

Supplementary material

Contraventions of MPA regulations by the South African demersal trawl fisheries: Evidence from loss and damage of scientific instruments

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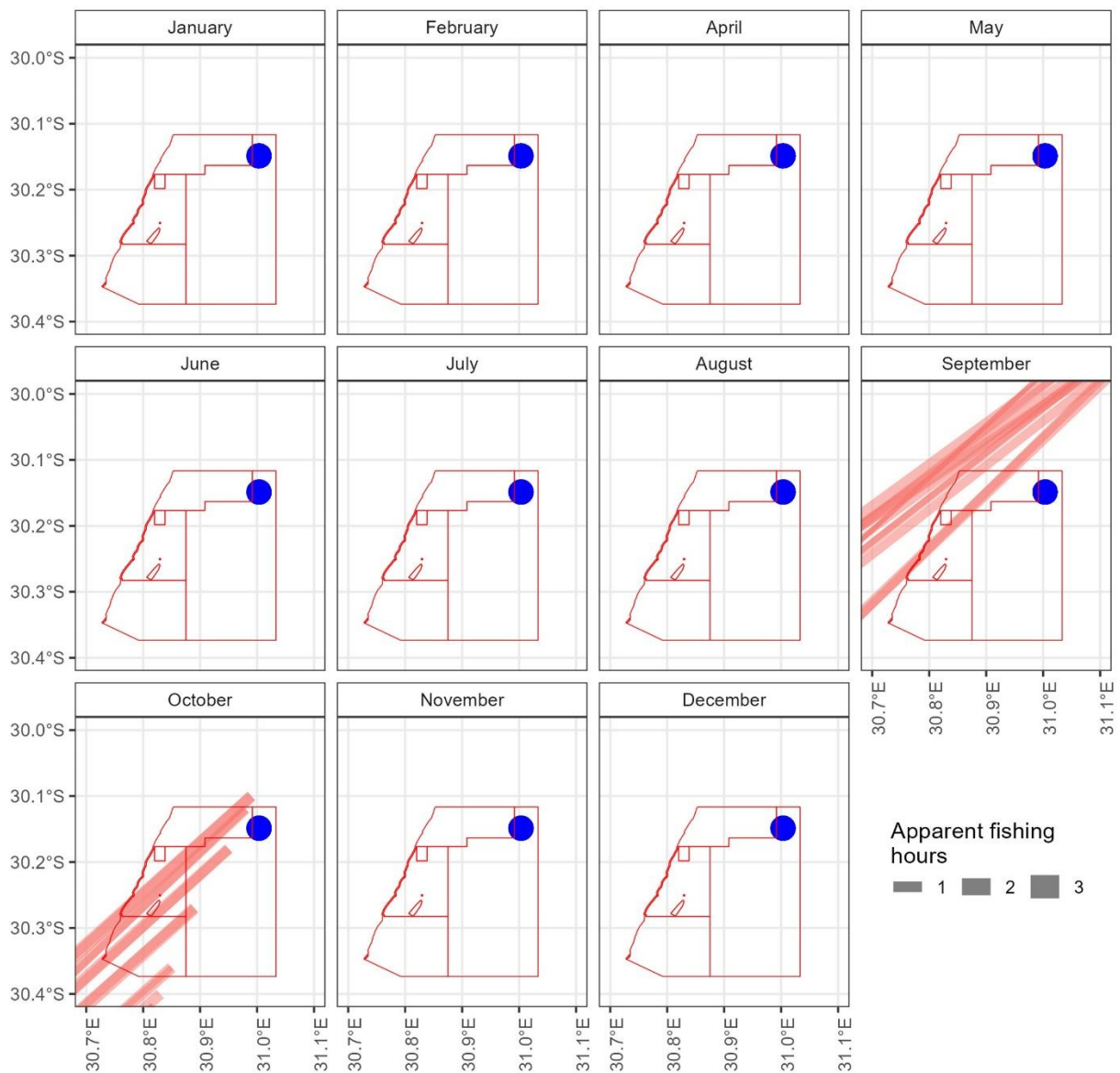
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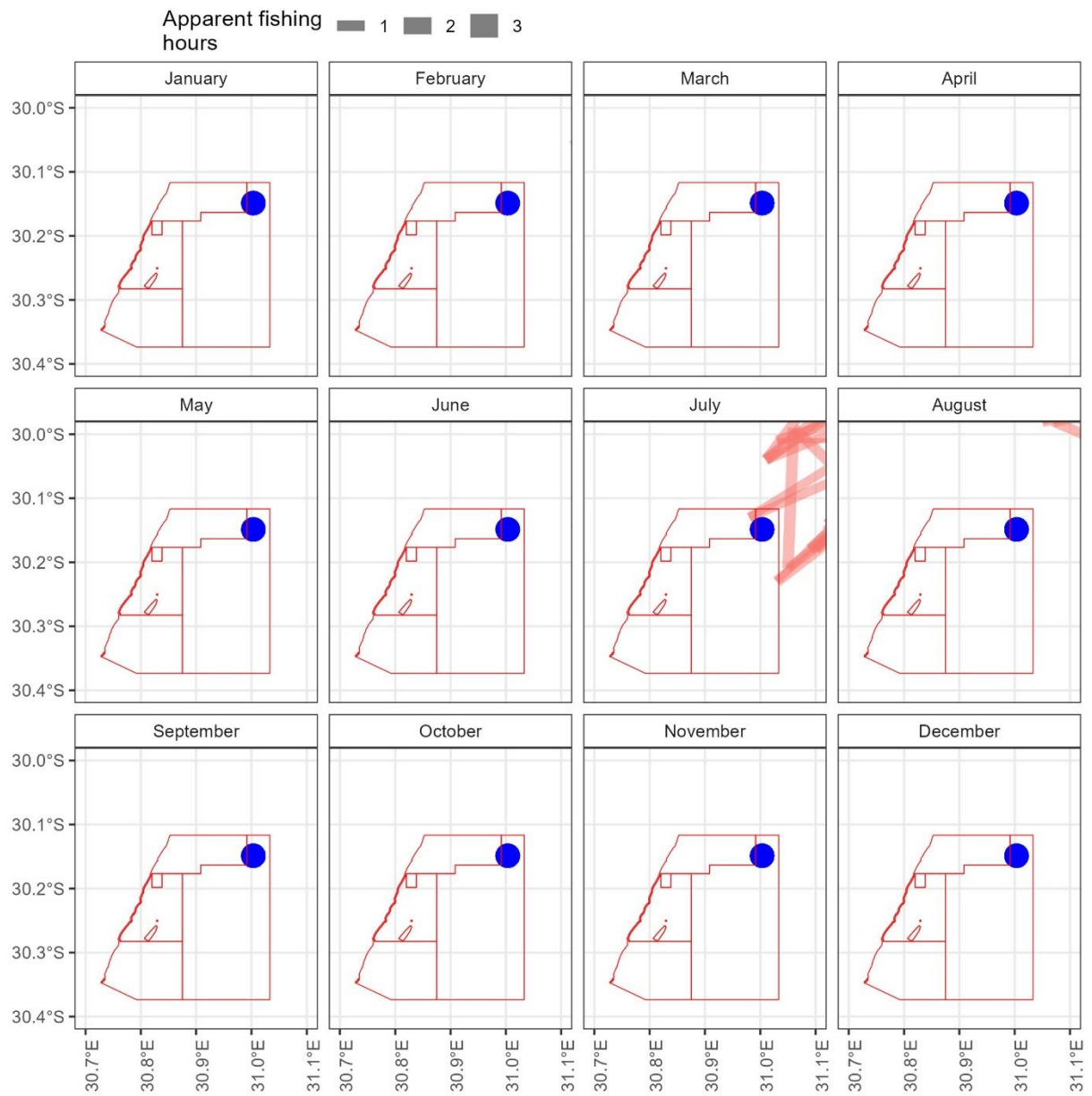
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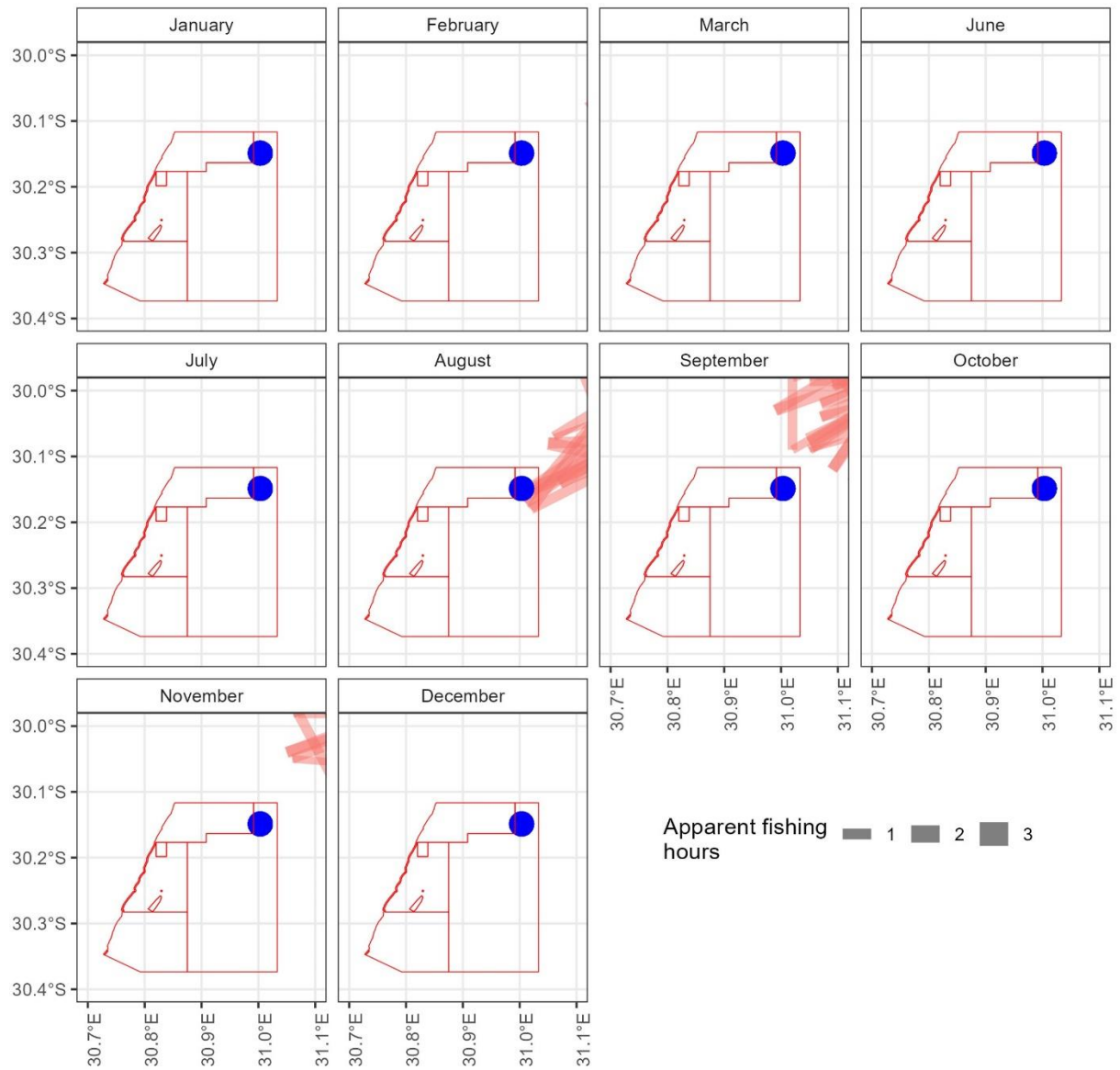
Supplementary Material 1. MPA fishing trend over time: Aliwal Shoal MPA



