

Red-throated Diver winter movements in areas with offshore wind farms

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DIVER – Project background

- Red-throated Divers winter in important numbers in the German North Sea
- High protection status
- Highly sensitive to disturbances
- Divers and OWFs
 - Potential for conflicts
- Questions in focus of this presentation:
 - Diver movement patterns in areas with offshore wind farms
 - Connectivity between different wintering areas

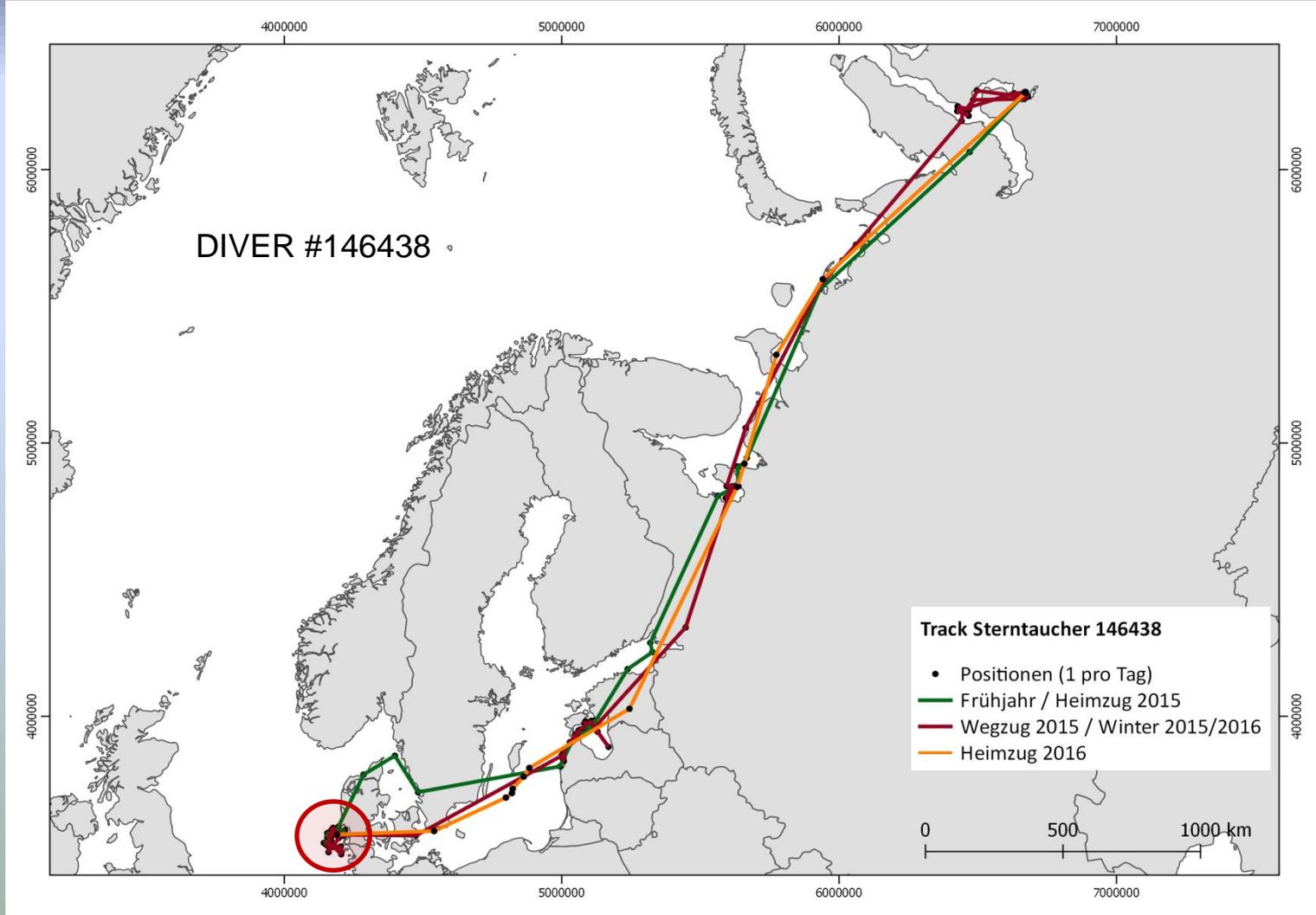


Methods

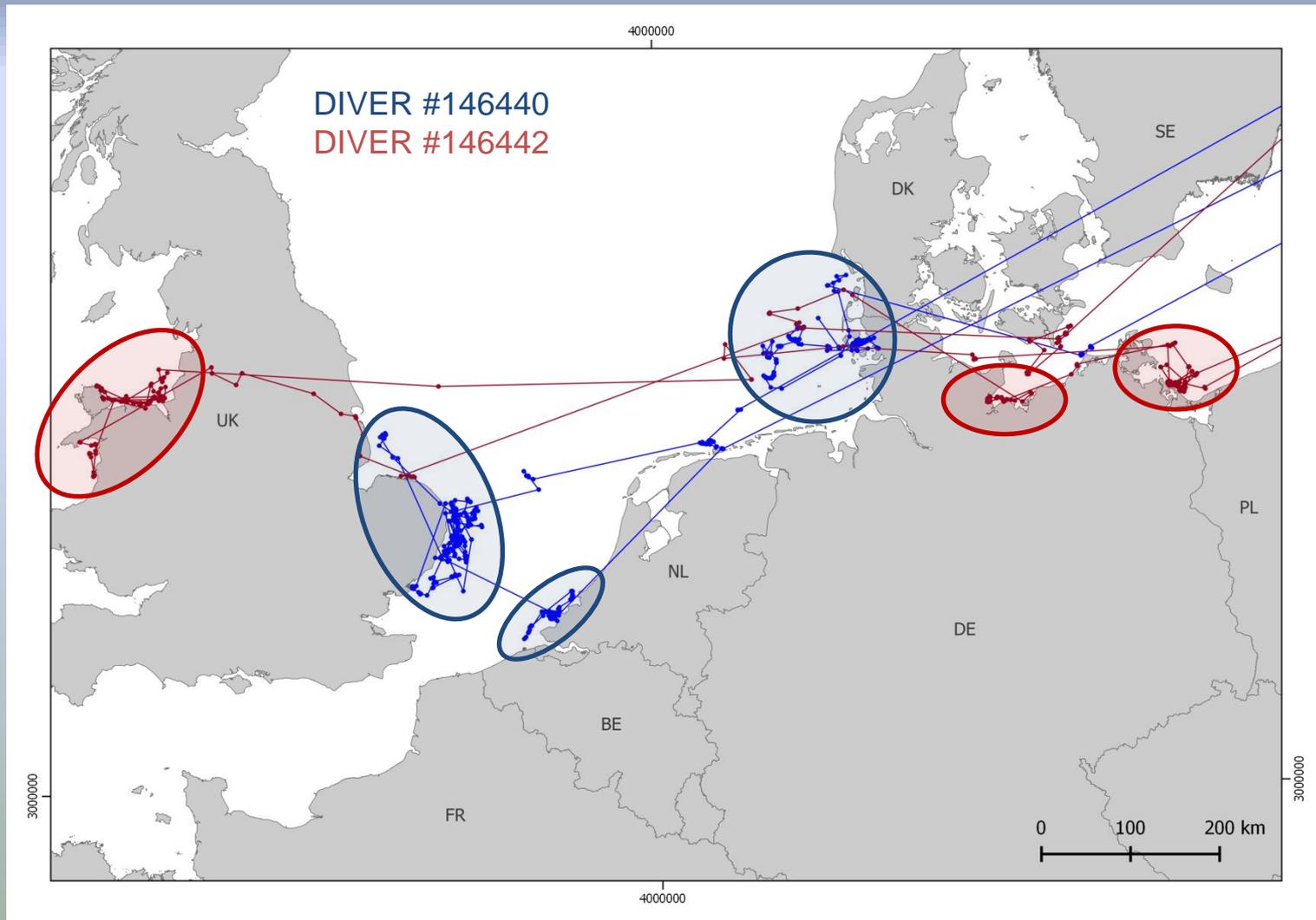
- Birds captured in area of main interest (core diver wintering area in the German North Sea)
- Data analyses from satellite telemetry data
 - Use of different wintering areas
 - Movement patterns within wintering areas
 - Winter home ranges
 - Relocation distances within wintering areas



