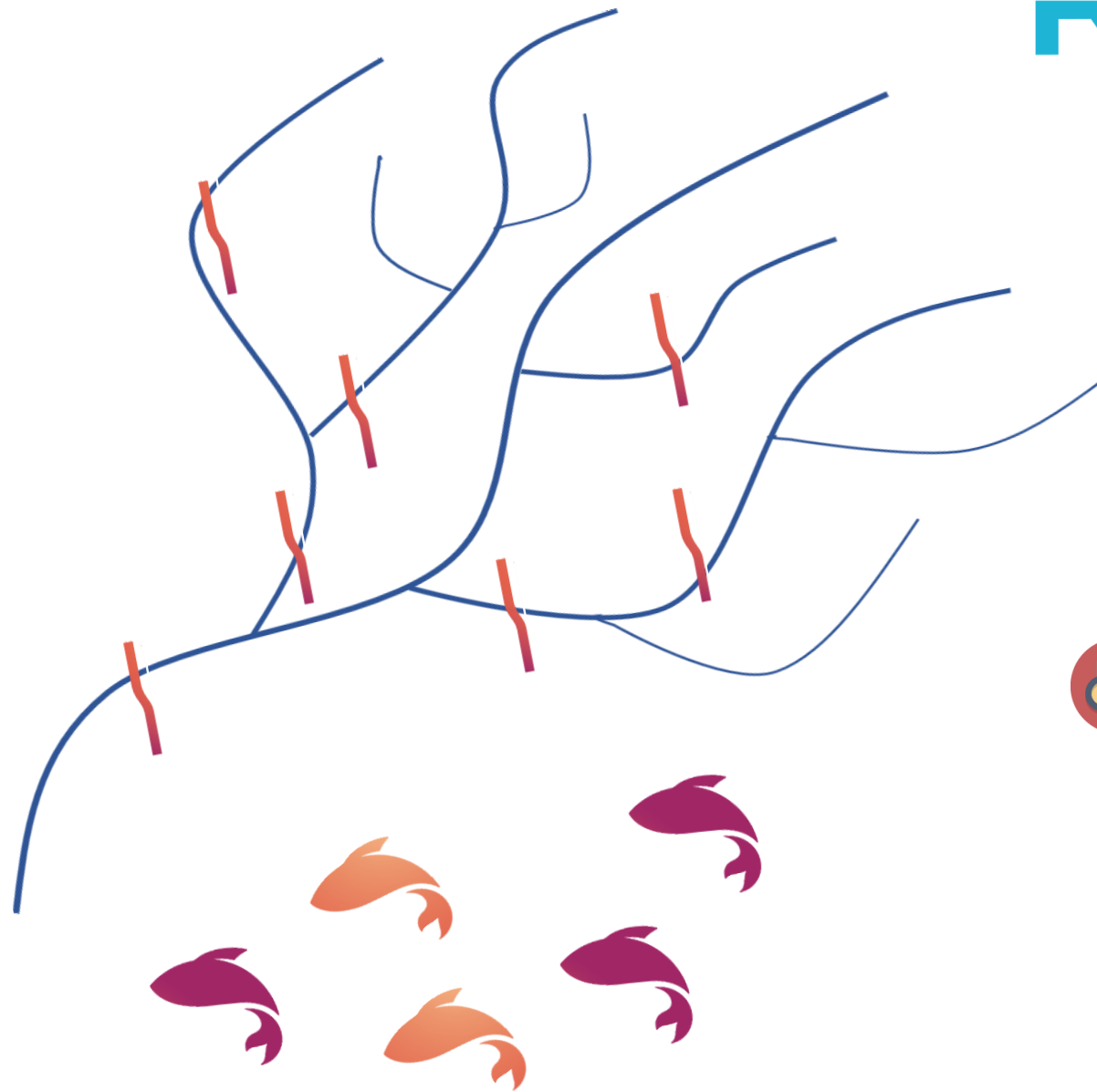


RvOpt



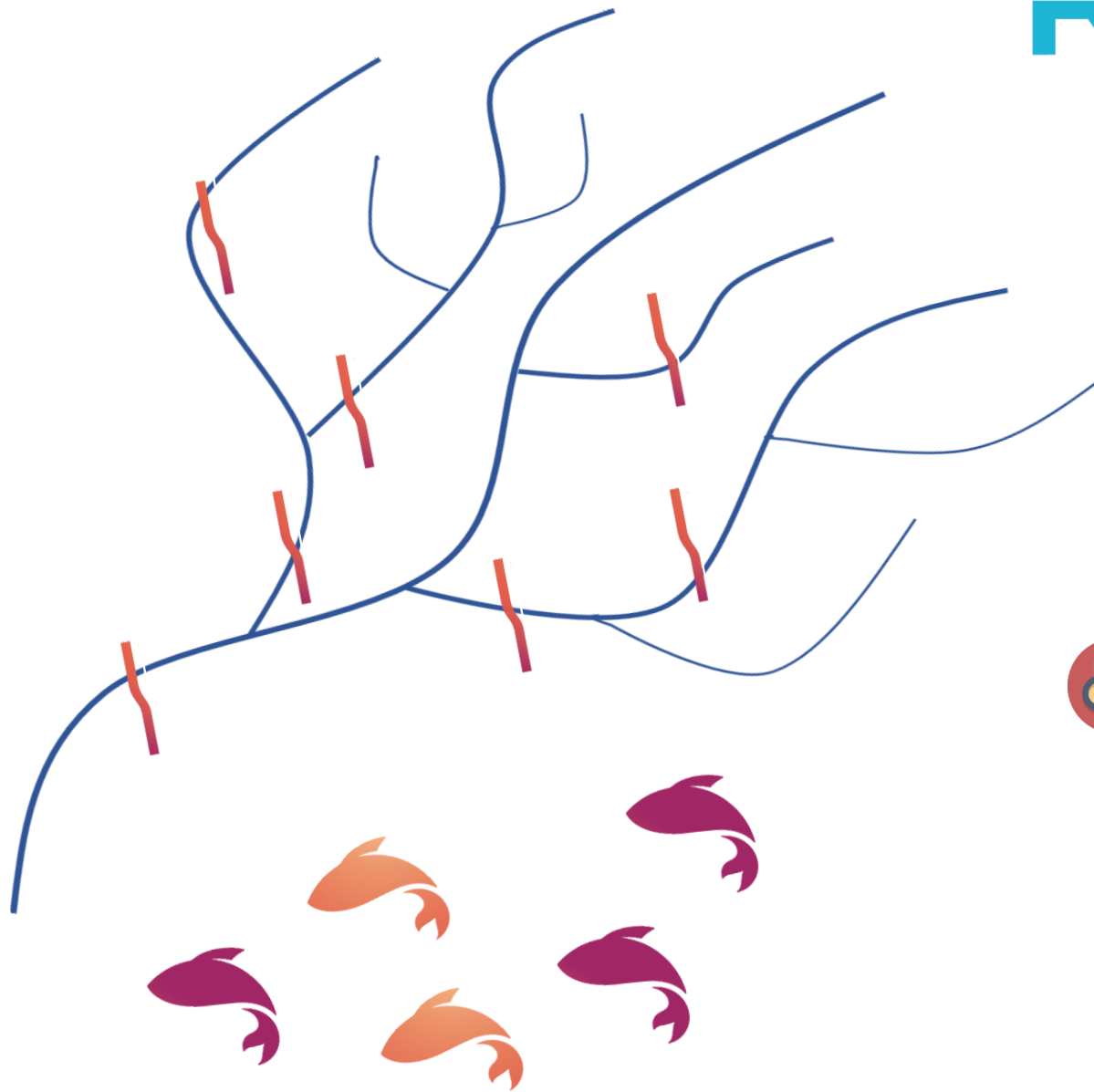
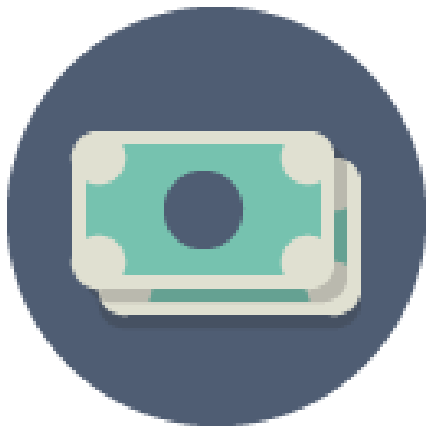


RnDpt





RnOpt





RnVTool

RnVOpt



RnVConnect

RnVTool

RnVFish

RnVOpt



RnVTool





RVTool





RnVTool





RnVTool





RnVTool



**Dammed** \  **Fish**



Thank you!  
Obrigado!

Paulo Branco  
**[pjbranco@isa.ulisboa.pt](mailto:pjbranco@isa.ulisboa.pt)**

# CONNECTED RIVERS

International seminar on scaling up dam  
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**TERRA**  
Laboratory for sustainable  
land use and ecosystem services



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**GBIF**  
Global Biodiversity  
Information Facility

**U LISBOA** | UNIVERSIDADE  
DE LISBOA



**IHG**  
Institute of  
Hydrobiology and Aquatic  
Ecosystem Management

University of  
**Kent**

Paulo Branco – [pjbranco@isa.ulisboa.pt](mailto:pjbranco@isa.ulisboa.pt)

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