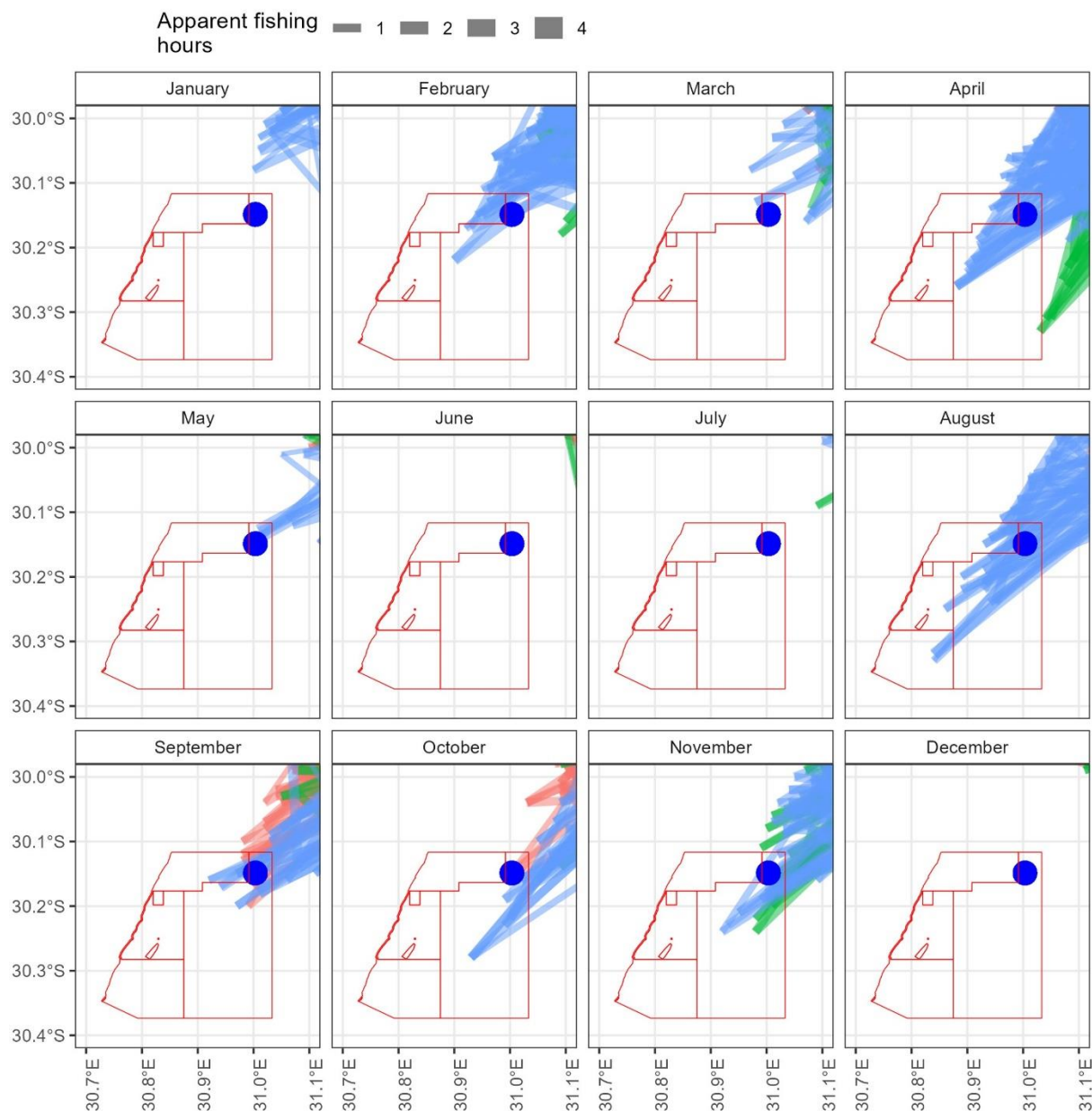
Supplementary Figure S1. Tracks showing apparent fishing hours of a trawler around and within Aliwal Shoal MPA boundaries (open red polygon) from 01 January to 31 December 2018. Blue circles represent the location of acoustic mooring. Width of vessel paths/tracks represents the amount of apparent fishing hour as per key. March is omitted from the figure as it had no data. Vessel tracks of land in September and October represent false vessel tracks.



