

The occurrence of humpback whales across the Hawaiian archipelago revealed through acoustics



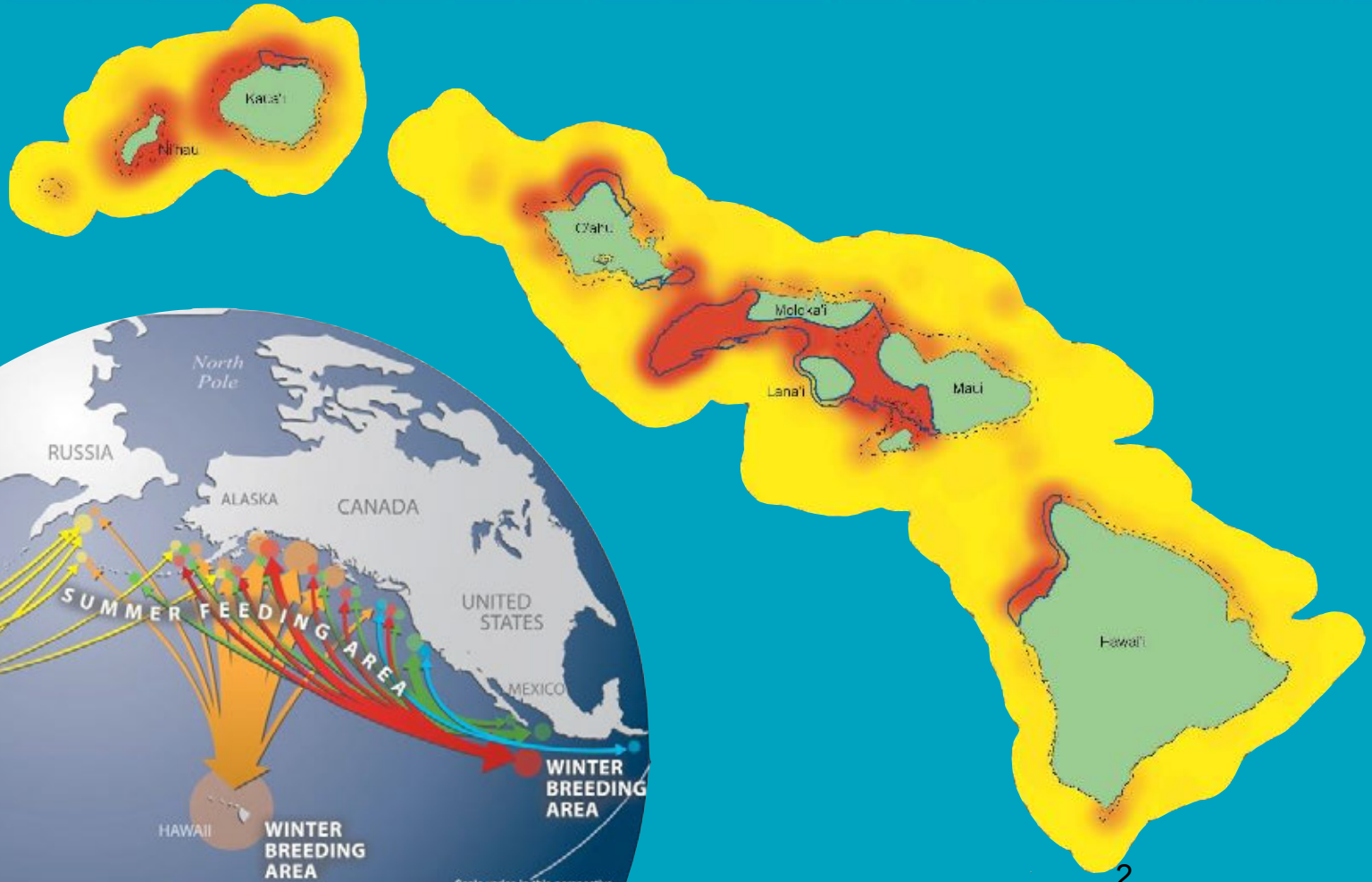
Marc Lammers
Research Coordinator
NOAA/ONMS/HHWNMS



