

South America Mussel Inspection (Quad) 04-08-23

LW: 08:36 0.5m (Liverpool tides)

An inspection of South America was completed to assess the condition of the mussel on the bed. An inspection had been completed previously on the 20th of April, and since then, officers had been unable to access the beds due to the limited spring tides this year.

Although tide and conditions were good, access remains limited to a short period over low water due to the depth and size of the channel needing to be crossed. However, officers did manage to access a significant portion of the bed and obtain evidence of the condition and extent of the mussel present.

Figure 1 shows officer tracks (grey), the estimated area of mussel (blue) and the geolocations of the photographic evidence provided below.

The extent of mussel across the area has increased significantly. Previous surveys have identified the area located between waypoints 2 to 17 where the bed was accessed over a large channel (the main bed). This time, mussel was present in the channel, and on the landward side on a new area of colonised bare cobble (near waypoints 11 and 12) (Figures, 21, 22, 23, 24 34 and 38). The seed present on the landward side of the channel was dense (Figure 23), largely smaller than that on the main bed, at 15 mm in size, and on a thin veneer of mud (Figures 21, 22, 23, 34, 35,36, and 37).

Crossing over the channel, mussel in the channel was present in patches and on thick mud (Figure 31 and 33) though it was difficult to determine the full extent and coverage due to the water. From the water to the channel edge of the main bed, there was a small area of thick mussel mud and mussel, interspersed with patches of cobble (Figure 32 and 30).

Across the majority of the main bed, mussel was patchy at approximately <50% density, with some areas of loose mussel (Figure 4) and many areas of exposed cobble (Figures 7, 16, 18, 25, 26, 28 30, and 32). Often mussel was only on a shallow layer of mud on top of the underlying substrate (Figures 6, 6, 11 17 and 26). There was evidence of scour across some of the central part of the bed (Figure 5). Much of the mussel had grown on to 25 to 30 mm (Figures 14, 29 and 37).

The southern part of the bed, became much thinner with a mud veneer over cobble (11, 12 and 13) and the density of mussel decreased.

The area of *Sabellaria* identified from previous surveys has been overgrown by mussel. The extent of *Sabellaria* is not within the boundaries shown in Figure 1.

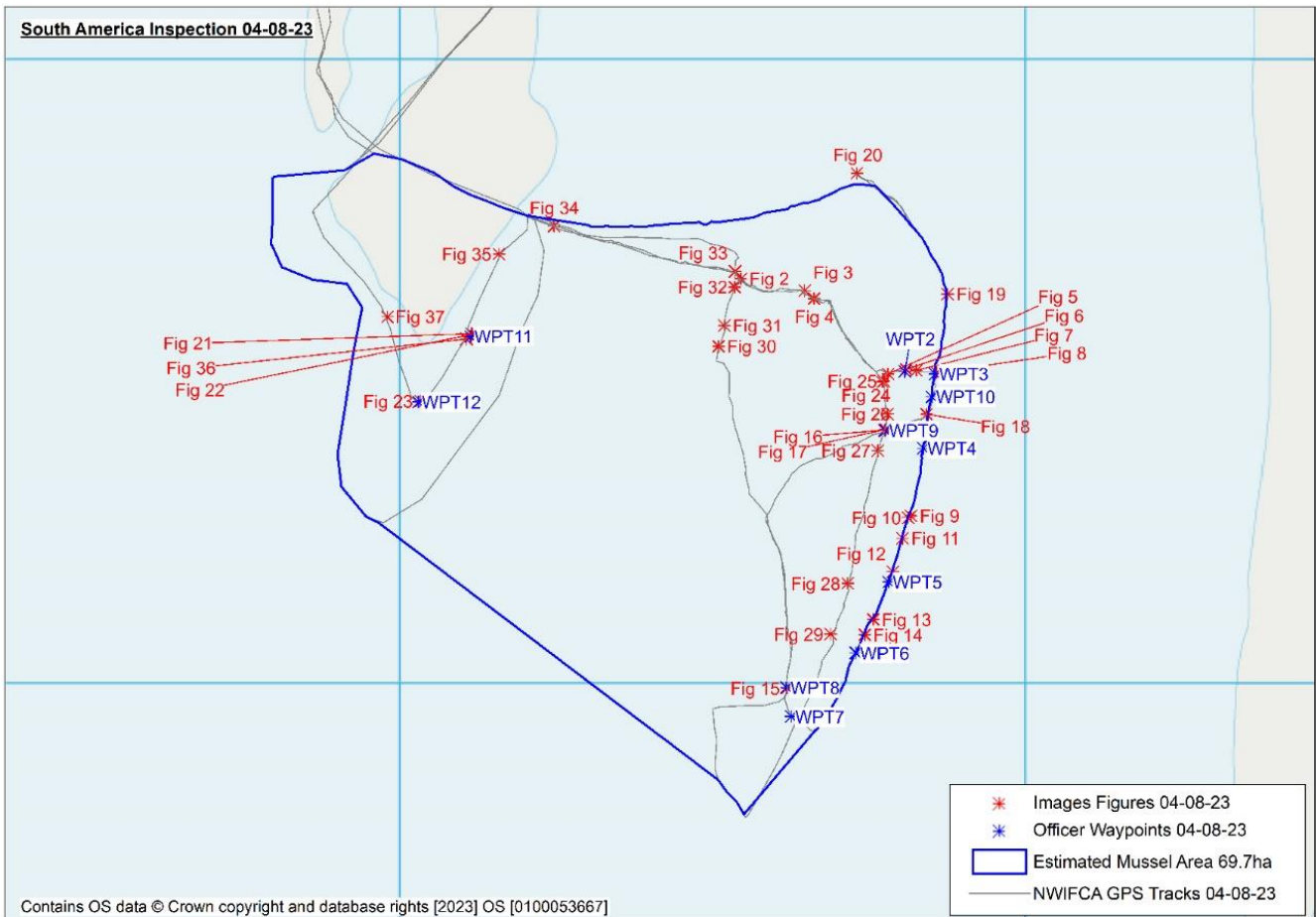


Figure 1. The location and extent of the South America mussel bed in Morecambe bay, and the geolocations of survey photos.



Figure 2. 25-30 mm mussel seed on South America 04-08-2023



Figure 3. Mussel mud on the edge of the bed near the channel on South America 04-08-2023