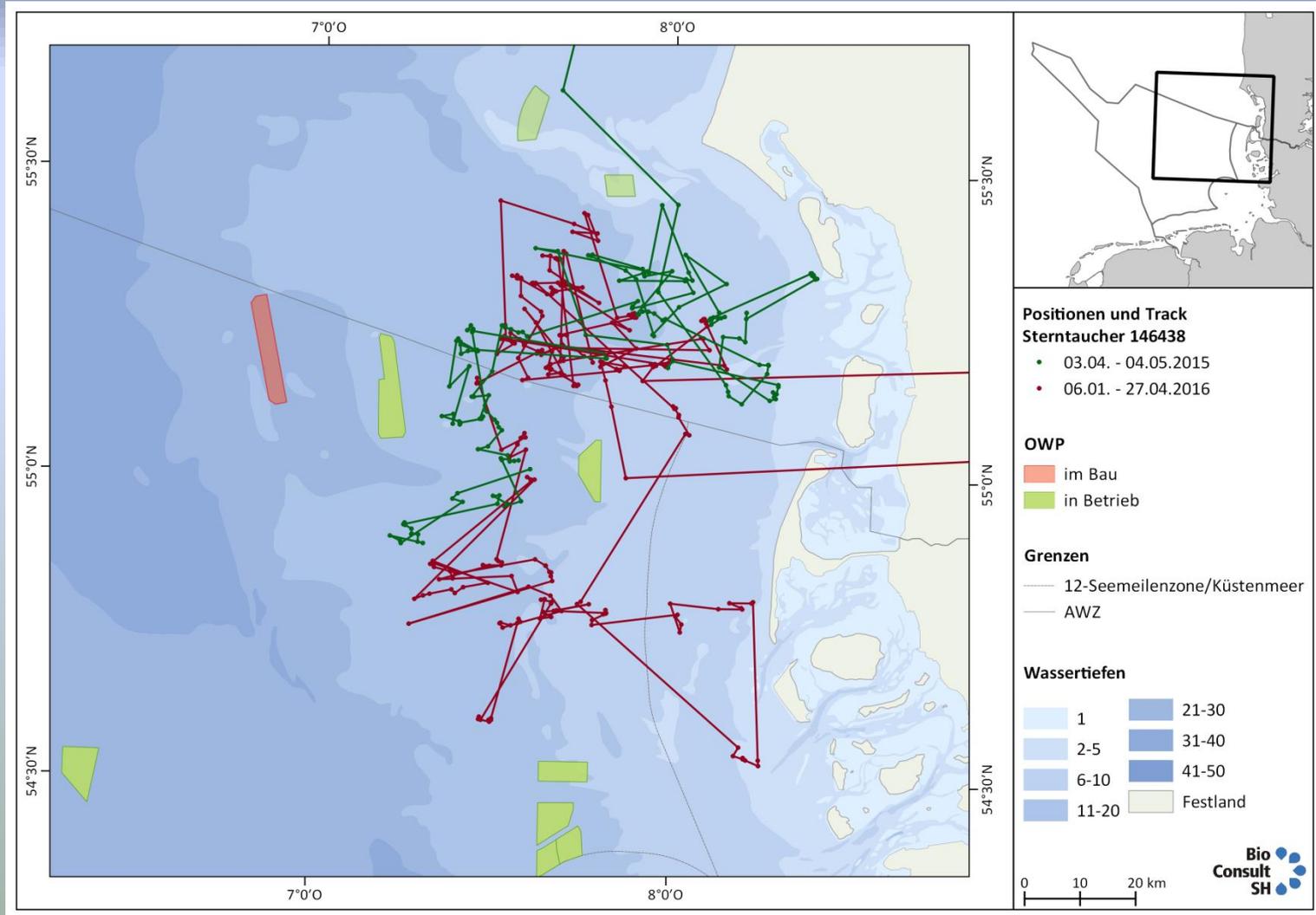
Results – winter movements – one wintering area