NOAA Fisheries permit #14682



The Hawaiian Islands Humpback Whale National Marine Sanctuary



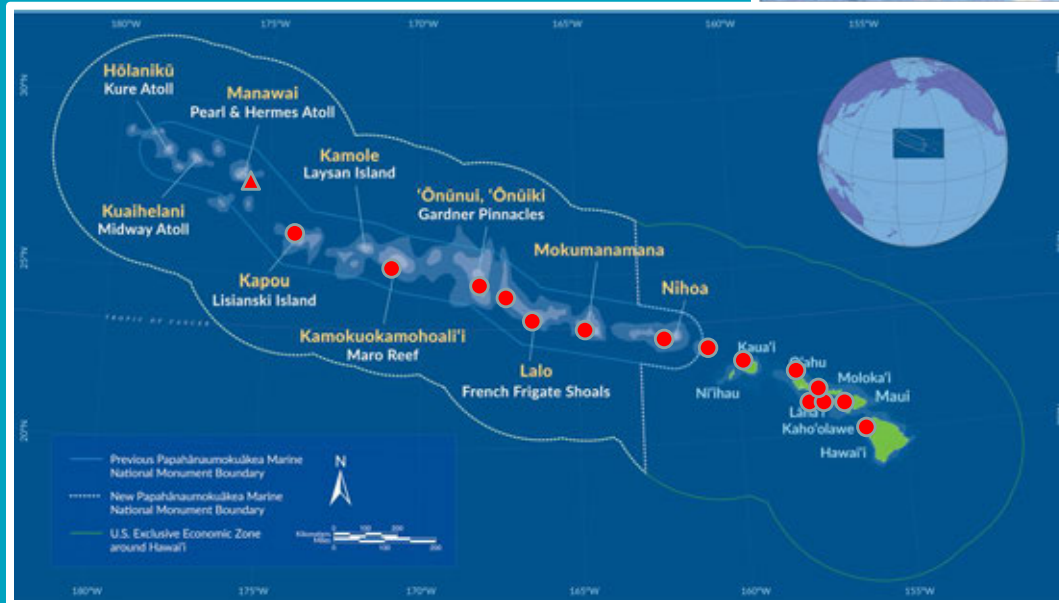
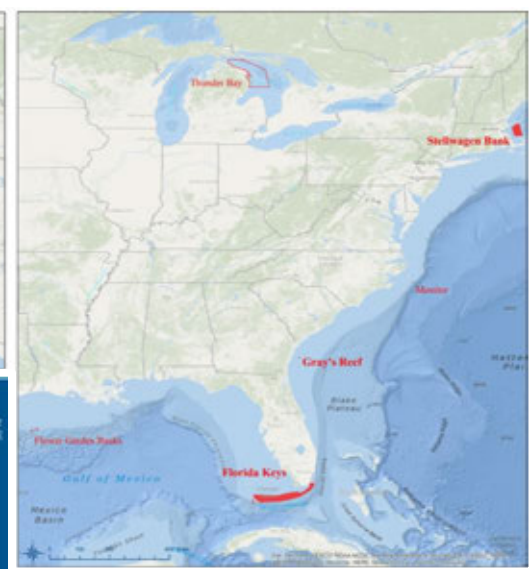
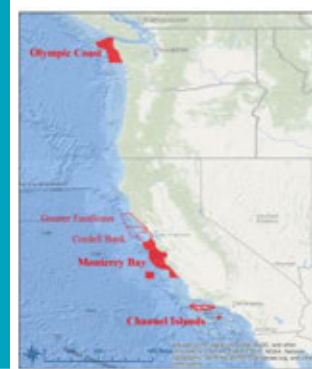
Scale varies in this perspective. Adapted from National Geographic maps.



SanctSound Project



3-year ONMS-wide effort to study the soundscapes of 7 National Marine Sanctuaries and 1 Marine National Monument funded by the U.S. Navy through a legal settlement



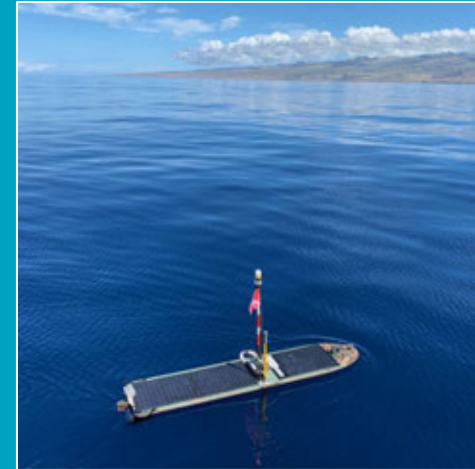


Wave Glider mission to PMNM



Wave Glider SV3:

- Autonomous surface vehicle
- Powered by the sun and waves
- Controlled via satellite link
- Composed of 'float' and 'sub'
- Equipped with hydrophone on 'sub' recording continuously
- WG *Europa* operated by Jupiter Research Foundation out of Puako, Hawaii



Mission objectives:

- Survey the banks and shoals of PMNM for presence of humpback whale song
- Determine how widespread humpback whale presence is in PMNM
- Establish the location of any 'hotspots'

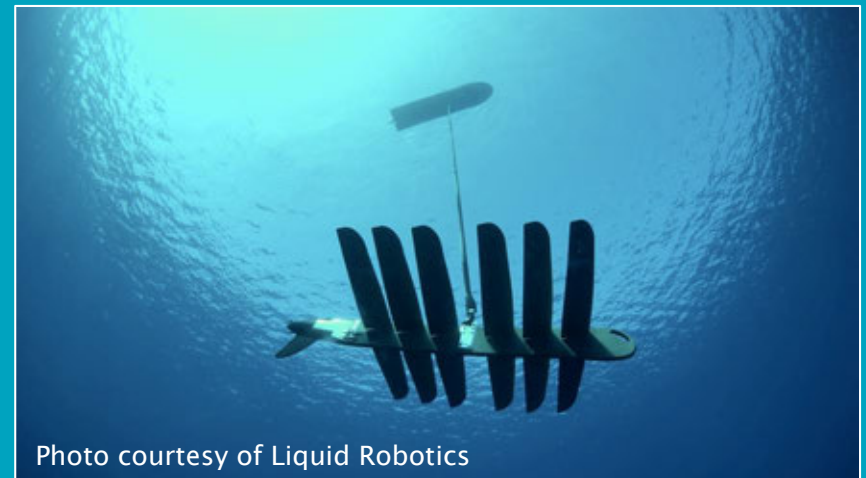
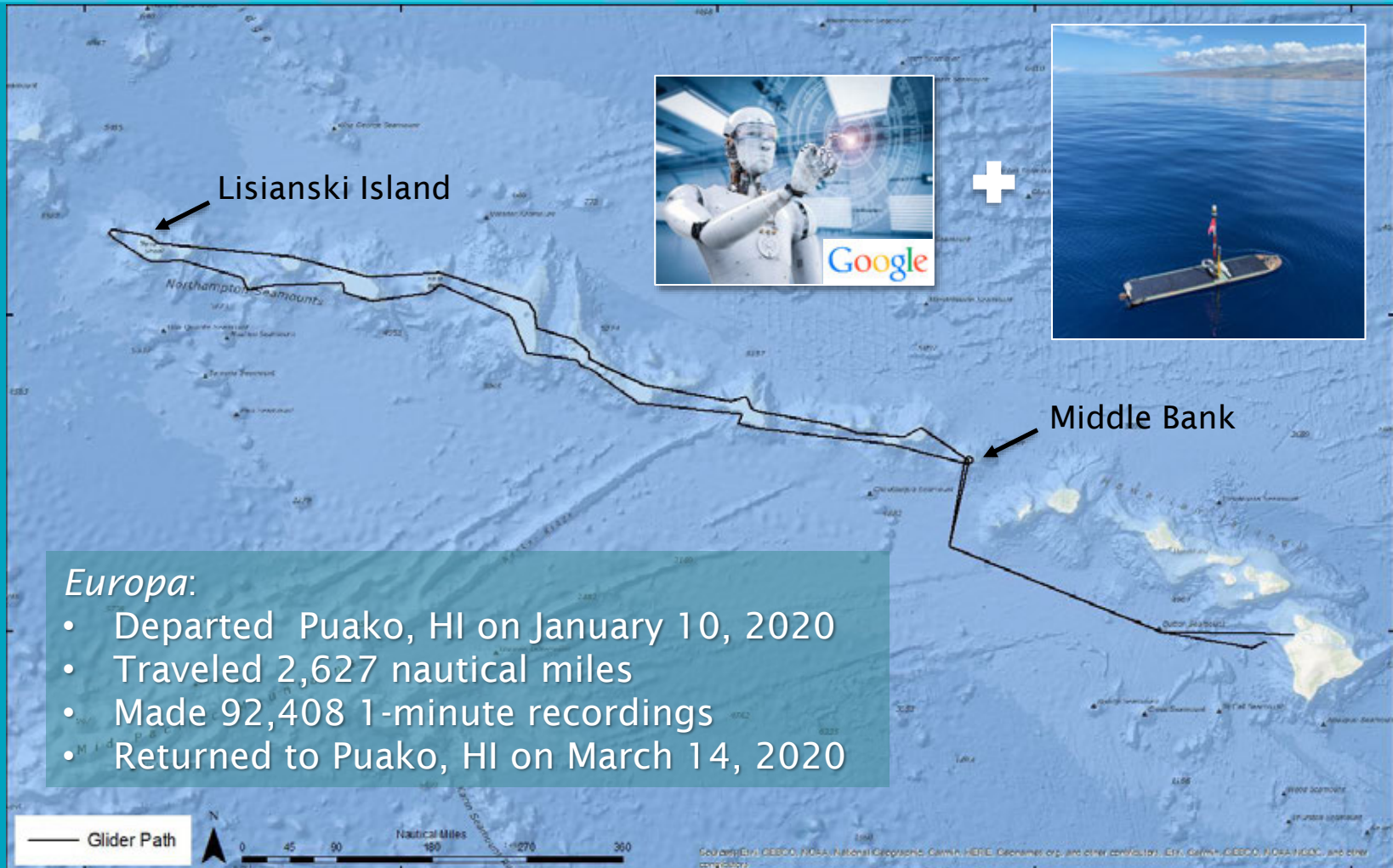
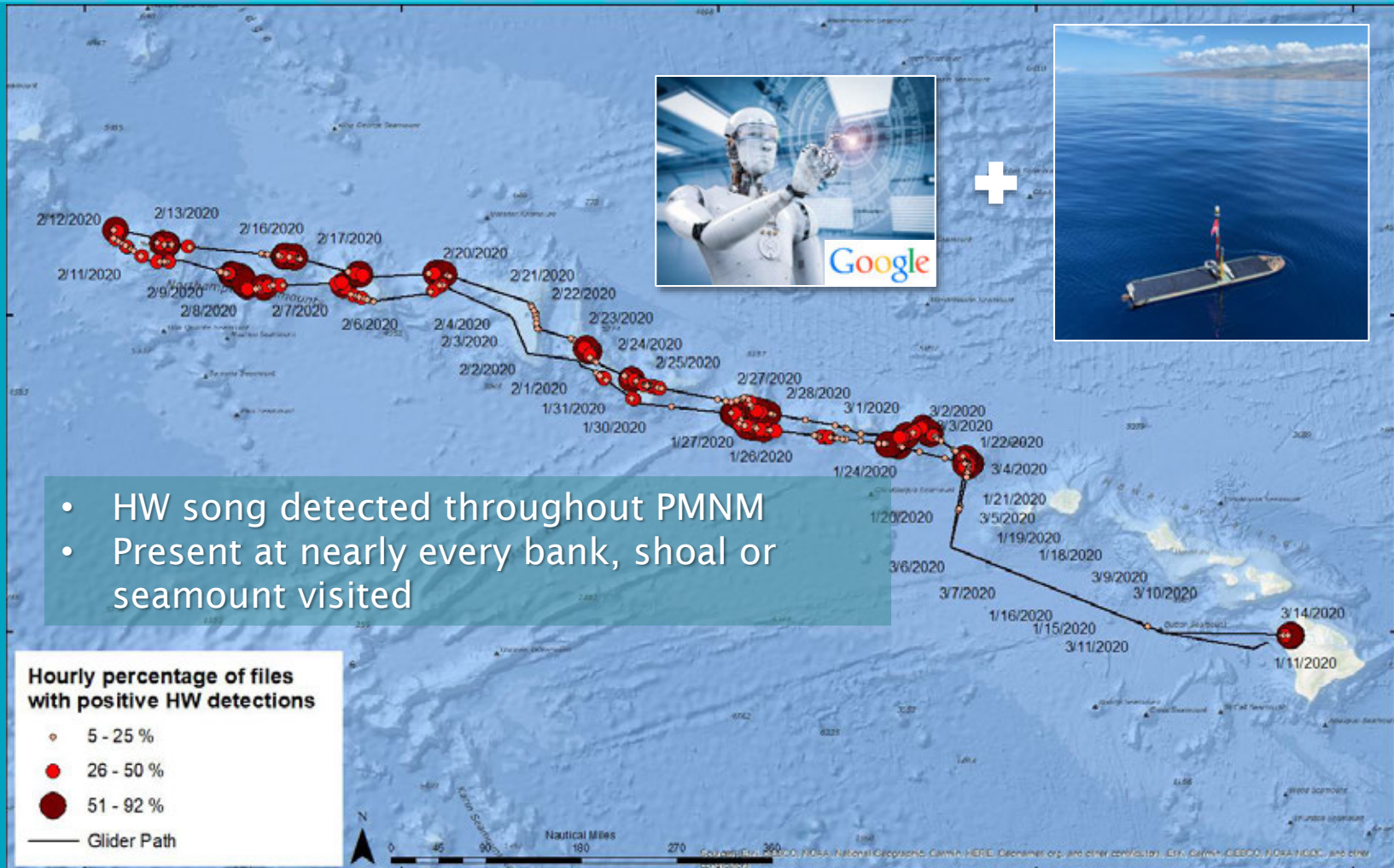