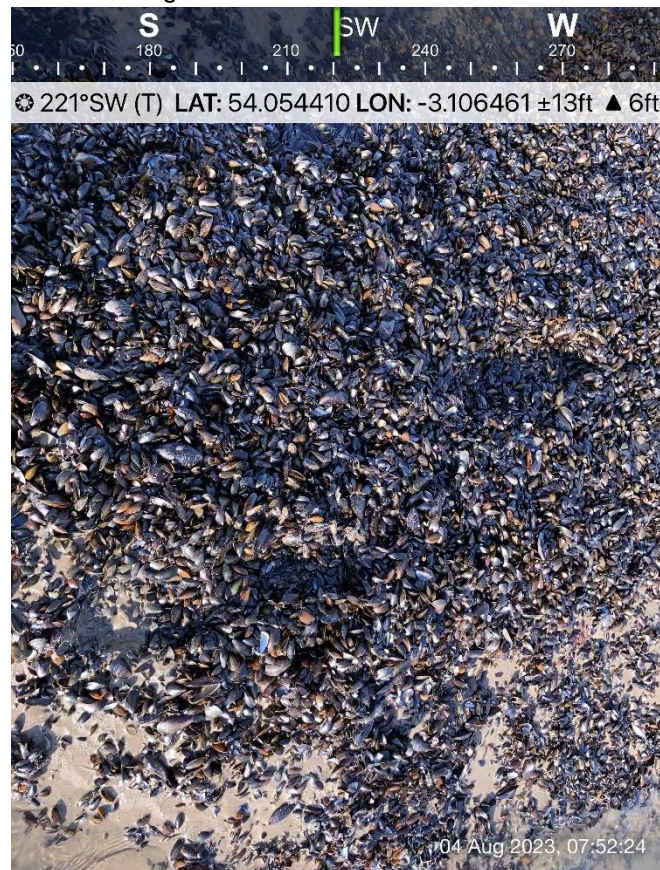


Figure 4. An area of loose mussel on South America 04-08-2023



Figure 5. evidence of Scouring on South America 04-08-2023



Figure 6. This mud over cobble on South America 04-08-2023



Figure 7. Exposed cobble beneath thin mud South America 04-08-2023



Figure 8. Mussel mud forming on the seaward edge of the bed 04-08-2023

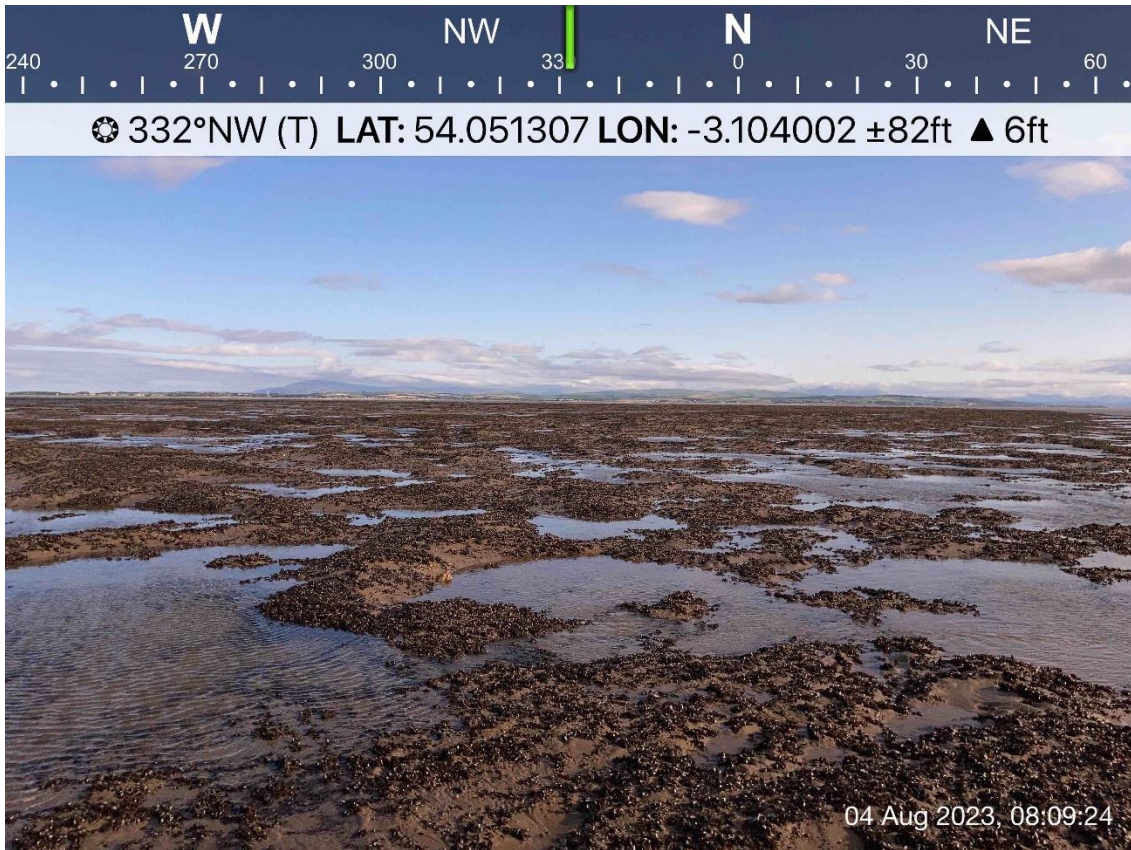


Figure 9. Mussel mud forming 04-08-2023

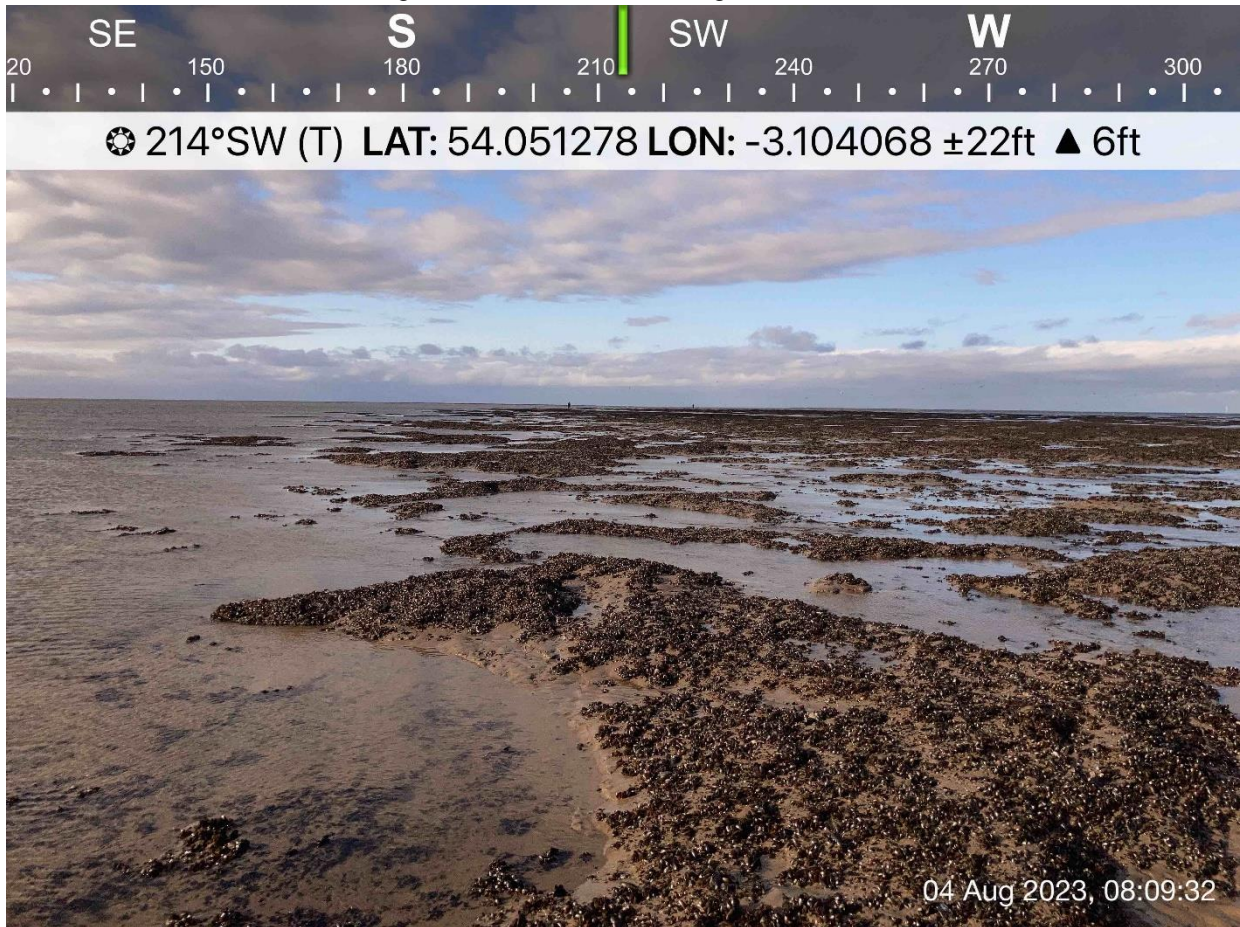


Figure 10. Shallow mud forming on the seaward edge of South America 04-08-2023.

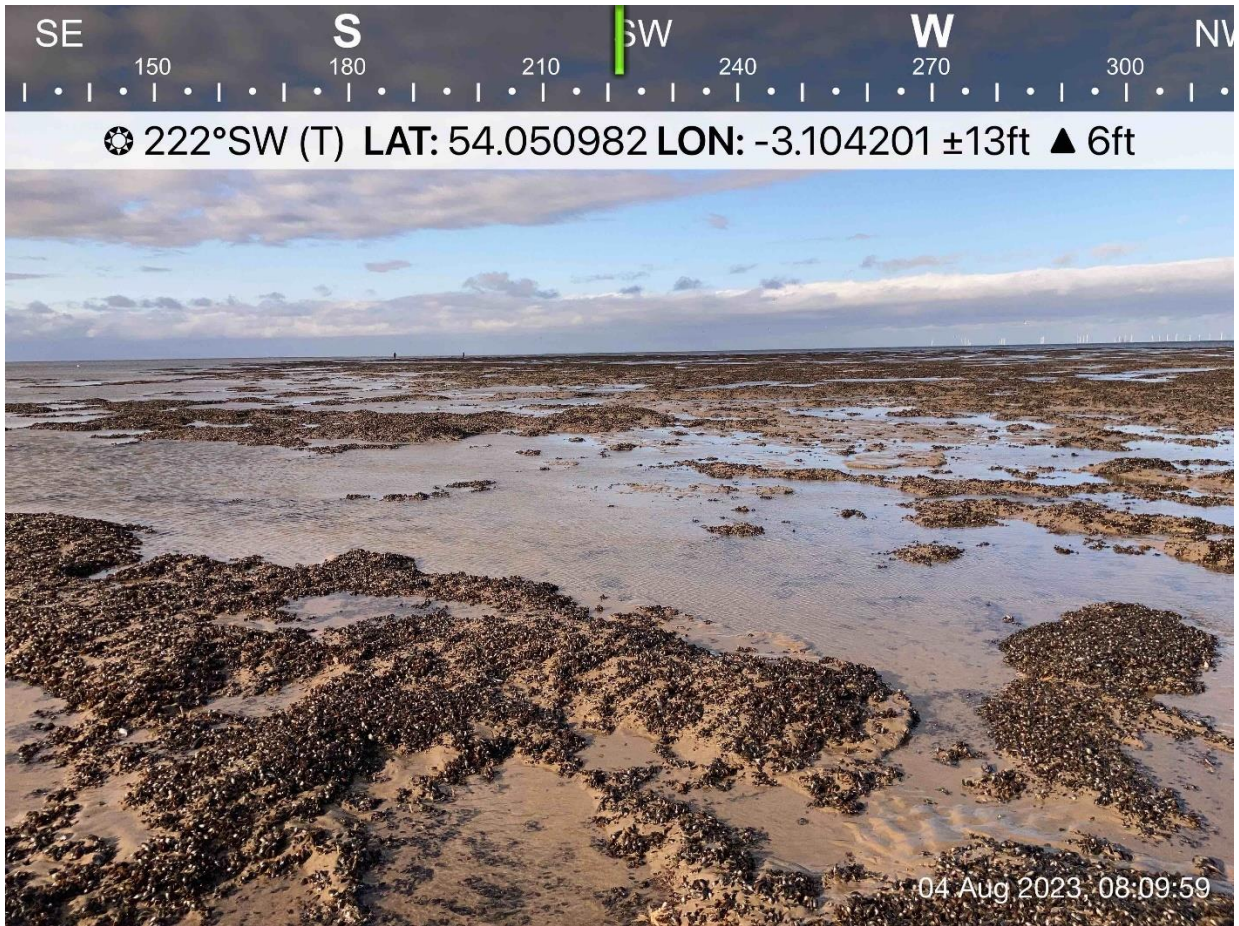


Figure 11. Thin mud and mussel coverage on South America 04-08-2023.