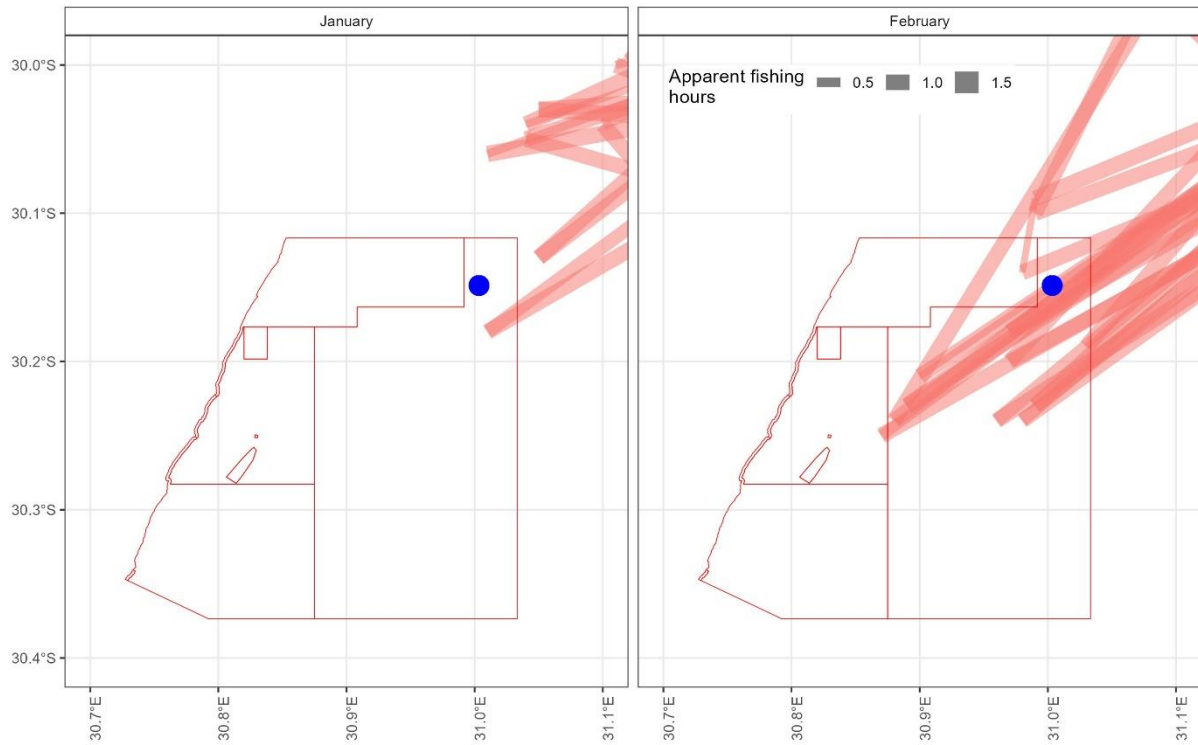
Supplementary Figure S2. Tracks showing apparent fishing hours of a trawler around and within Aliwal Shoal MPA boundaries (open red polygon) from 01 January to 31 December 2019. Blue circles represent the location of acoustic mooring. Width of vessel paths/tracks represents the amount of apparent fishing hour as per key.