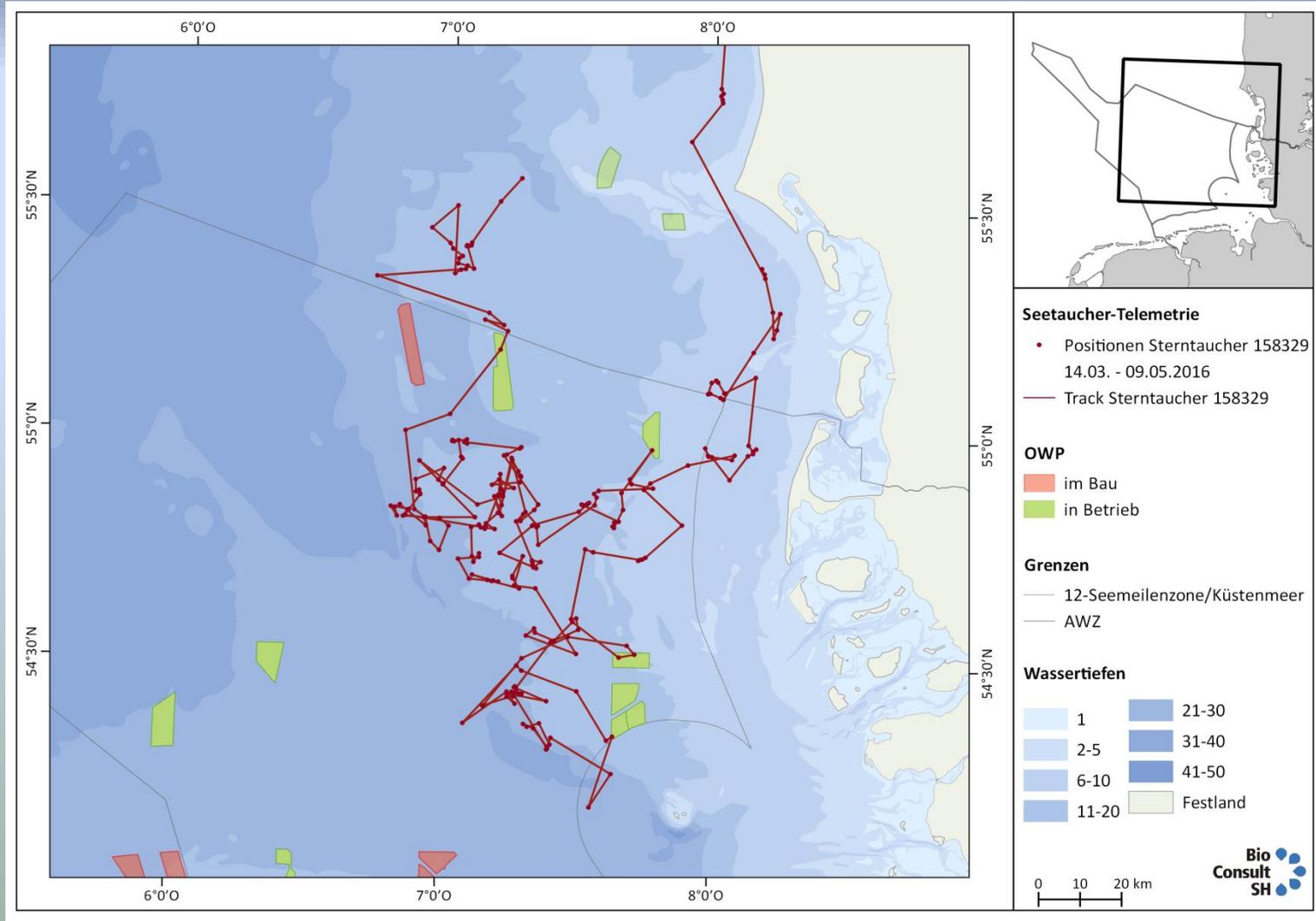
Results – winter movements – several wintering areas



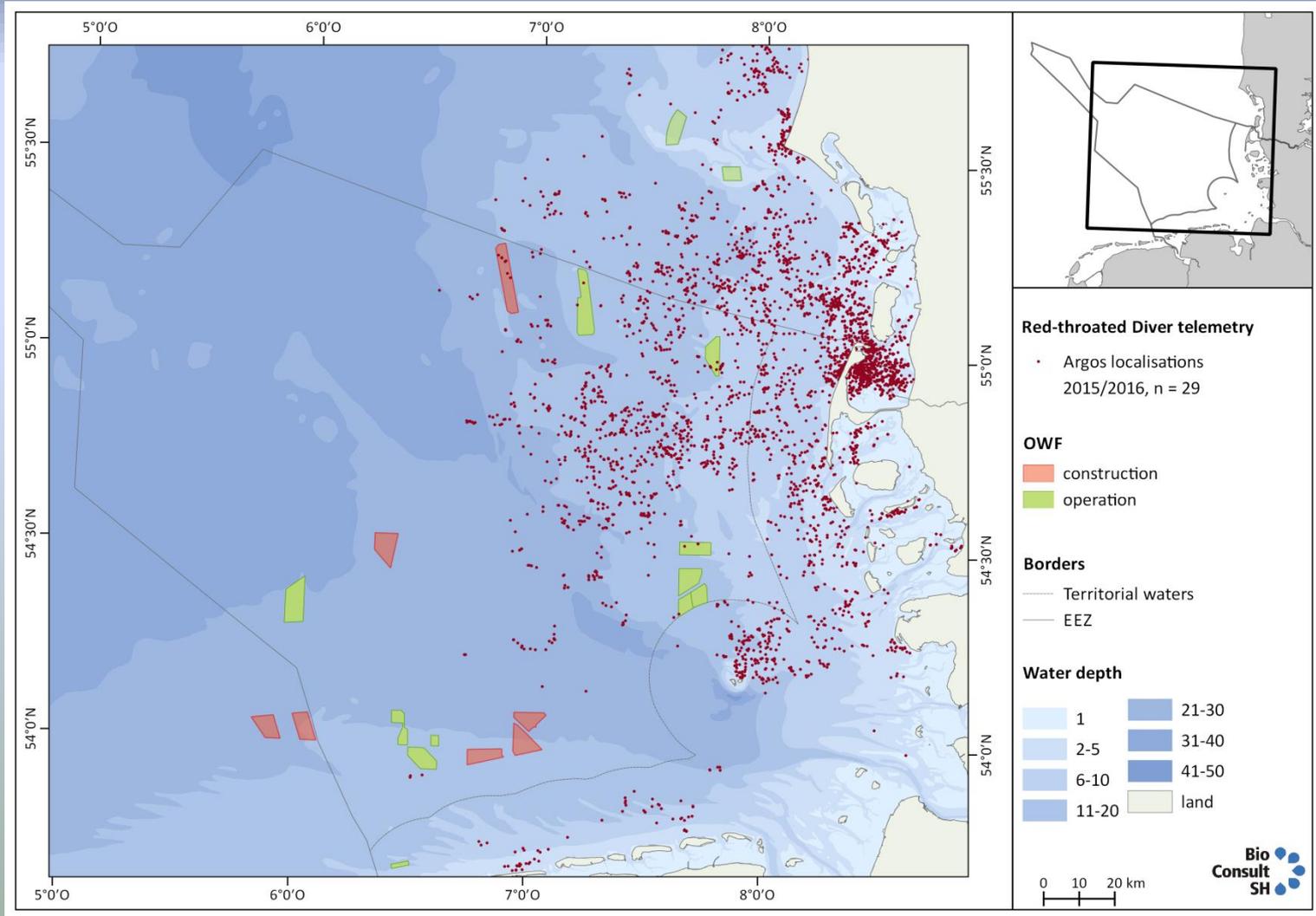
Results – winter movements: German North Sea