Figure 12. Thin mud and mussel coverage on South America 04-08-2023.



Figure 13. Thin mud and mussel coverage on South America 04-08-2023

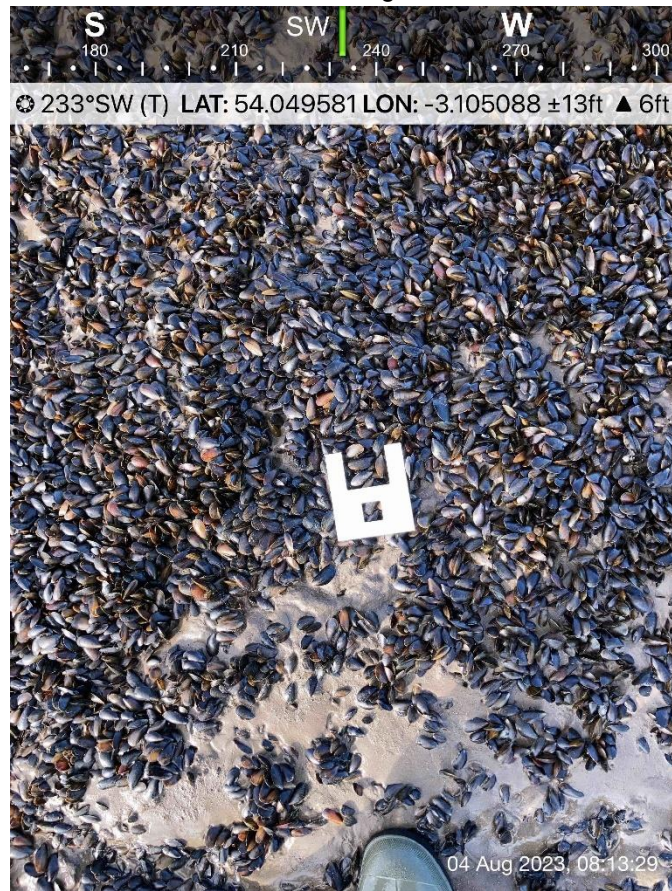


Figure 14. 25-30 mm mussel seed on South America 04-08-2023

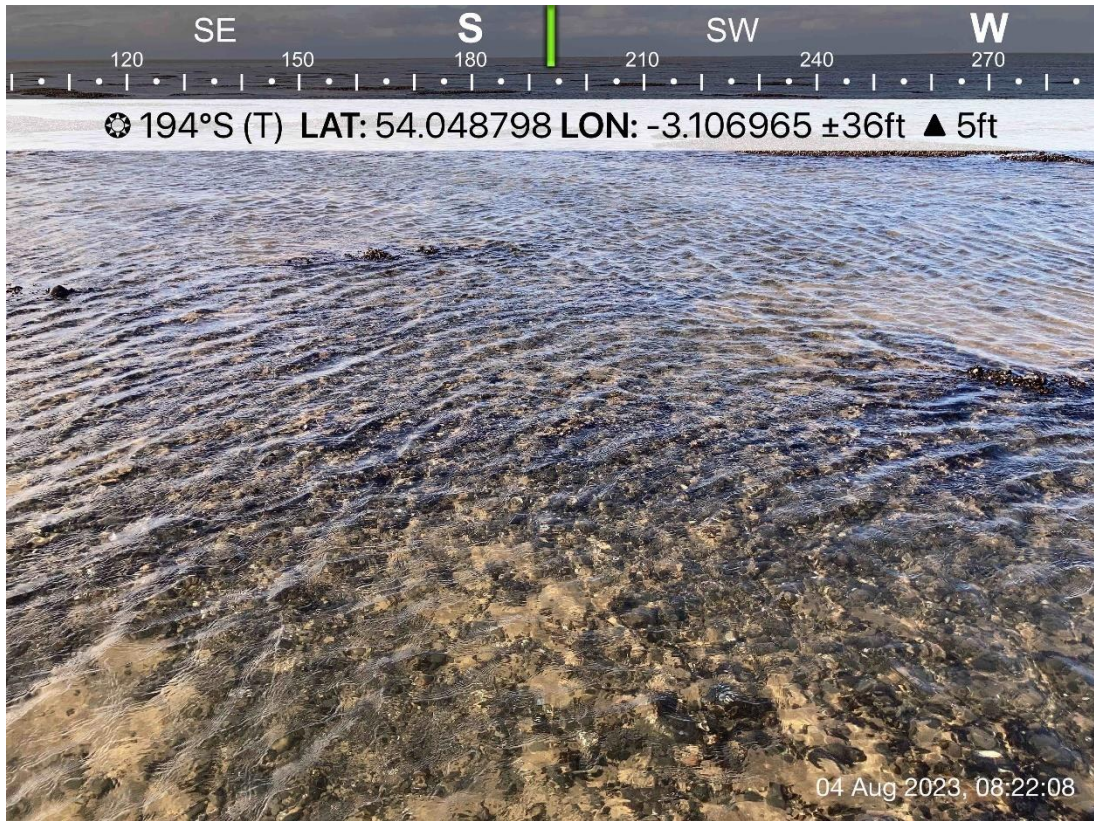


Figure 15. Mussel in the channel South America 04-08-2023

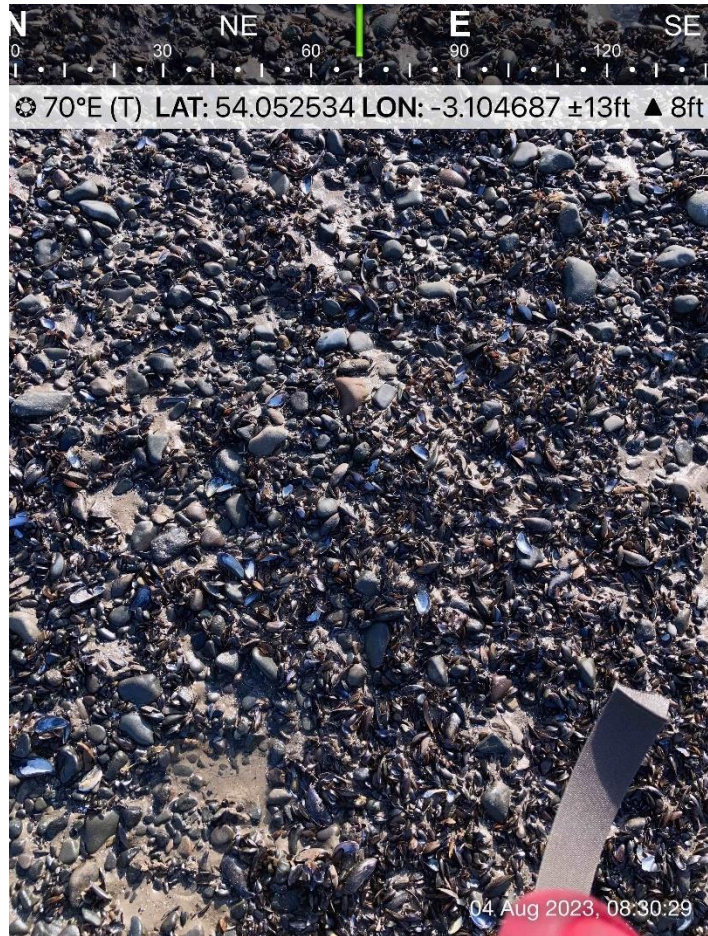


Figure 16. Exposed cobble substrate on South America 04-08-2023



Figure 17. Thin mud and mussel coverage on South America 04-08-2023

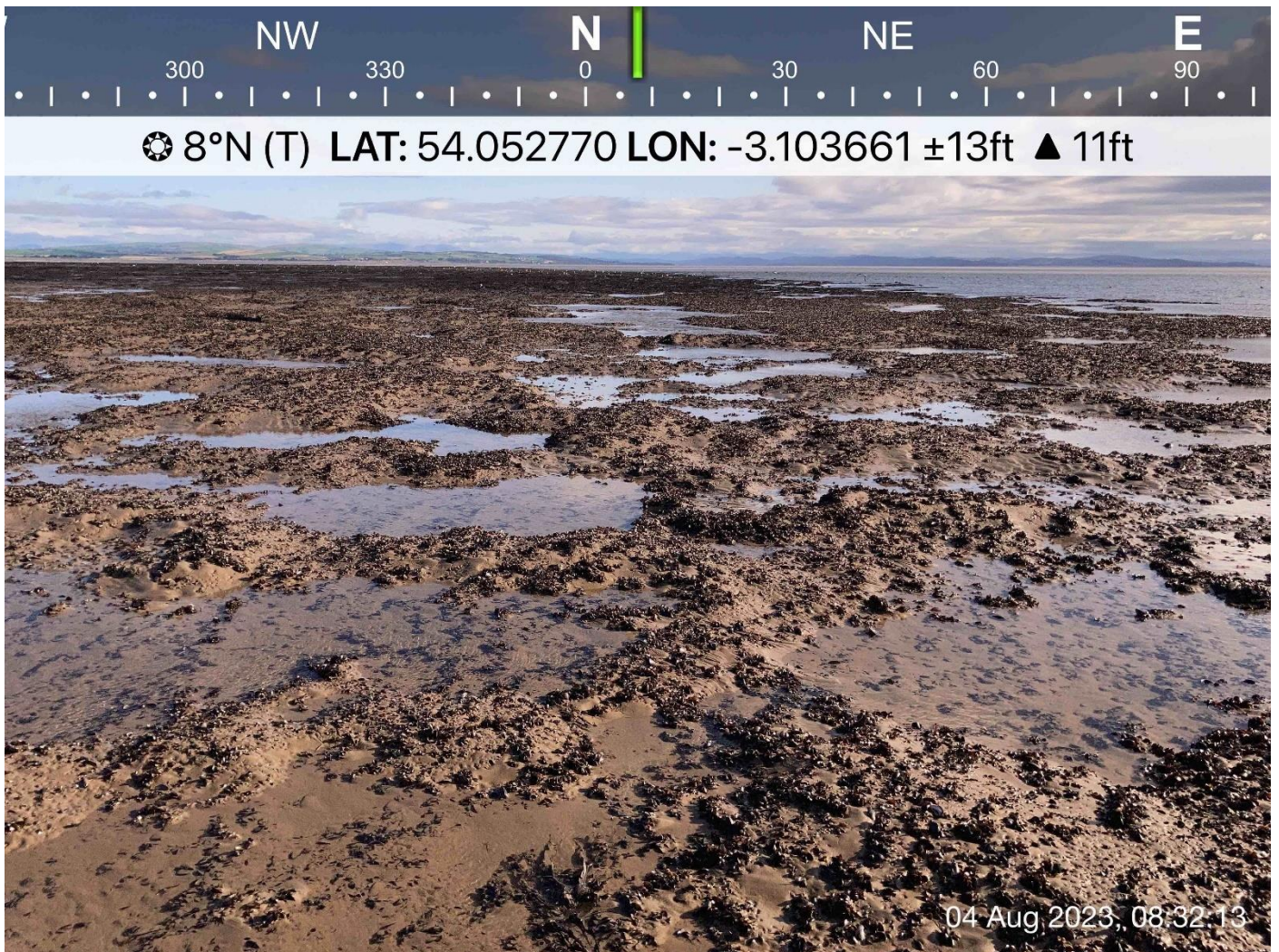


Figure 18. Thin mud and mussel coverage on South America 04-08-2023