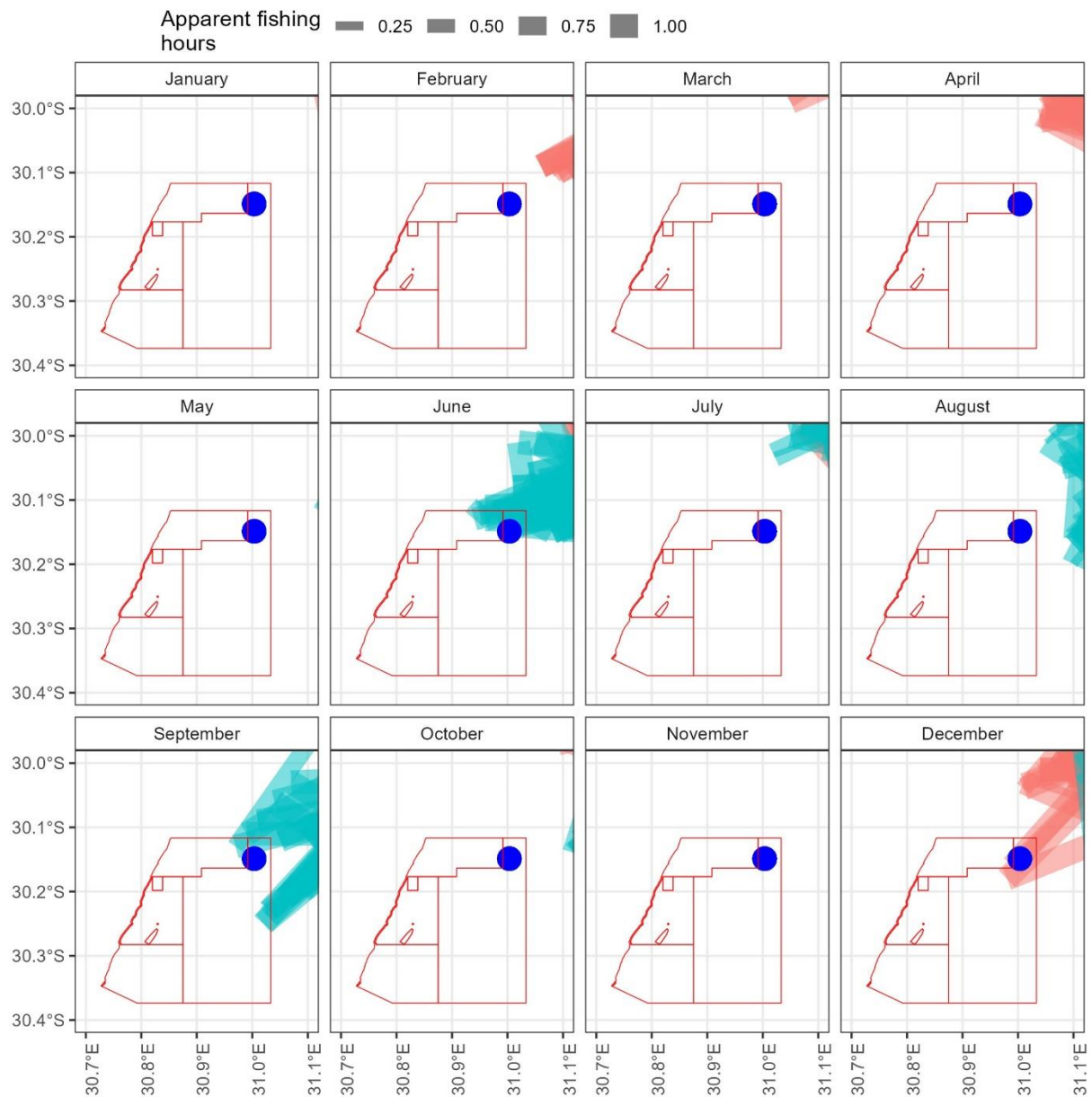
Supplementary Figure S3. Tracks showing apparent fishing hours of a trawler around and within Aliwal Shoal MPA boundaries (open red polygon) from 01 January to 31 December 2020. Blue circles represent the location of acoustic mooring. Width of vessel paths/tracks represents the amount of apparent fishing hour as per key. April and May are omitted from the figure as they had no data.



Supplementary Figure S4. Tracks showing apparent fishing hours of three trawlers (individually coloured) around and within Aliwal Shoal MPA boundaries (open red polygon) from 01 January to 31 December 2021. Track colours represent individual fishing vessels based on MMSI numbers. Blue circles represent the location of acoustic mooring. Width of vessel paths/tracks represents the amount of apparent fishing hour as per key.

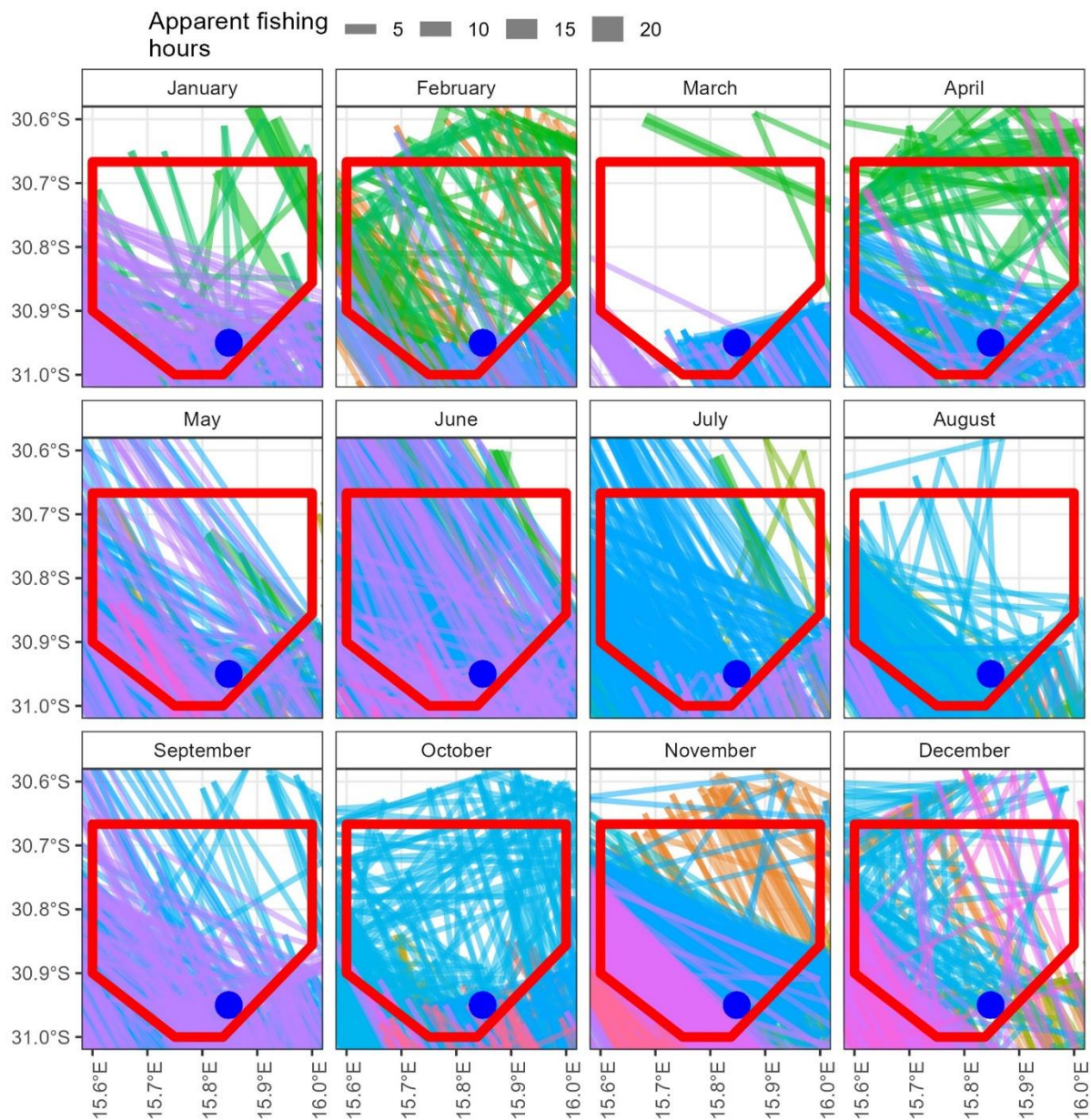


Supplementary Figure S5. Tracks showing apparent fishing hours of a trawler around and within Aliwal Shoal MPA boundaries (open red polygon) from 01 January to 06 February 2022. Blue circles represent the location of acoustic mooring. Width of vessel paths/tracks represents the amount of apparent fishing hour as per key.

