

AN eDNA PROTOCOL FOR MONITORING AND PRESERVING

BIODIVERSITY FROM GENES TO SPECIES

A CASE STUDY OF ALPINE AMPHIBIANS FROM TRENTINO

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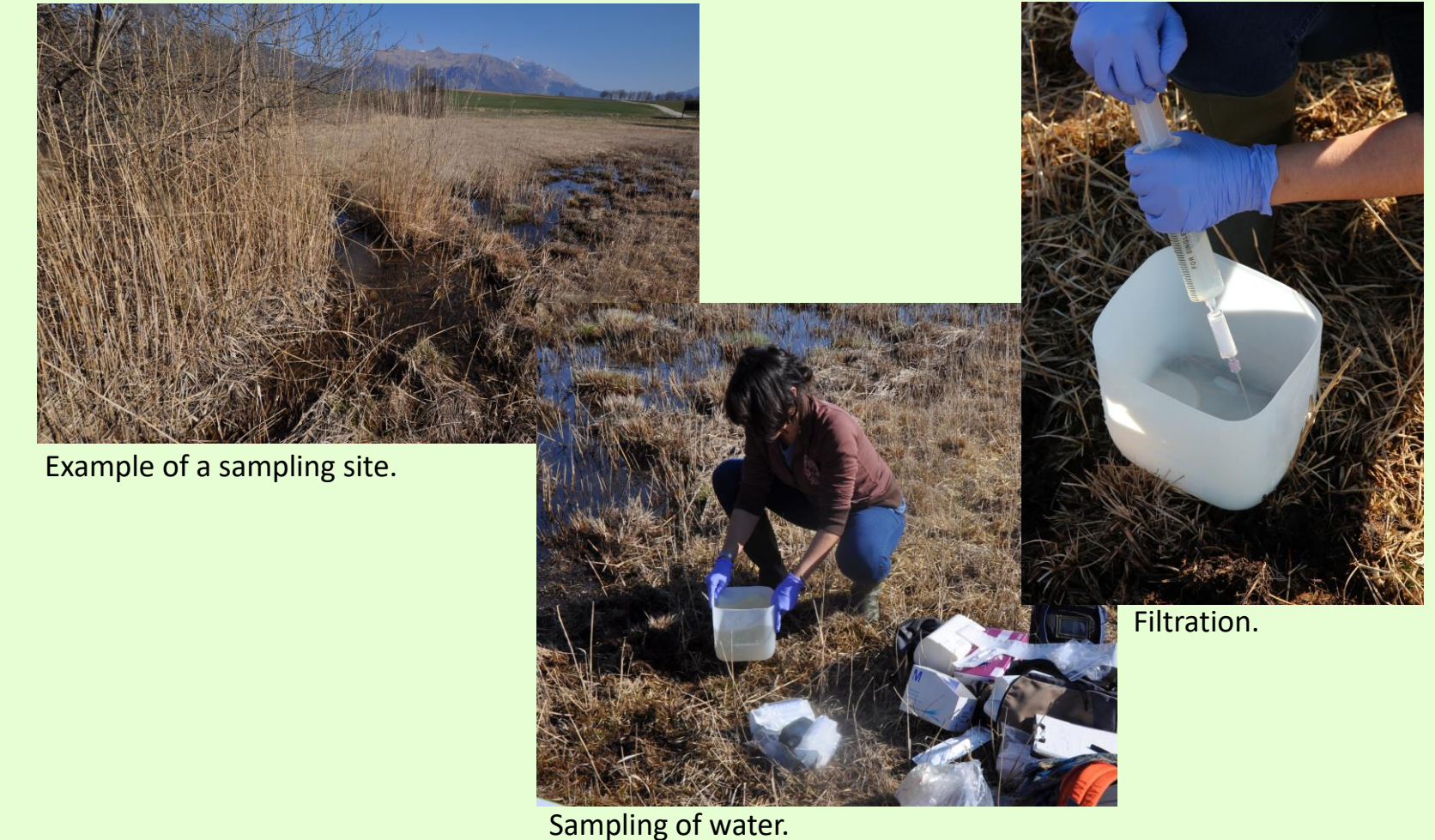


Lucia Zanovello. Masters degree student in Evolutionary Biology, University of Padova.