Figure 19. Exposed cobble and mud on South America 04-08-2023



Figure 20. This mussel on mud in central South America 04-08-2023



Figure 21. Loose mussel patches on shallow mud on the new area landward of the South America channel 04-08-2023

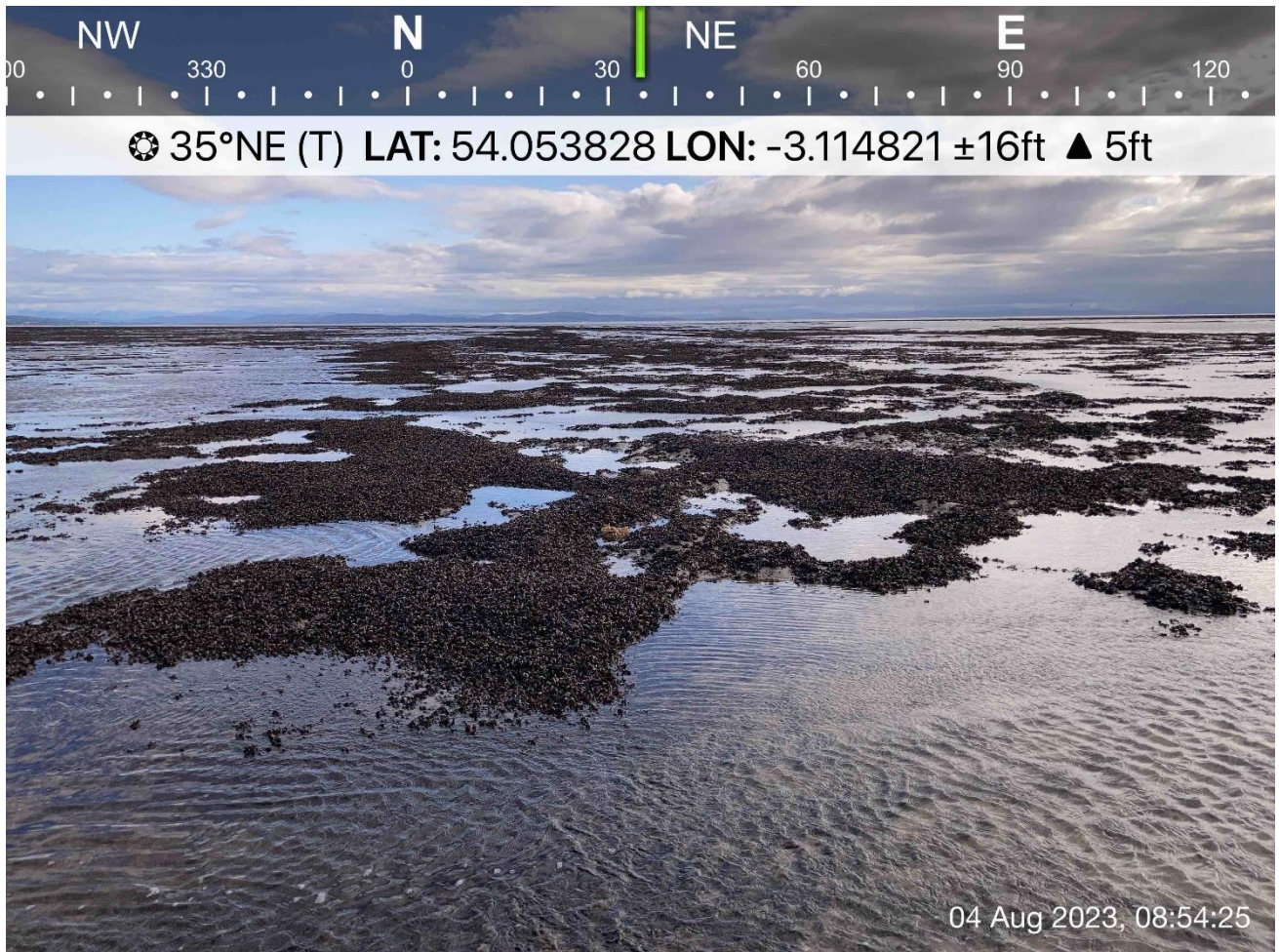


Figure 22. patch of dense mussel on shallow mud on the new area landward of the South America channel 04-08-2023



Figure 23. patch of dense mussel on shallow mud on the new area landward of the South America channel 04-08-2023



Figure 24. Area of thin mud and dense seed on the new area, landward of the South America channel 04-08-2023