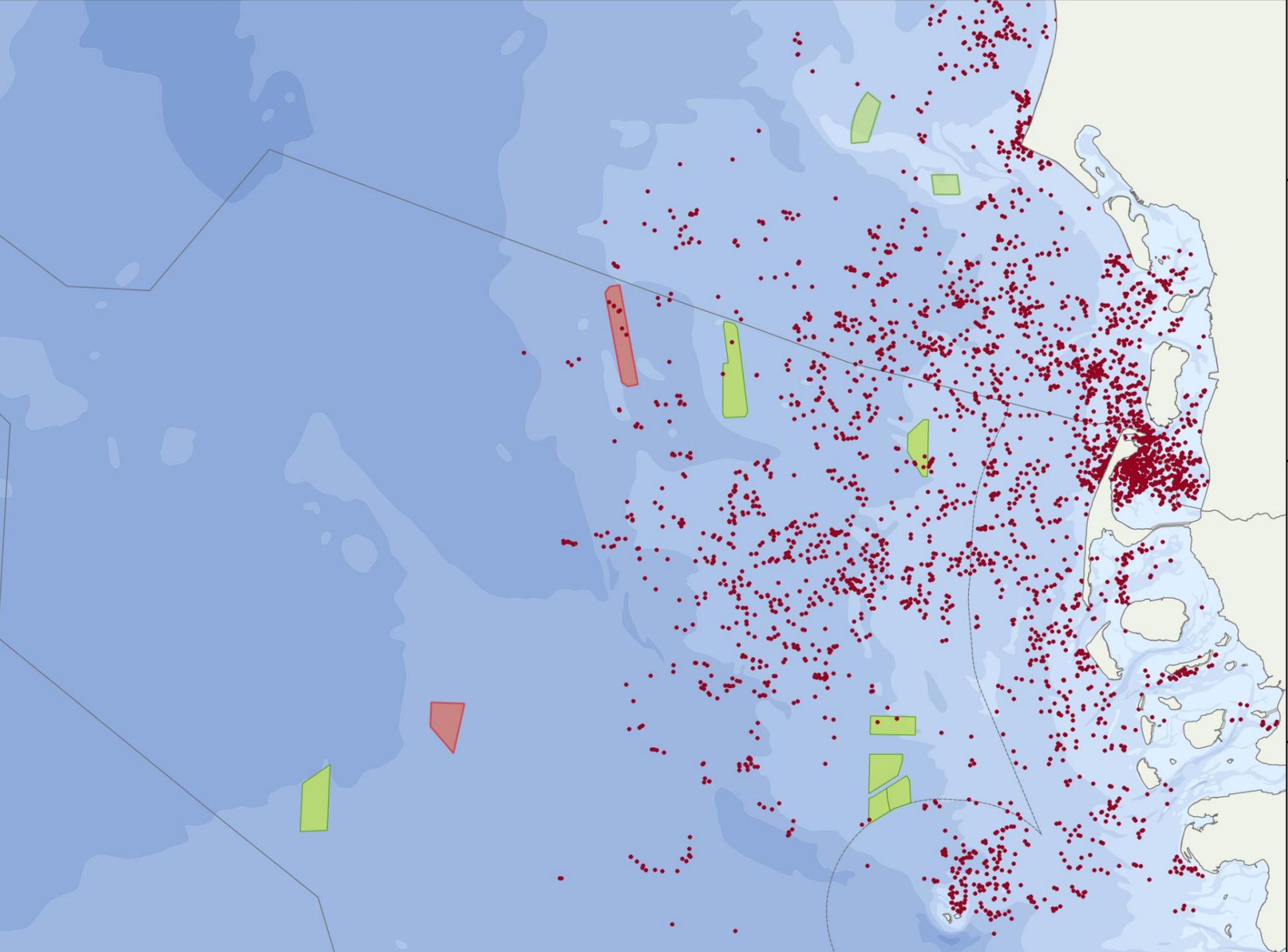


Results – movement patterns: German North Sea

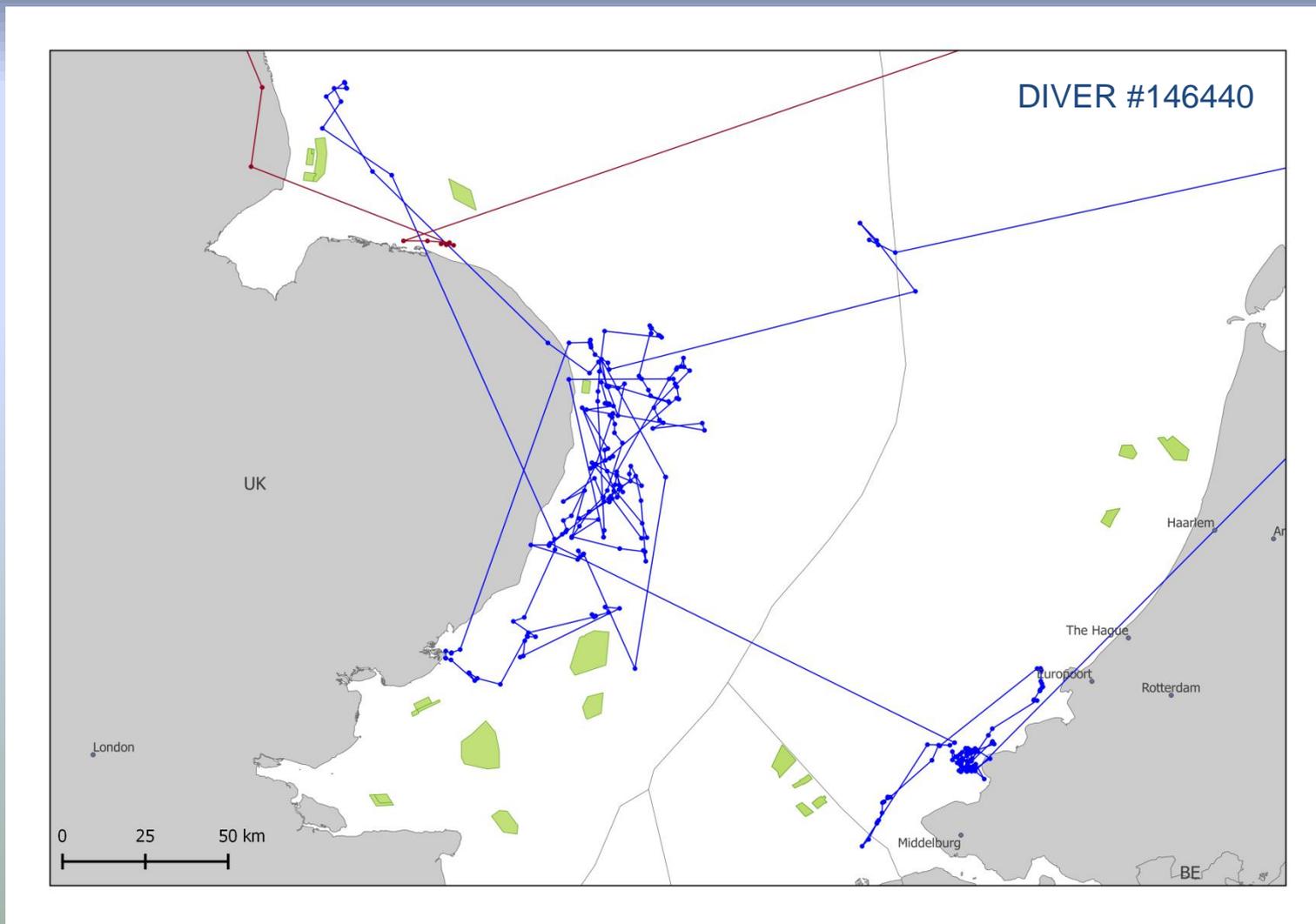


Results – winter movements: German North Sea