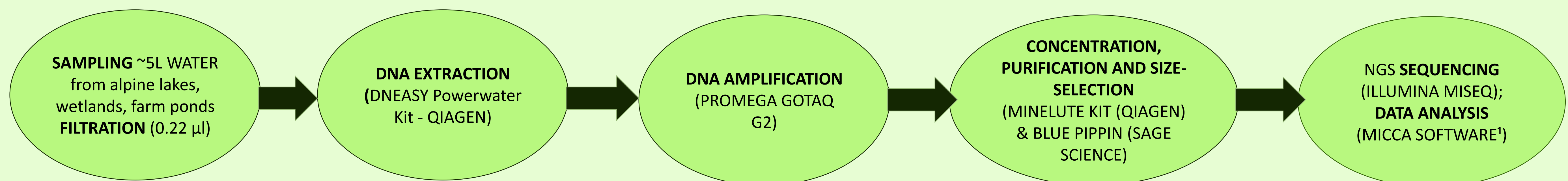
INTRODUCTION

OBJECTIVE:

A non-invasive approach (eDNA metabarcoding) for monitoring amphibian biodiversity in diverse water bodies was tested for 12 amphibian species present in Trentino in the MAB UNESCO 'Alpi Ledrensi and Giudicaria' Biosphere Reserve (Trentino, south-eastern Alps).



METHODS



RESULTS

LEGEND

SITES:

1. Nambi Alm
2. Lake of Valagola
3. Movlina Alm
4. Durone Pass
5. Stabio Alm
6. Peatland of Fivè
7. Peatland of Lomasona
8. Tenno Alm
9. Bestana Alm
10. Stigolo Alm
11. Lake of Ampola
12. Giumela Basin