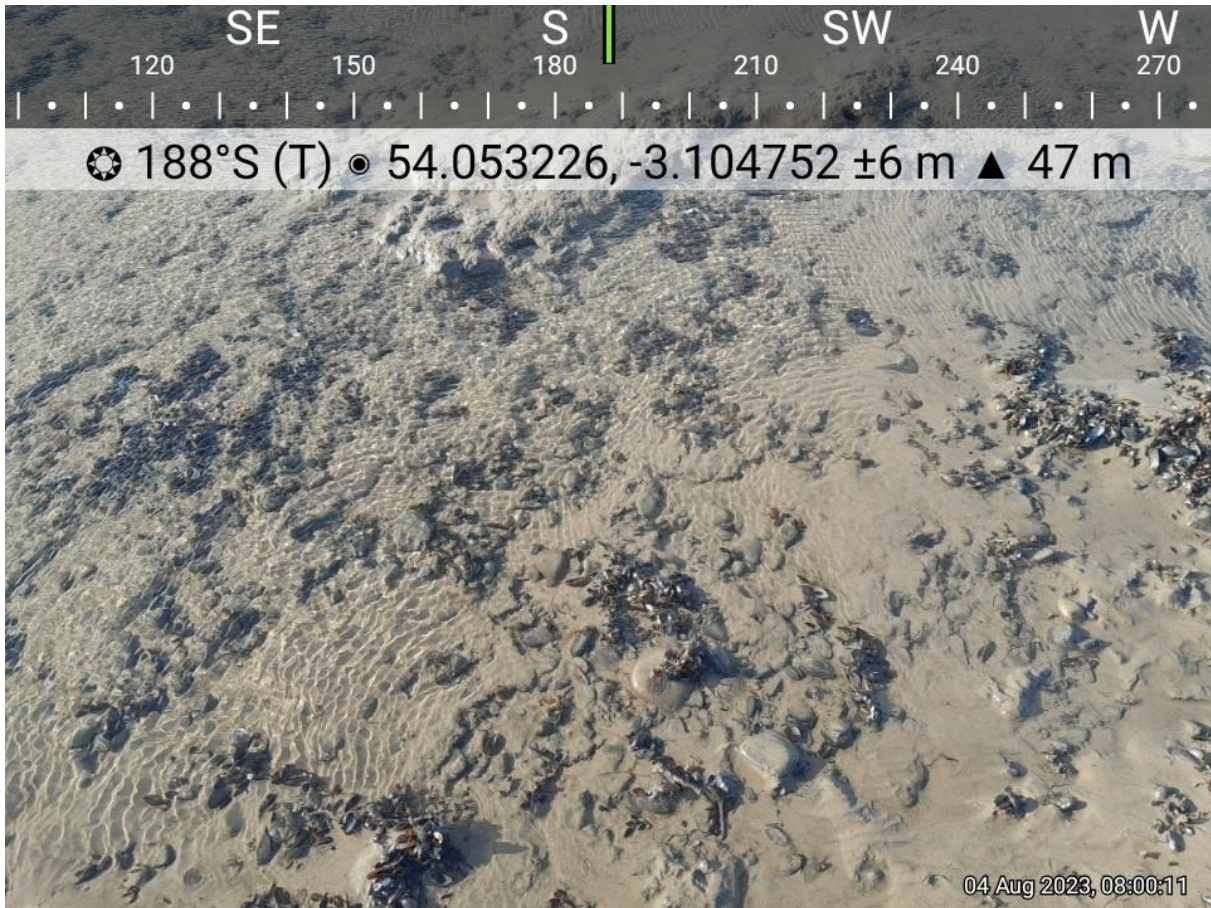


Figure 25. Exposed cobble substrate on South America 04-08-2023



Figure 26. Mussel on thin mud South America 04-08-2023

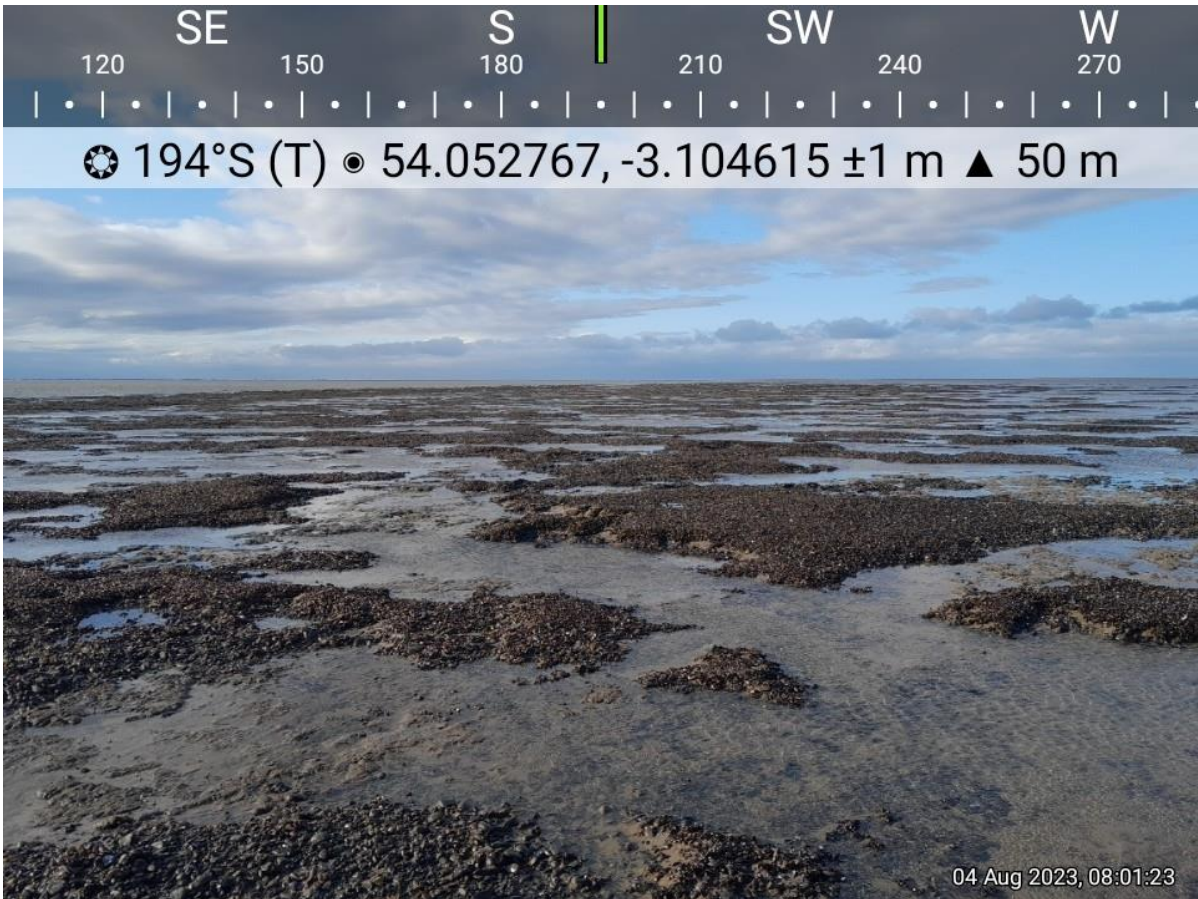


Figure 27. Mussel mud forming on South America with evidence of scour 04-08-2023

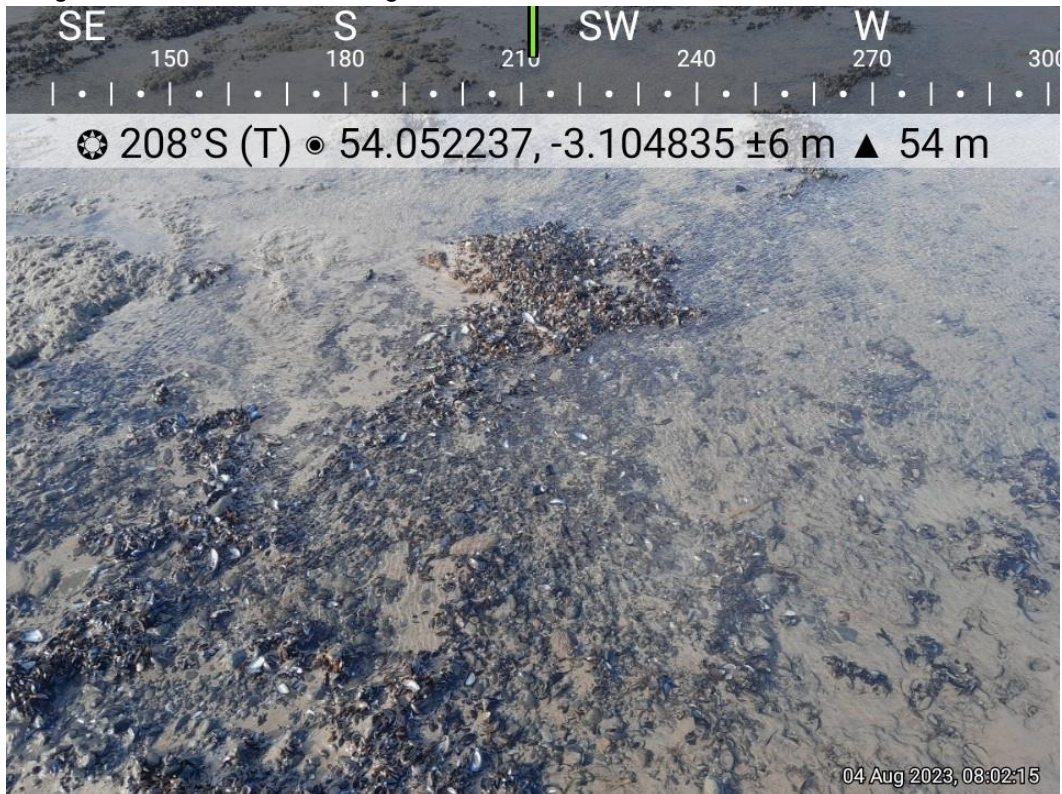