Photo courtesy of Liquid Robotics

Wave Glider mission to PMNM



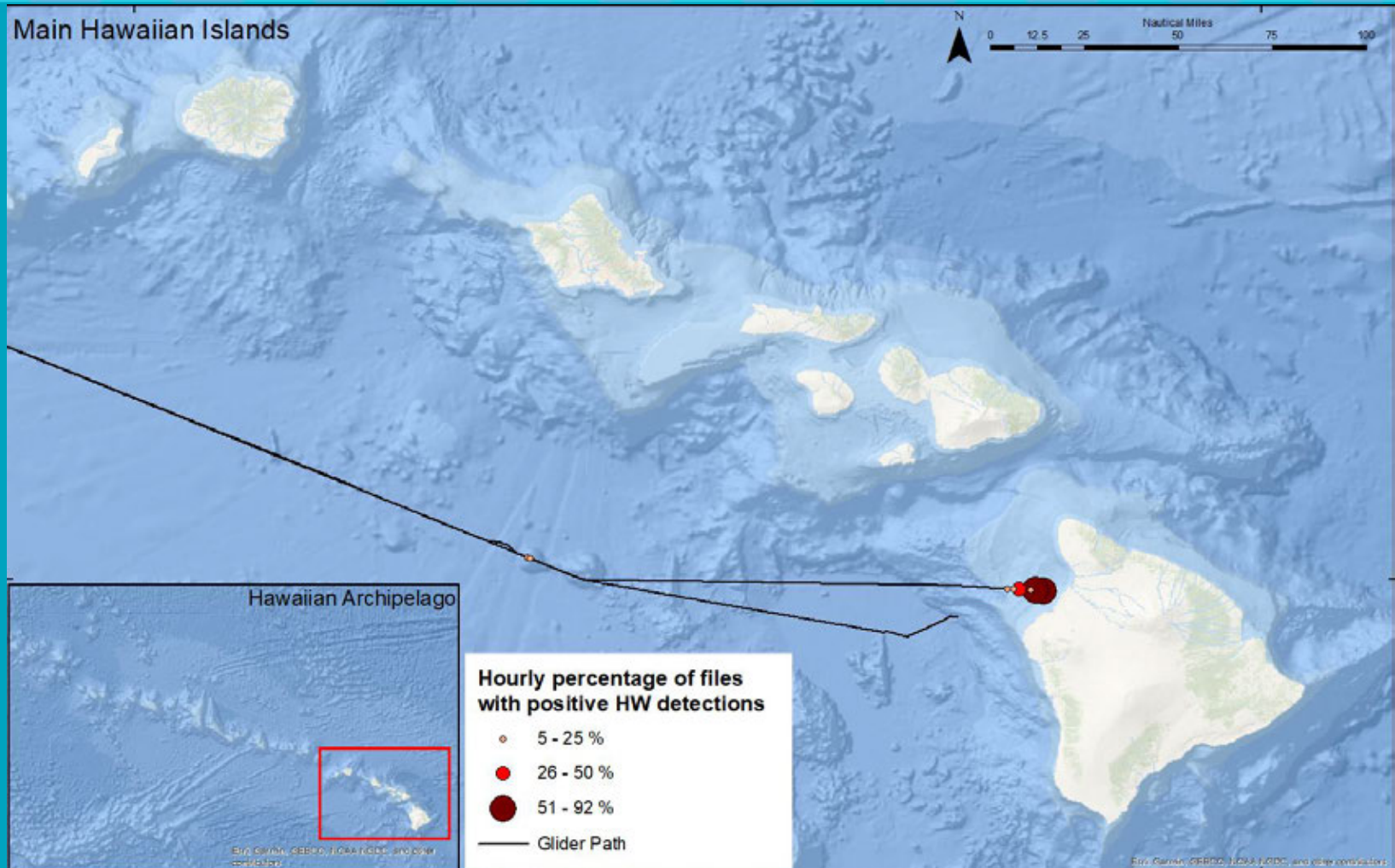
Wave Glider mission to PMNM