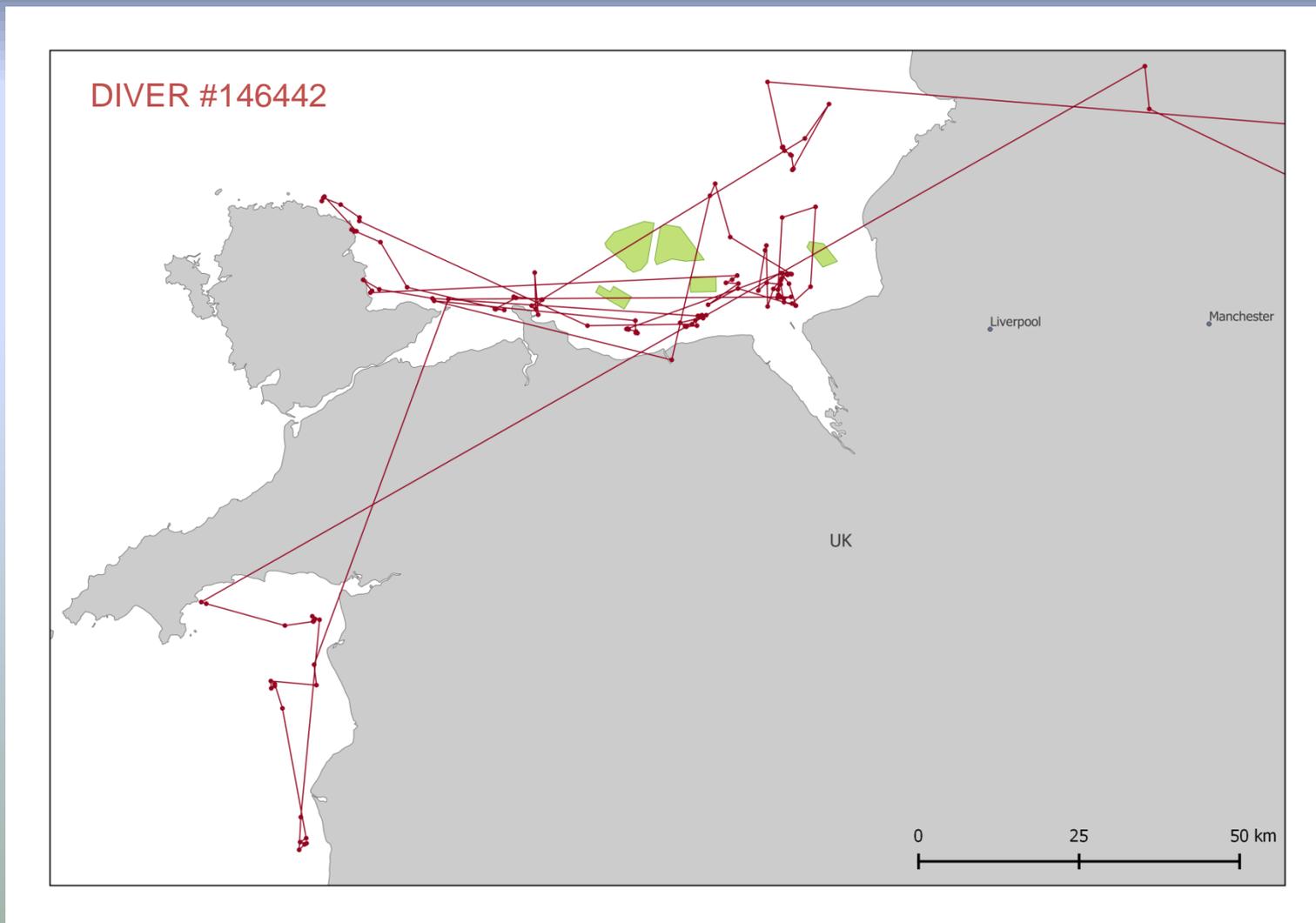




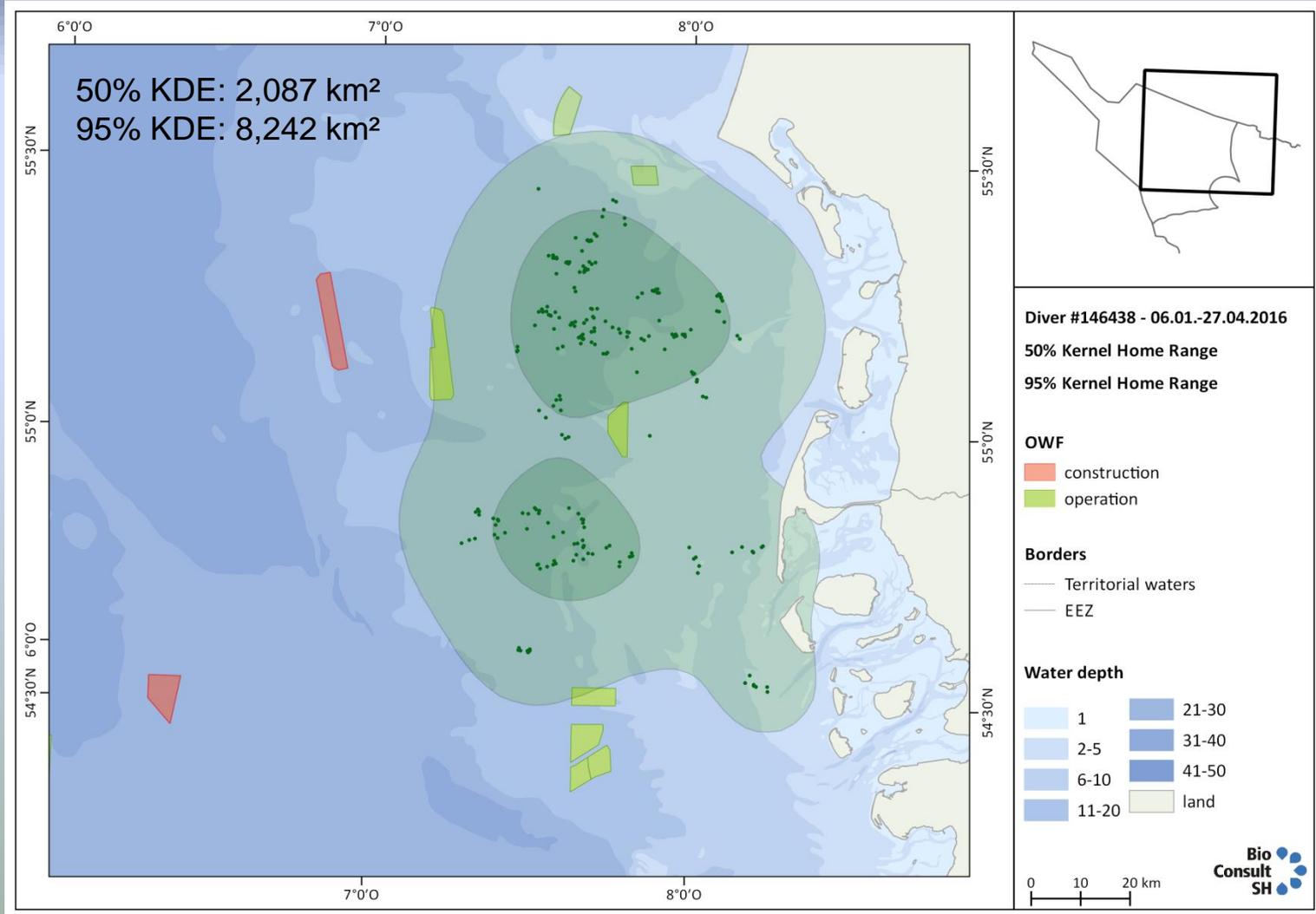
Results – winter movements: NL and British east coast