Figure 28. Bare cobble and underlying substrate South America 04-08-2023

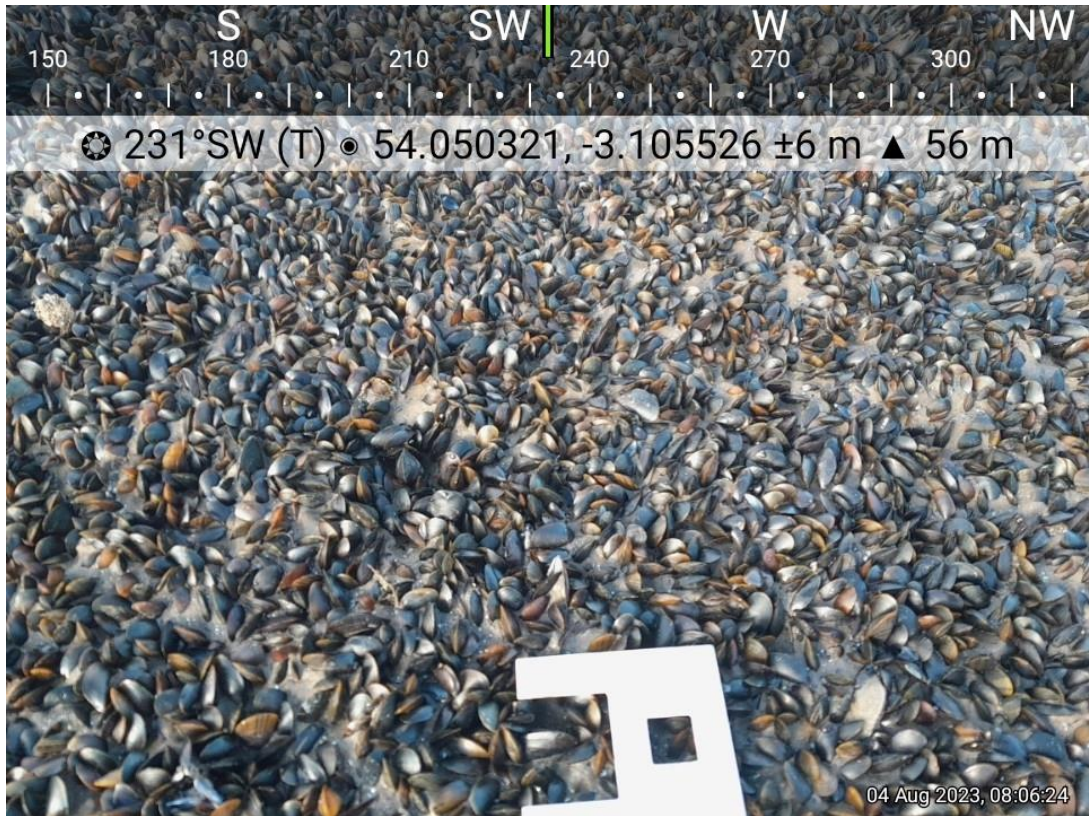


Figure 29. 25-30 mm mussel seed on South America 04-08-2023



Figure 30. Mussel on thin mud with exposed cobble on South America 04-08-2023

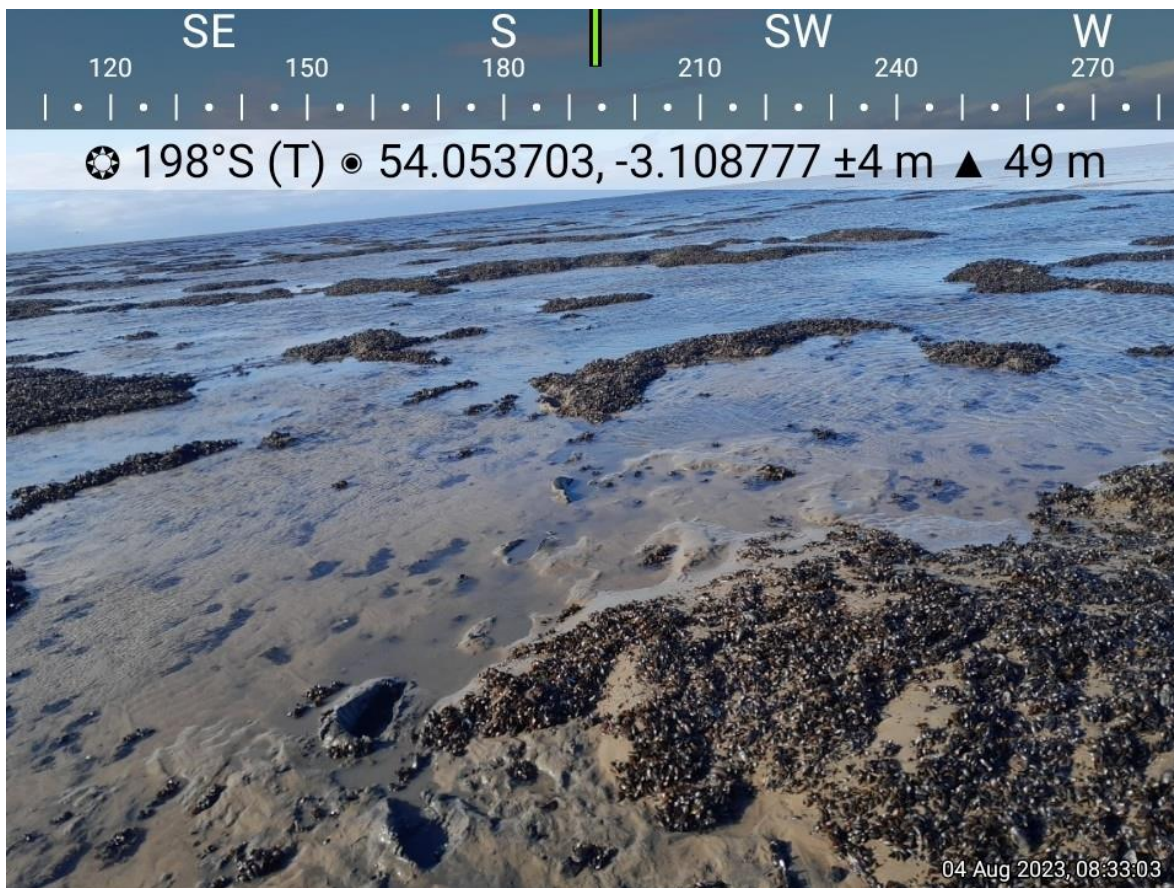


Figure 31. Mussel mud with loose mussel near the channel edge on South America 04-08-2023