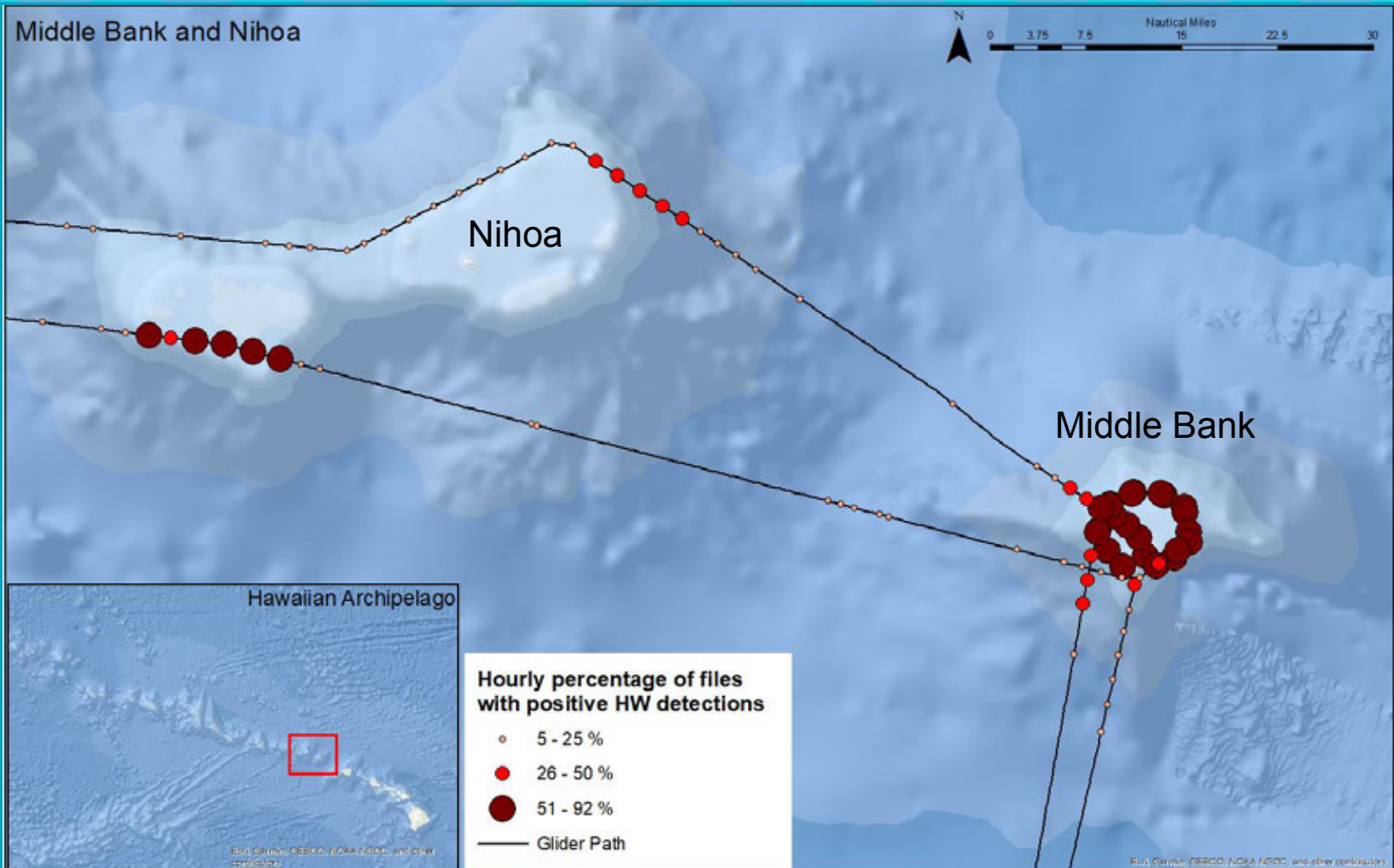
- HW song detected throughout PMNM
- Present at nearly every bank, shoal or seamount visited