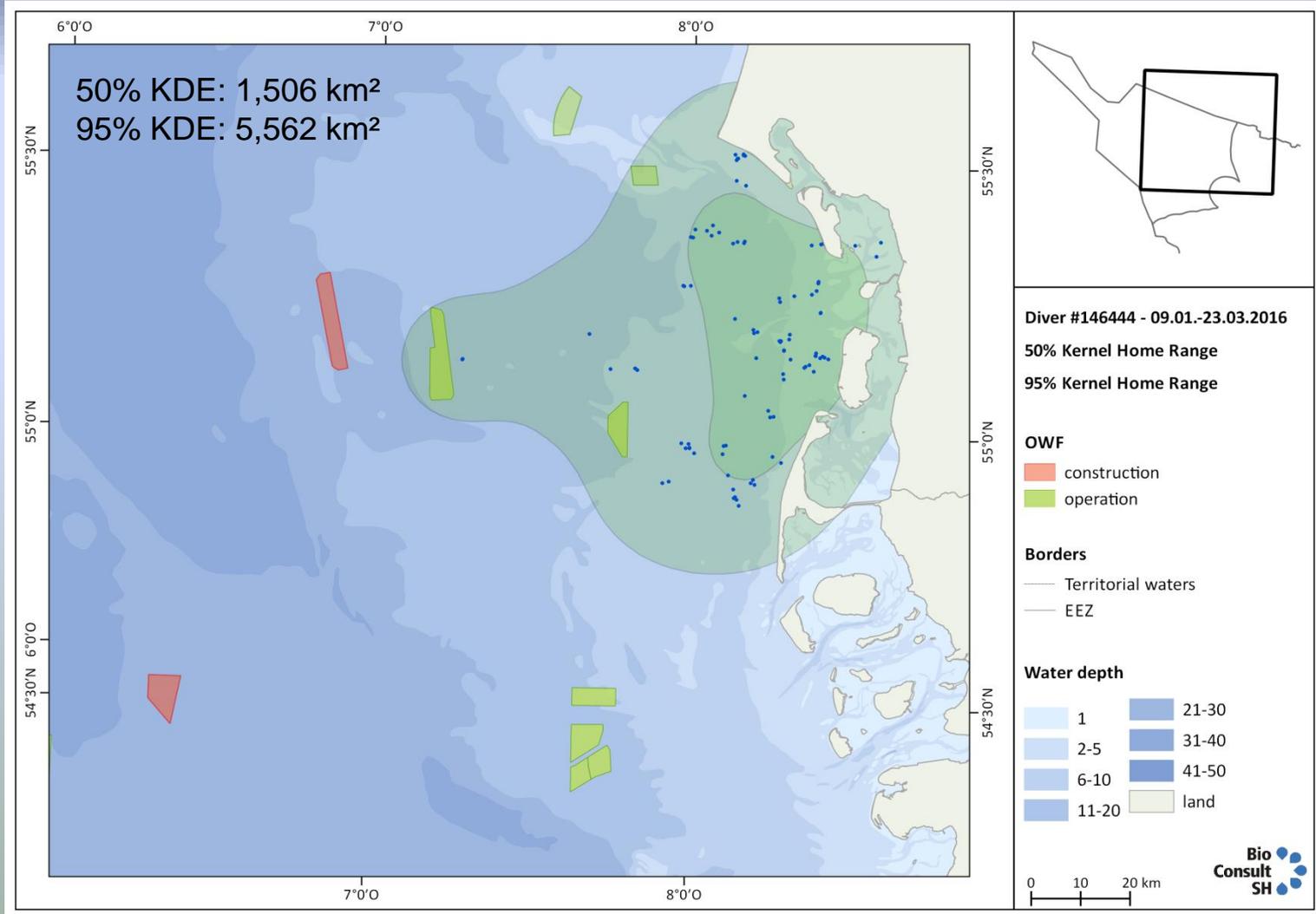
Results – winter movements: Irish Sea



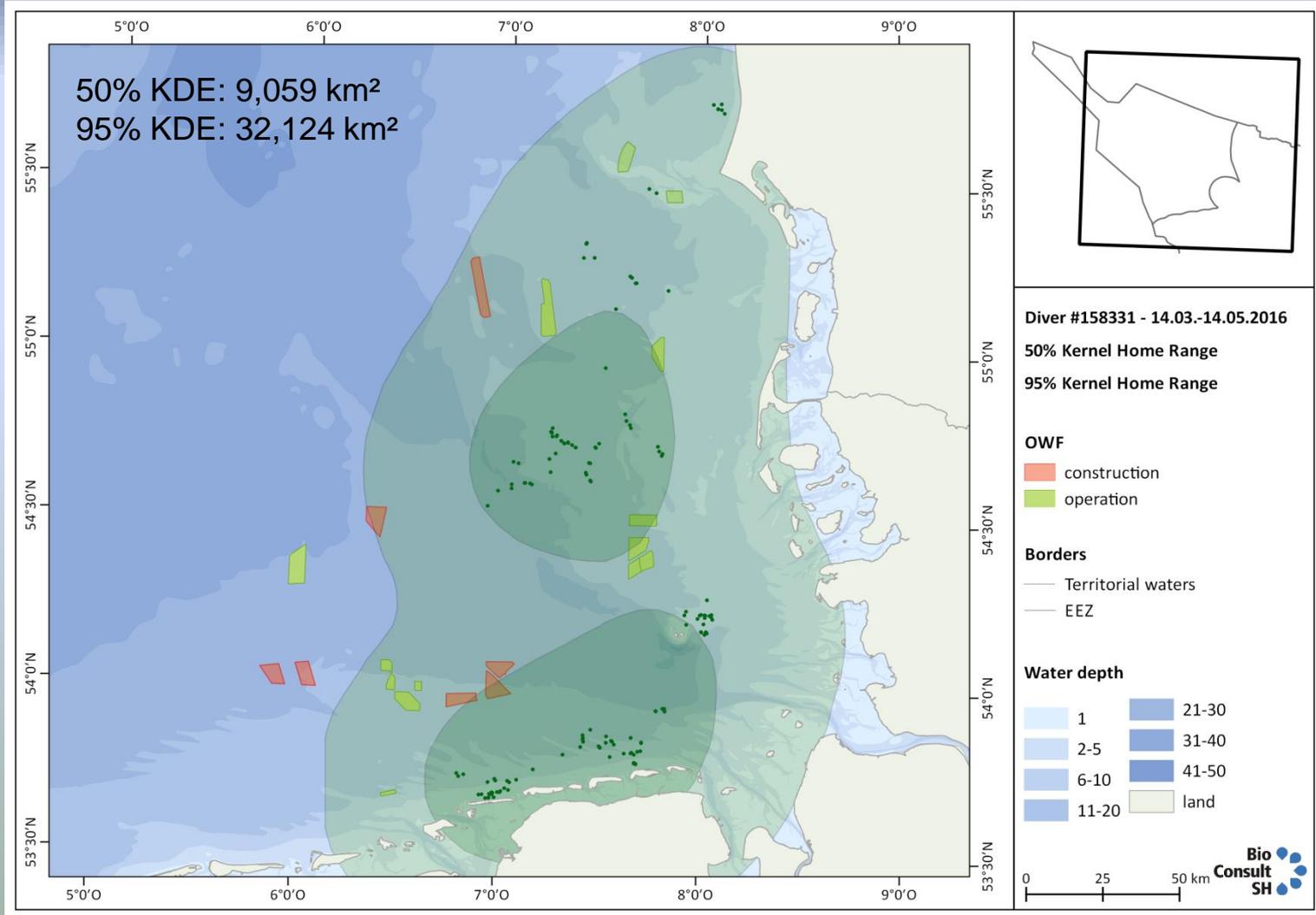
Results – Kernel Densities: Diver #146438, winter 2016



Results – Kernel Densities: Diver #146444, winter 2016



Results – Kernel Densities: Diver #158331, winter 2016