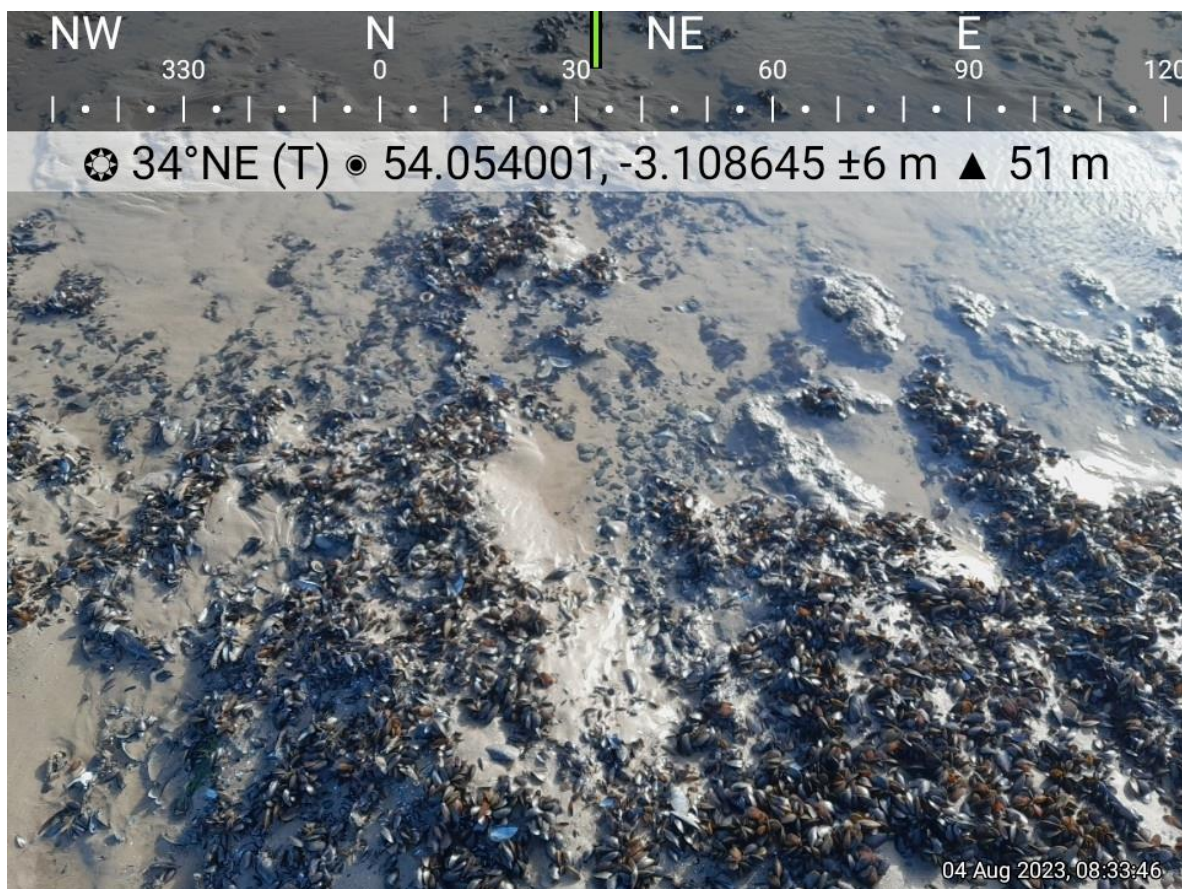


Figure 32. Mussel on thin mud with exposed cobble on South America 04-08-2023

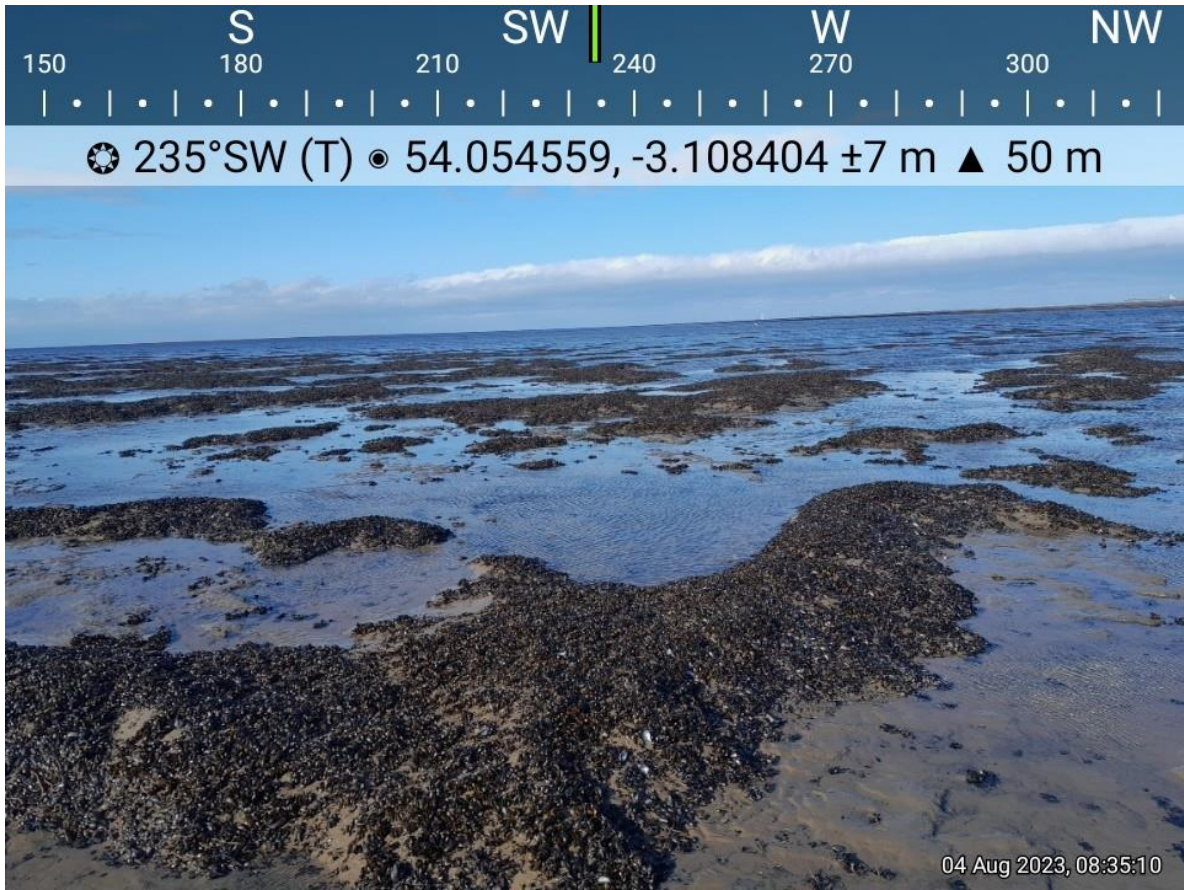


Figure 33. Loose mussel on shallow mud near the channel edge on South America 04-08-2023

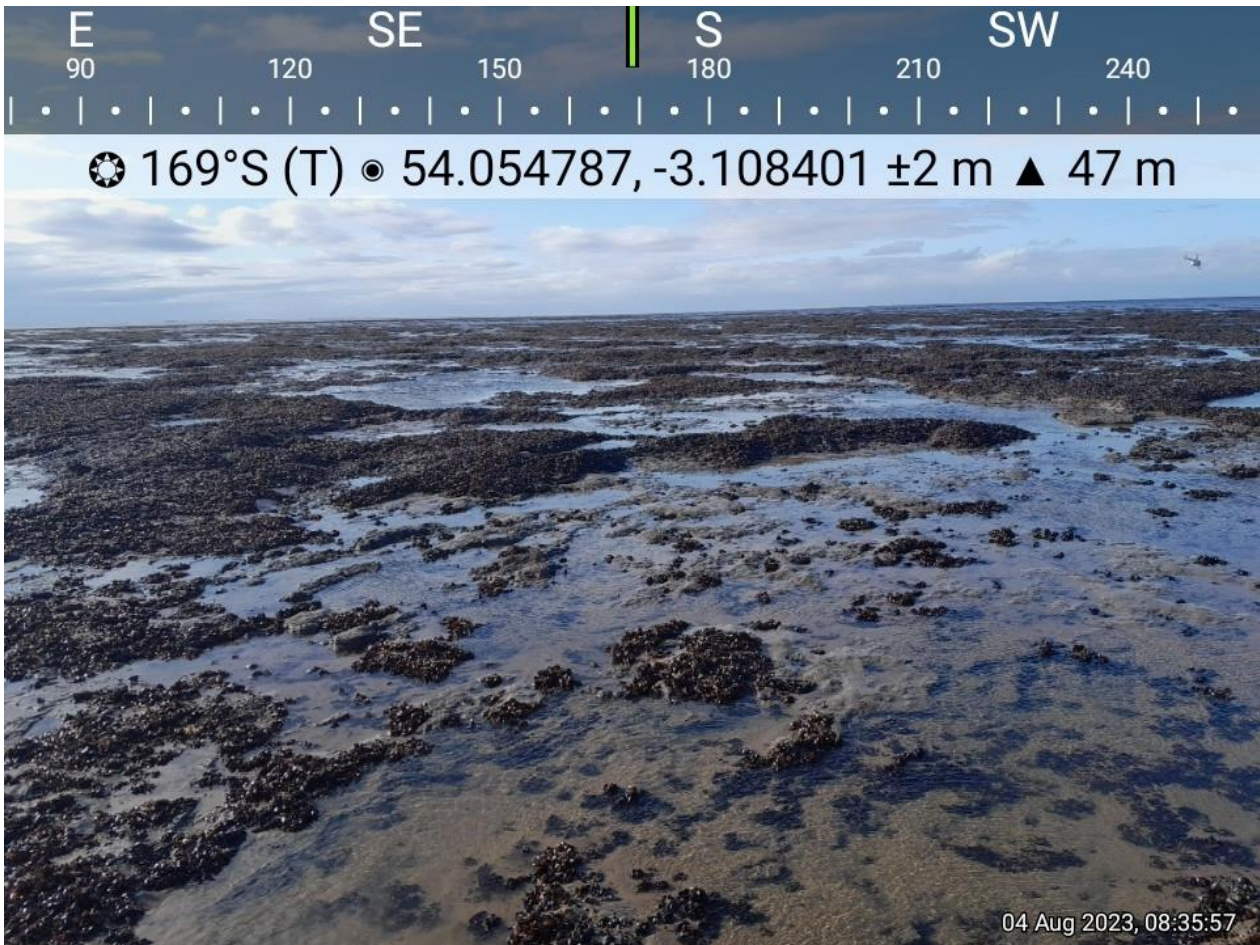


Figure 34. Loose mussel on mud on the opposite side of the channel to South America 04-08-2023

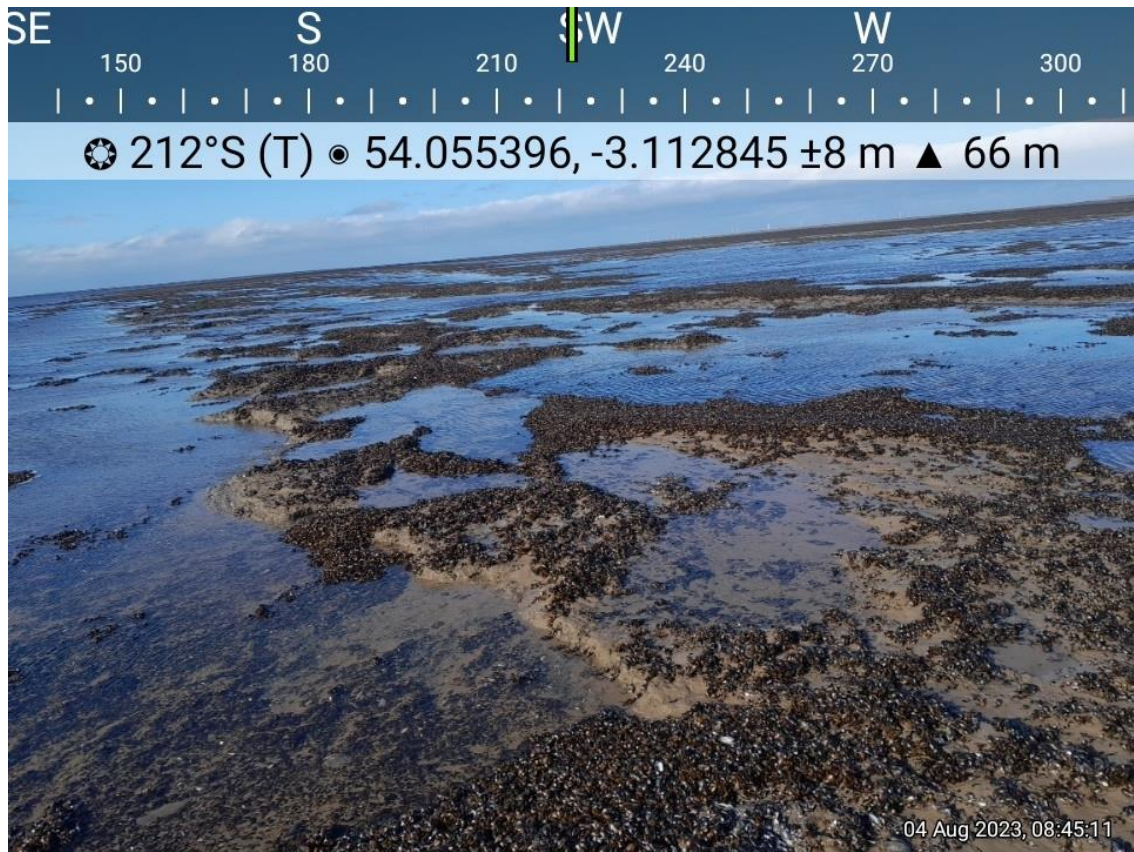


Figure 35. Mussel on thin mud on the new area on the seaward side of the South America Channel 04-08-2023