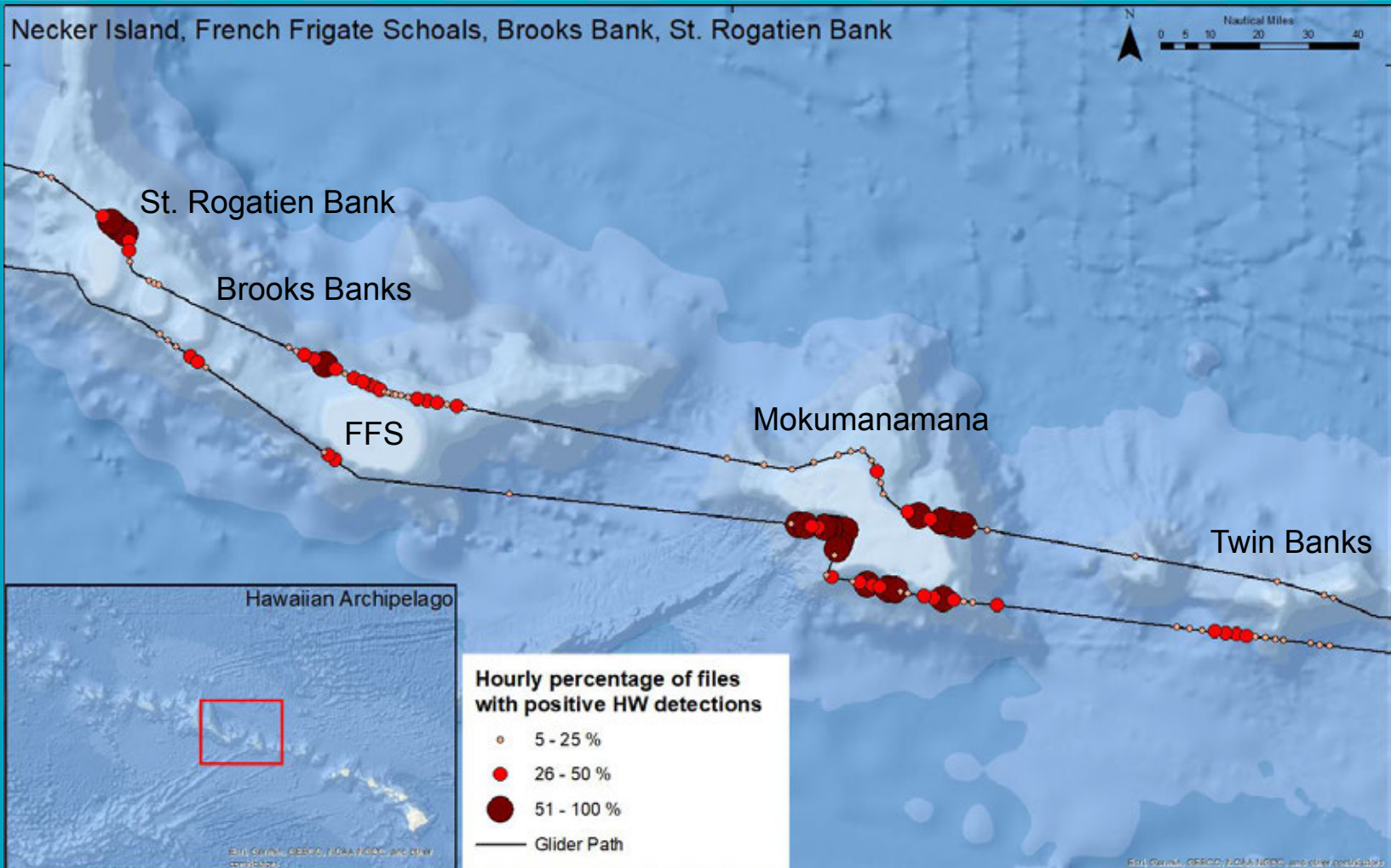
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