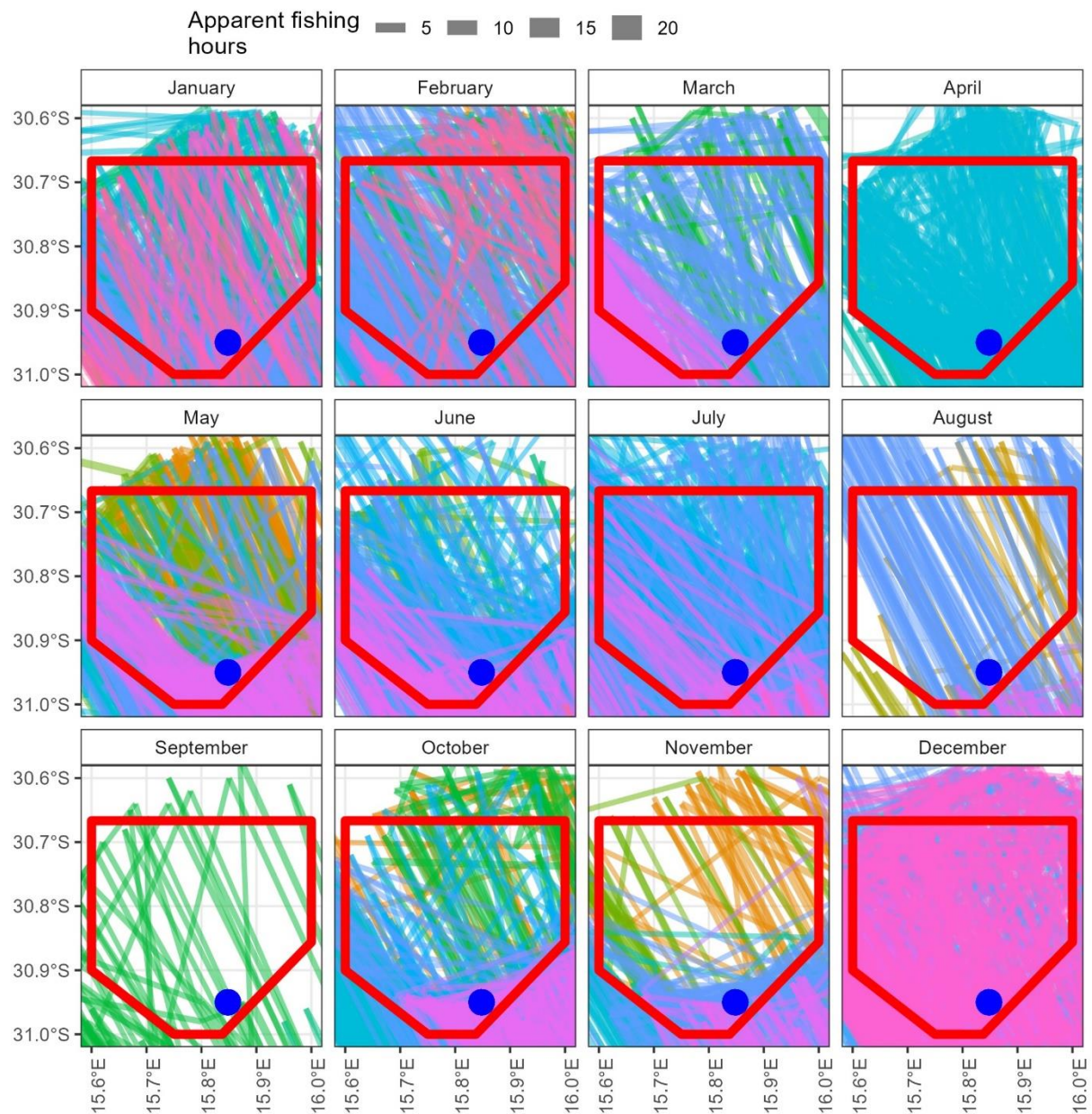


Supplementary Figure S6. Tracks showing apparent fishing hours of two trawlers around and within Aliwal Shoal MPA boundaries (open red polygon) from 01 January to 31 December 2023. Track colours represent individual fishing vessels based on MMSI numbers. Blue circles represent the location of acoustic mooring. Width of vessel paths/tracks represents the amount of apparent fishing hour as per key.