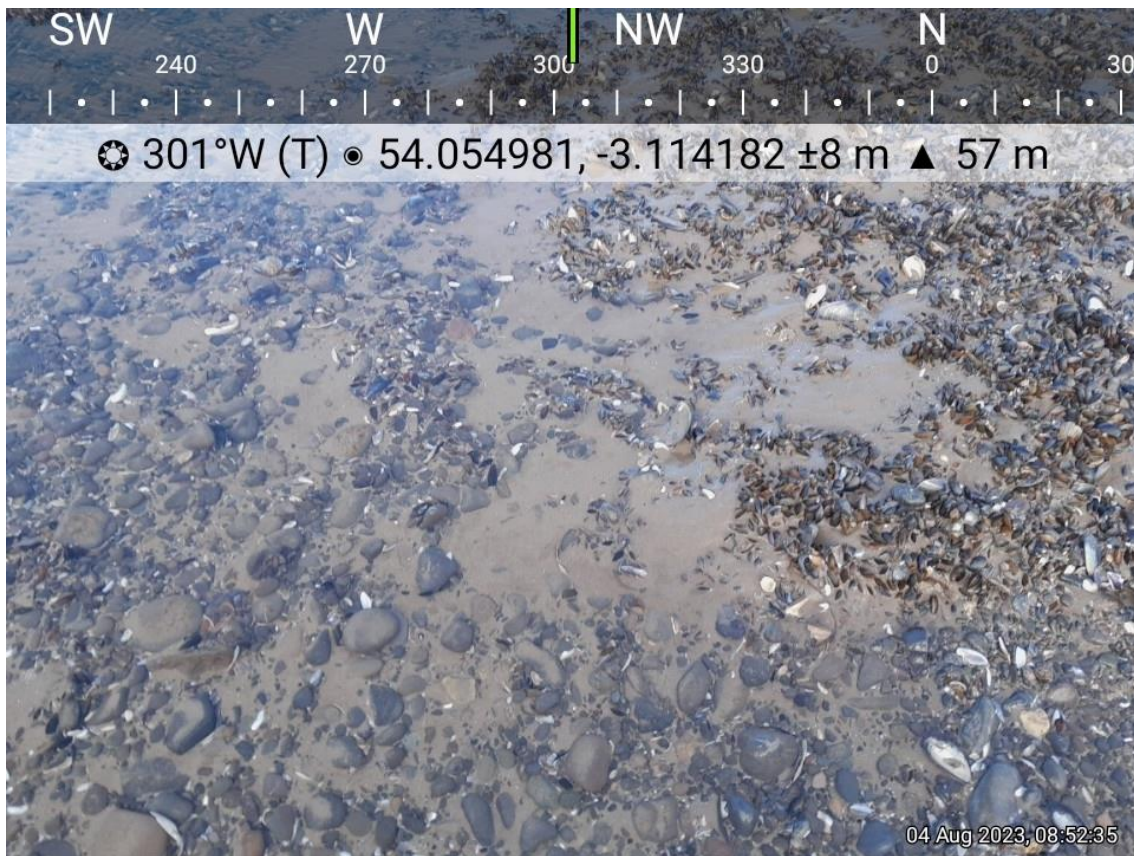


Figure 36. Exposed cobble substrate and thin patches of seed mussel 04-08-2023

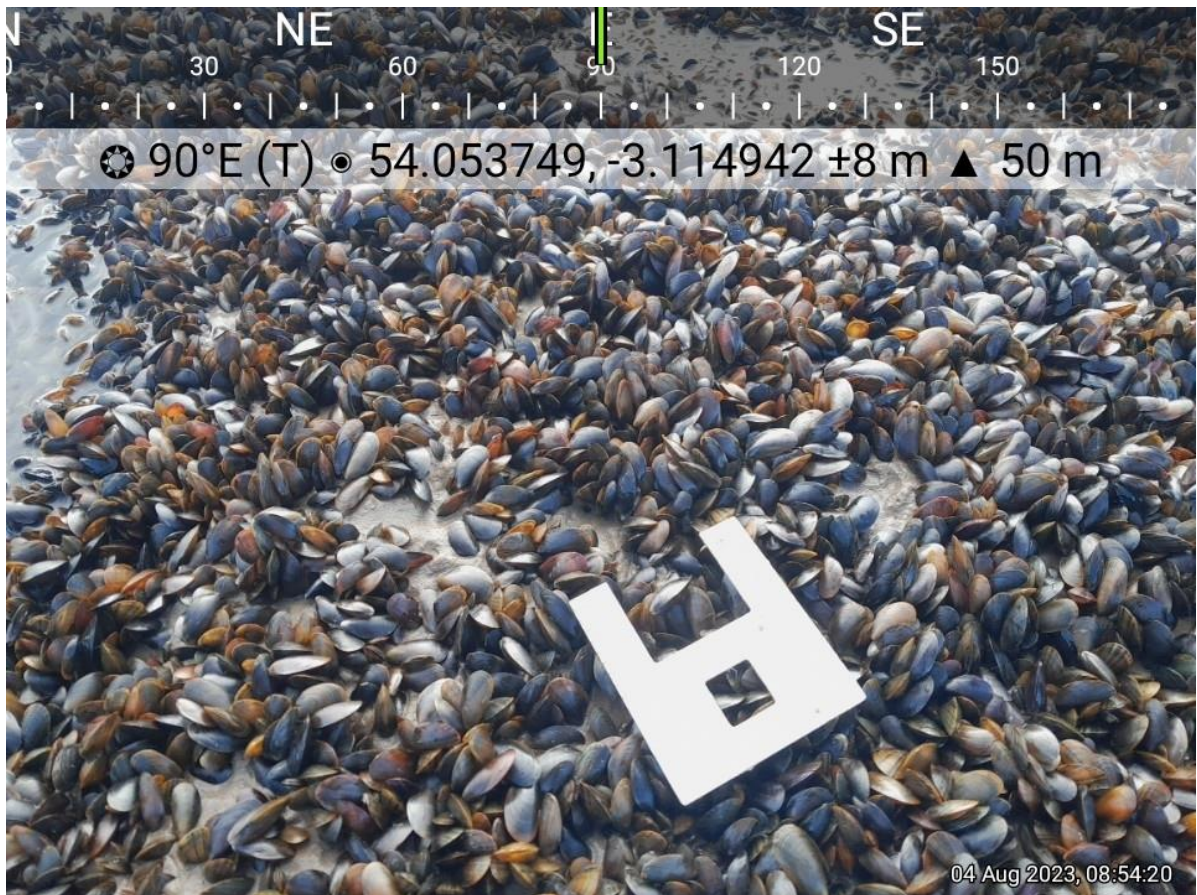


Figure 37. 20 mm seed mussel 04-08-2023

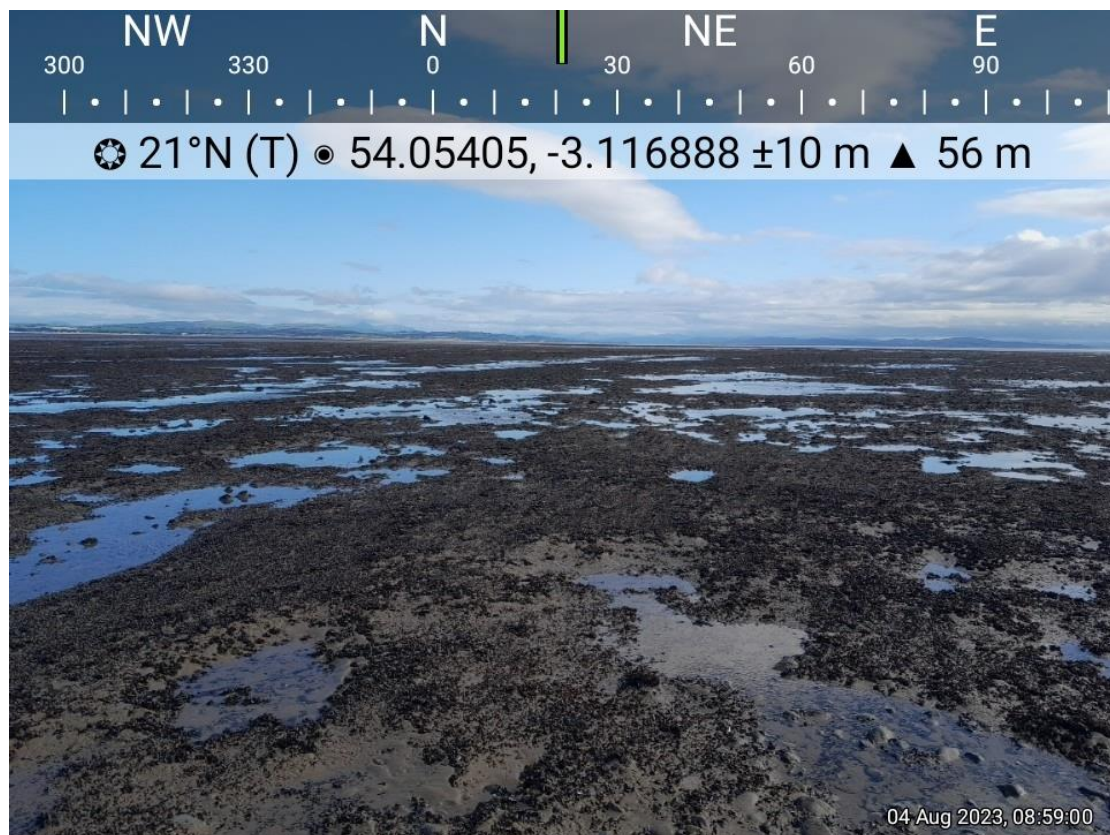


Figure 38. New settlement of seed mussel over cobble 04-08-2023