Results – winter movement in numbers

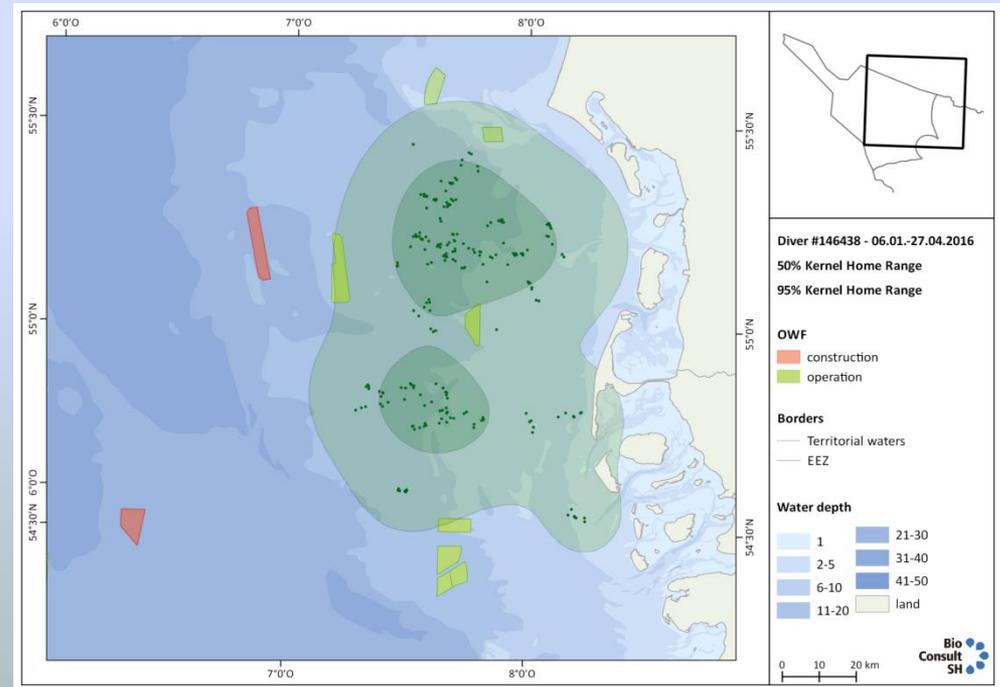
- Winter home ranges in the German North Sea (min.1 month in the area):
 - 50% KDE ranging from 726 km² to 9,059 km²
 - 95% KDE ranging from 5,562 km² to 32,124 km²