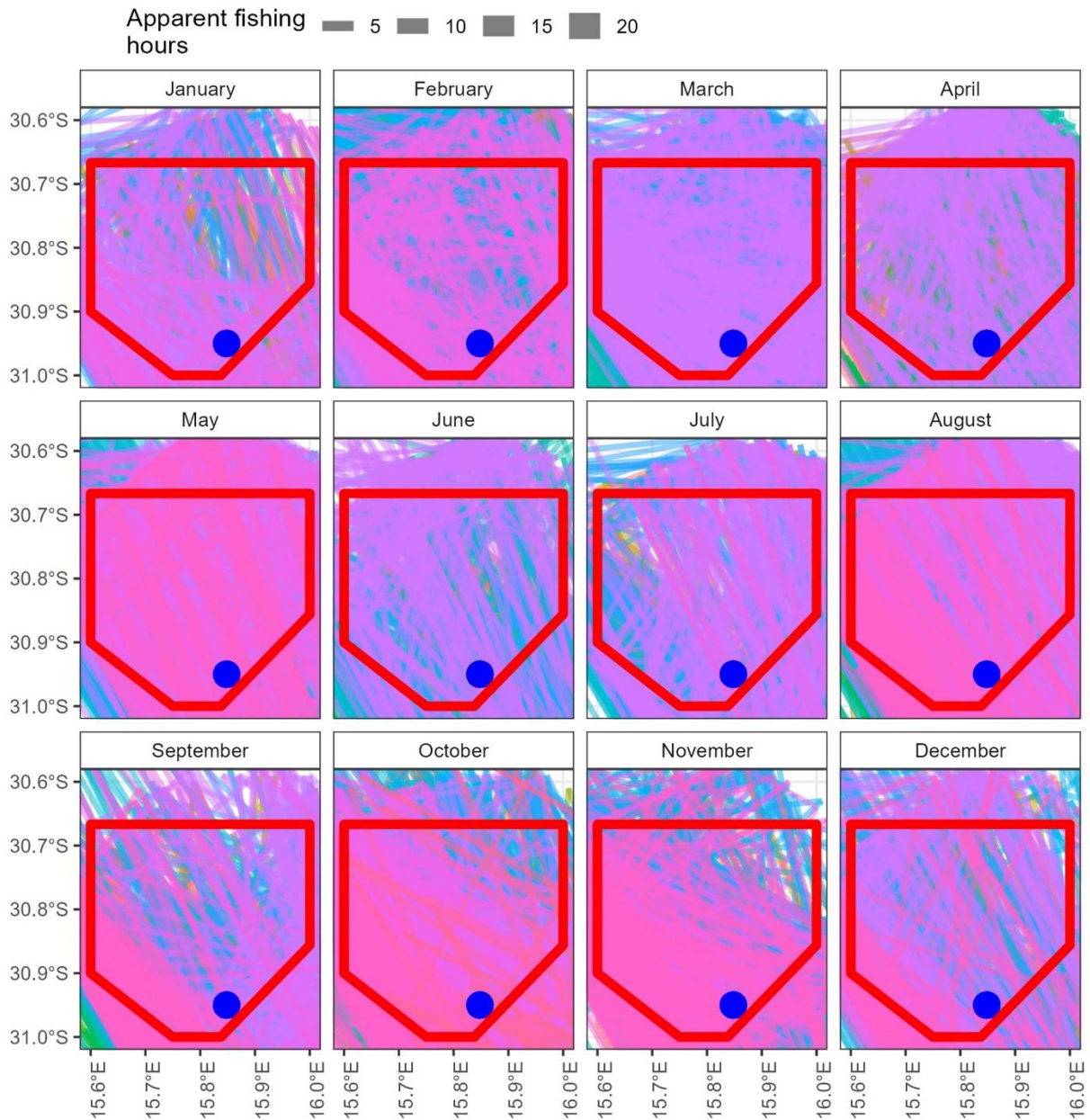
Supplementary Material 2. MPA fishing trend over time: Child's Bank MPA



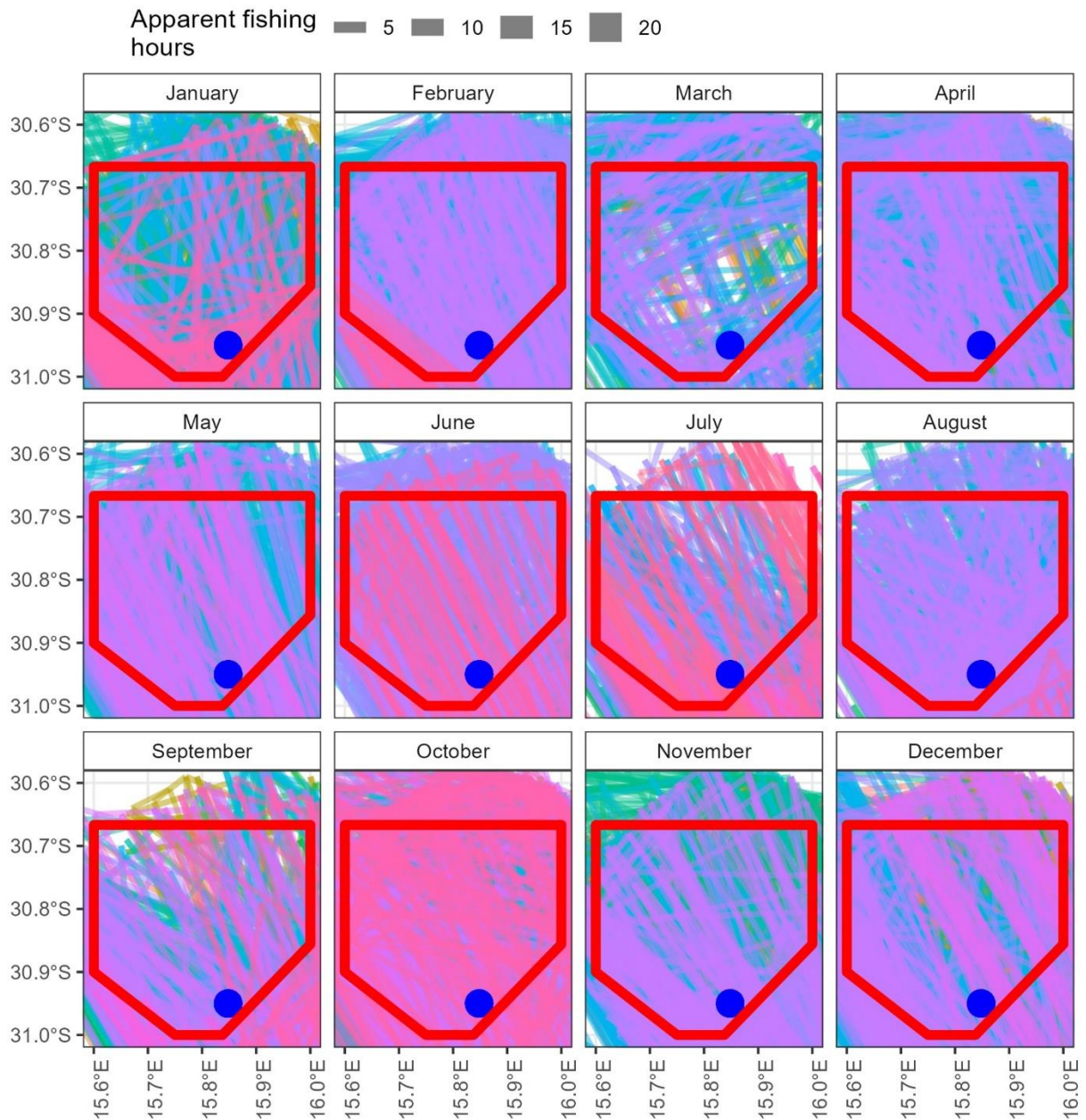
Supplementary Figure S7. Tracks showing apparent fishing hours of 19 trawlers around and within Child's Bank MPA boundaries (open red hexagon) from 01 January to 31 December 2018. Track colours represent individual fishing vessels based on MMSI numbers. Blue circles represent the location of acoustic mooring. Width of vessel paths/tracks represents the amount of apparent fishing hours as per key.