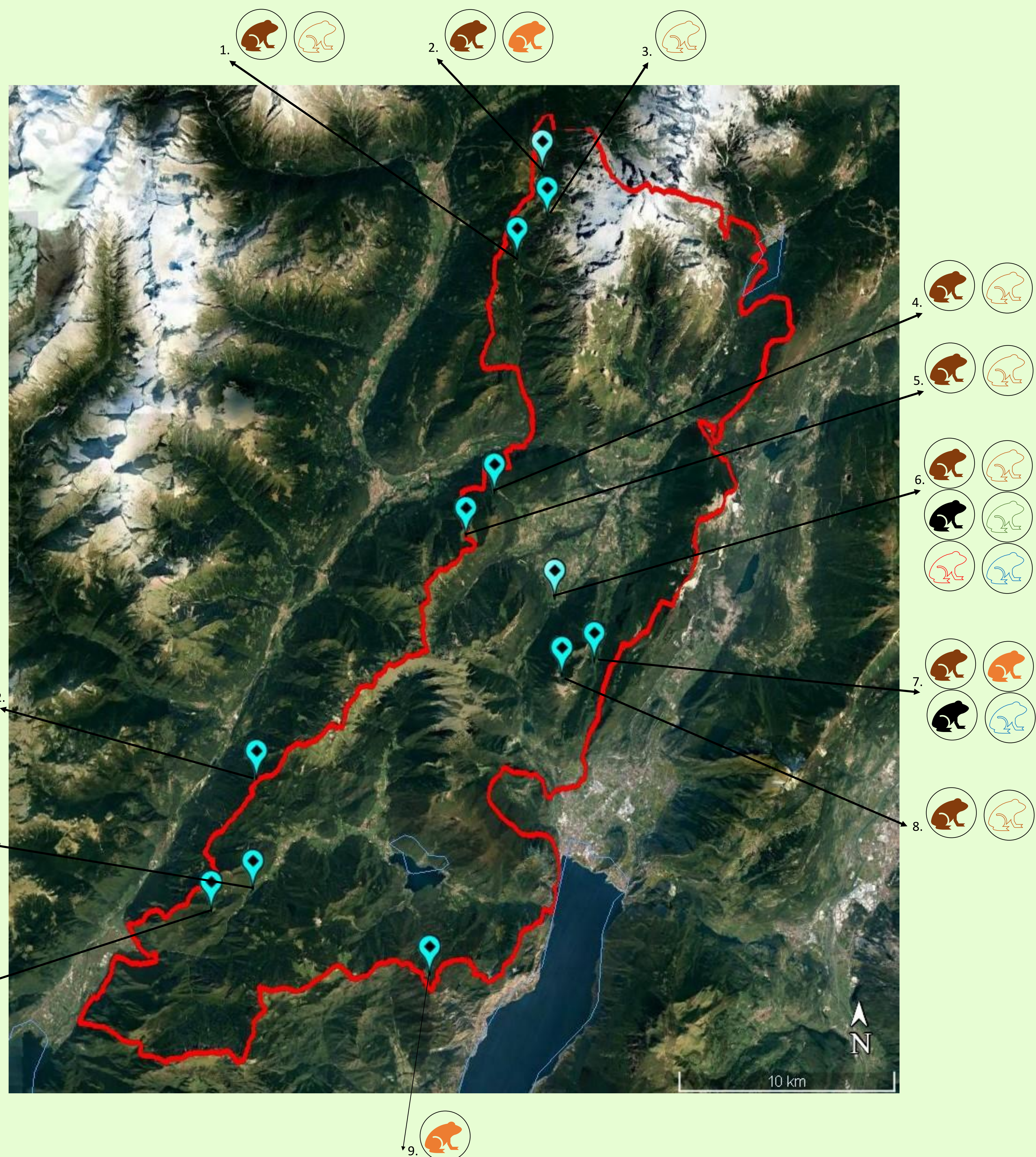
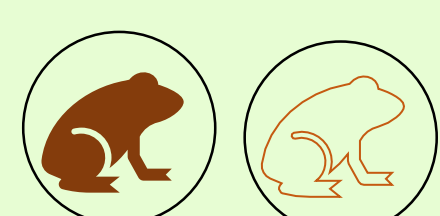
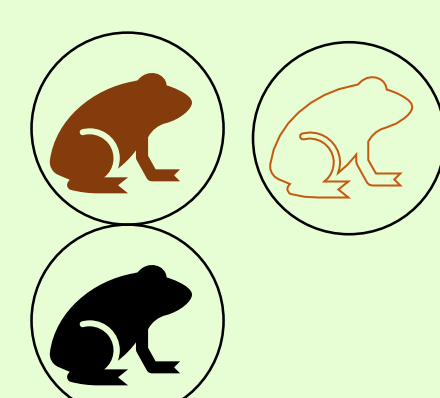
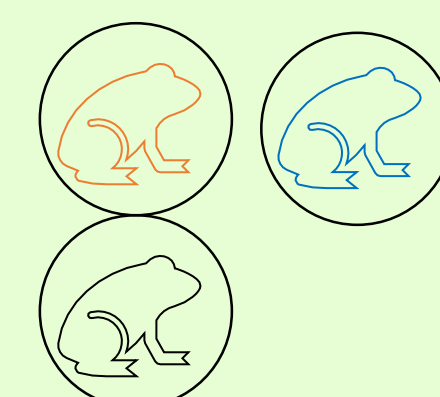


SPECIES DETECTED WITH eDNA (left) or ONLY WITH TRADITIONAL METHODS (right)
light brown= *Rana temporaria*
red= *Rana dalmatina*
dark brown= *Bufo bufo*
dark green= *Pelophylax synkl. esculentus*
black= *Salamandra Salamandra*
blue= *Ichthyosaura alpestris*



CONCLUSIONS

- We successfully detected three amphibian species from 10/12 (83,3%) sampling sites, in two seasonal periods
- For 10/10 sites (100%), the species detected with eDNA were the same as those reported previously using traditional field monitoring
- Published metabarcoding primer pairs for amphibians² amplify non-target organisms even when protocols were re-optimized; thus, new primer pairs should be designed and tested.



ACKNOWLEDGEMENTS

¹Albanese et al. 2015. Scientific Reports 5:9743. ²Lacoursière-Roussel et al. 2016. Genome 2017, 59(11): 991-1007.