Results – winter movement in numbers

- Mean weekly relocation distances within the wintering areas

➤ #146438 (winter 2)

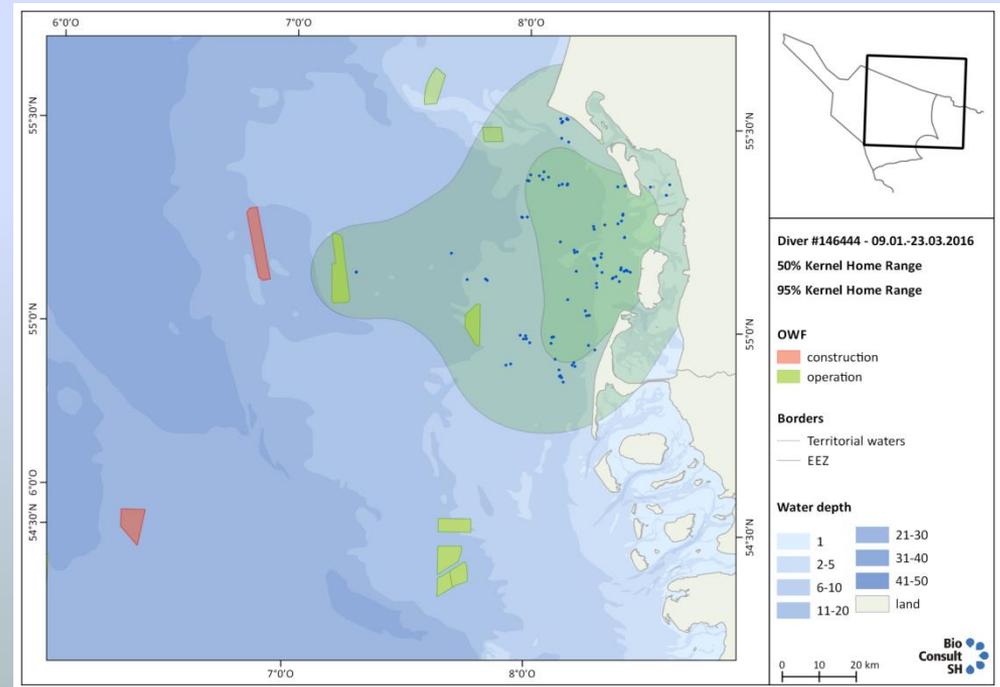


25.0 ± 8.09 km (range: 12.1 km – 80.9 km), n = 8

Results – winter movement in numbers

- Mean weekly relocation distances within the wintering areas

➤ #146444 (winter 2)

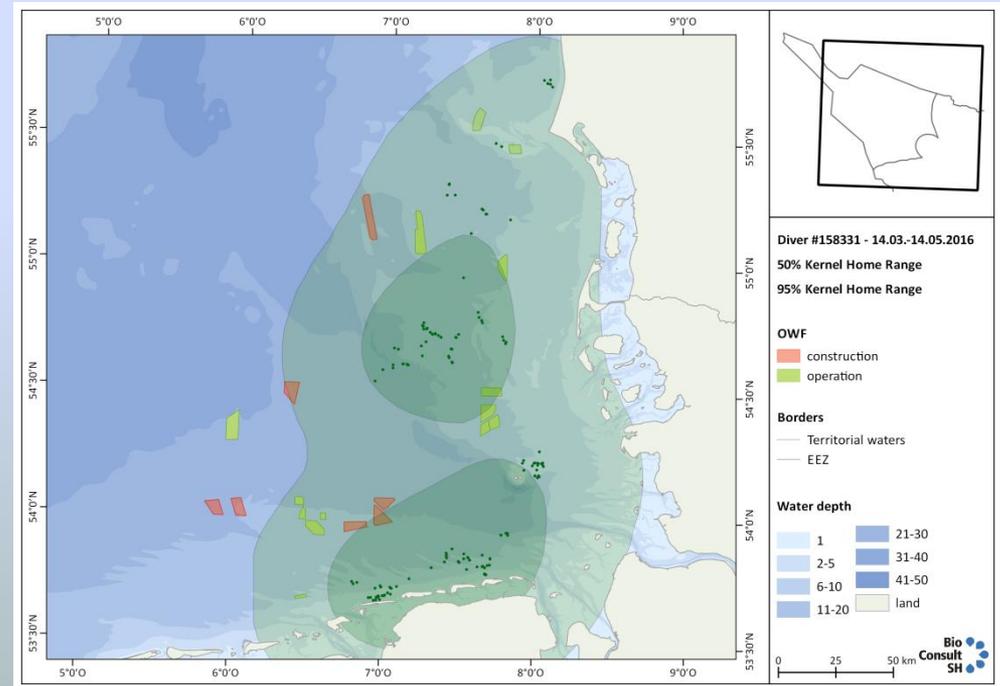


5.0 ± 1.65 km (range: 2.1 km – 9.3 km), n = 4

Results – winter movement in numbers

- Mean weekly relocation distances within the wintering areas

➤ #158331 (winter 1)



48.2 ± 5.34 km (range: 16.8 km – 64.5 km), n = 8

Conclusion

- High variability between individuals, but indication for high faithfulness to individual winter movement characteristics (use of wintering areas, movement patterns)
- Indication for strong avoidance of OWFs
- Large winter home ranges, high mobility



Thank you!



Stefan Heinänen
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