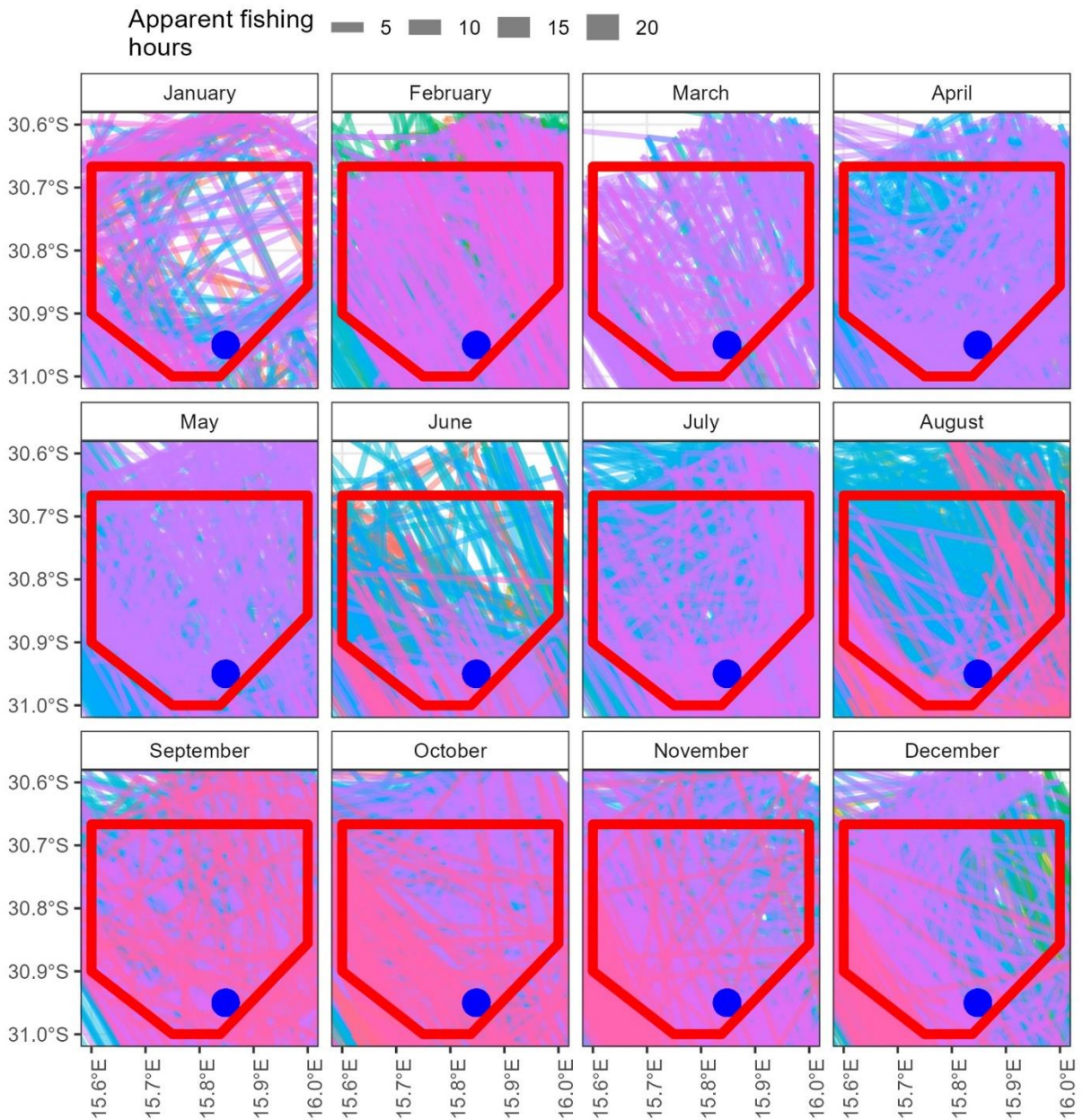
Supplementary Figure S8. Tracks showing apparent fishing hours of 15 trawlers around and within Child's Bank MPA boundaries (open red hexagon) from 01 January to 31 December 2019. Track colours represent individual fishing vessels based on MMSI numbers. Blue circles represent the location of acoustic mooring. Width of vessel paths/tracks represents the amount of apparent fishing hours as per key.



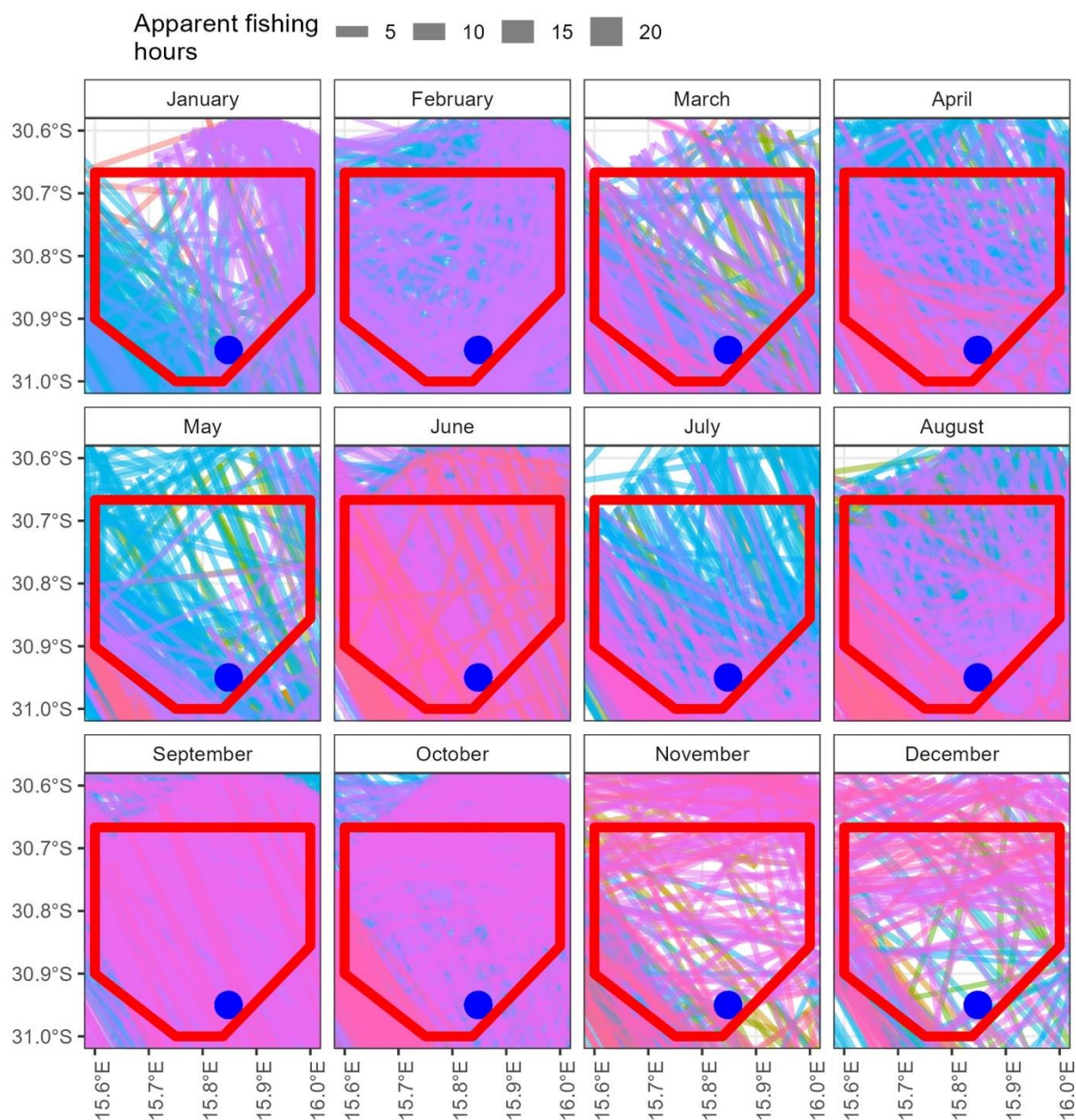
Supplementary Figure S9. Vessel tracks showing apparent fishing hours of 17 trawlers off Child's Bank MPA boundaries (open red hexagon) from 01 January to 31 December 2020. Track colours represent individual fishing vessels based on MMSI numbers. Blue circles represent the location of acoustic mooring. Width of vessel paths/tracks represents the amount of apparent fishing hours as per key.



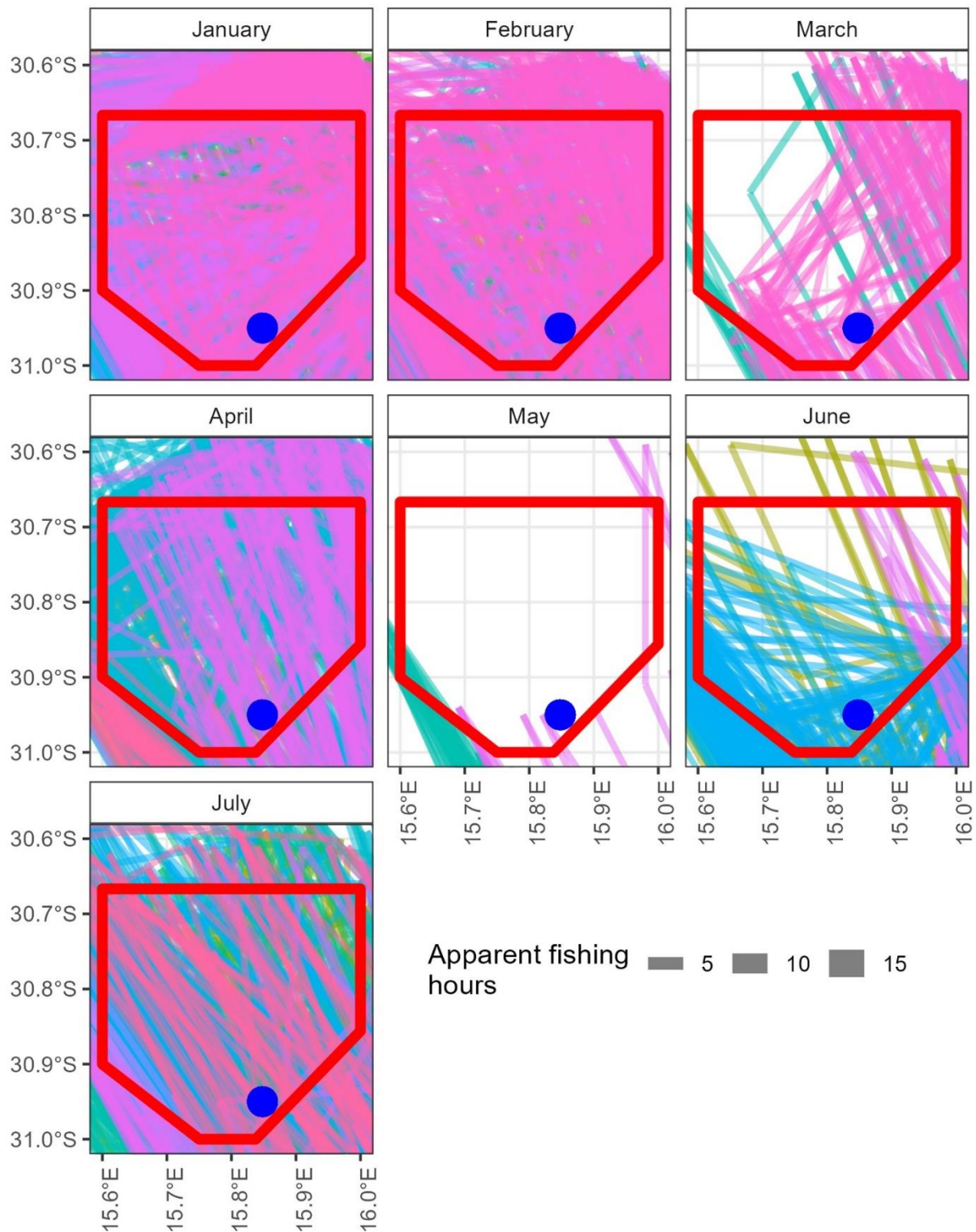
Supplementary Figure S10. Vessel tracks showing apparent fishing hours of 24 trawlers off Child's Bank MPA boundaries (open red hexagon) from 01 January to 31 December 2021. Track colours represent individual fishing vessels based on MMSI numbers. Blue circles represent the location of acoustic mooring. Width of vessel paths/tracks represents the amount of apparent fishing hour as per key.



Supplementary Figure S11. Vessel tracks showing apparent fishing hours of 24 trawlers off Child's Bank MPA boundaries (open red hexagon) from 01 January to 31 December 2022. Track colours represent individual fishing vessels based on MMSI numbers. Blue circles represent the location of acoustic mooring. Width of vessel paths/tracks represents the amount of apparent fishing hour as per key.



Supplementary Figure S12. Vessel tracks showing apparent fishing hours of 21 trawlers off Child's Bank MPA boundaries (open red hexagon) from 01 January to 31 December 2023. Track colours represent individual fishing vessels based on MMSI numbers. Blue circles represent the location of acoustic mooring. Width of vessel paths/tracks represents the amount of apparent fishing hour as per key.



Supplementary Figure S13. Vessel tracks showing apparent fishing hours of 15 trawlers off Child's Bank MPA boundaries (open red hexagon) from 01 January to 31 July 2024. Track colours represent individual fishing vessels based on MMSI numbers. Blue circles represent the location of acoustic mooring. Width of vessel paths/tracks represents the amount of apparent fishing hour as per key.