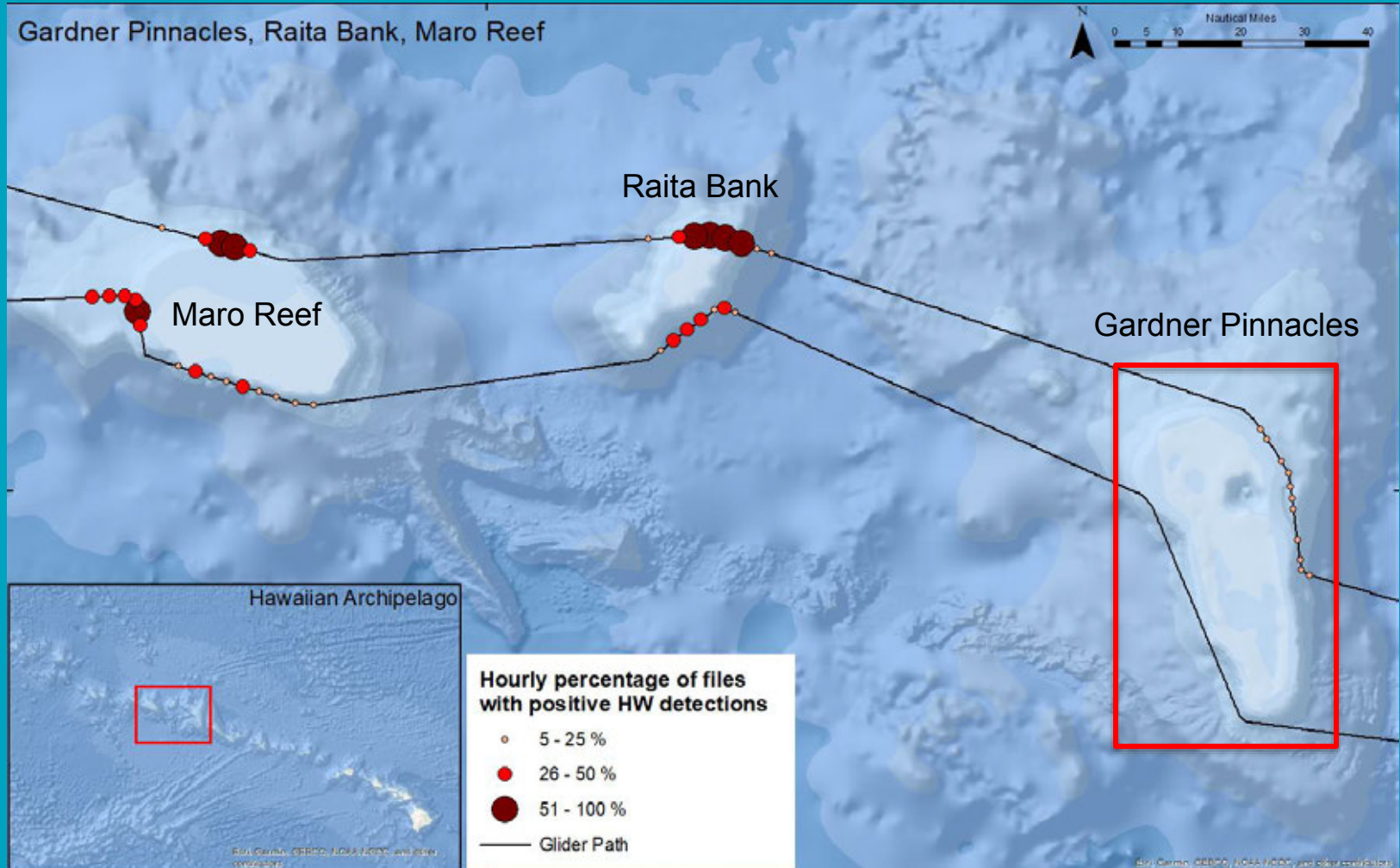
Wave Glider mission to PMNM



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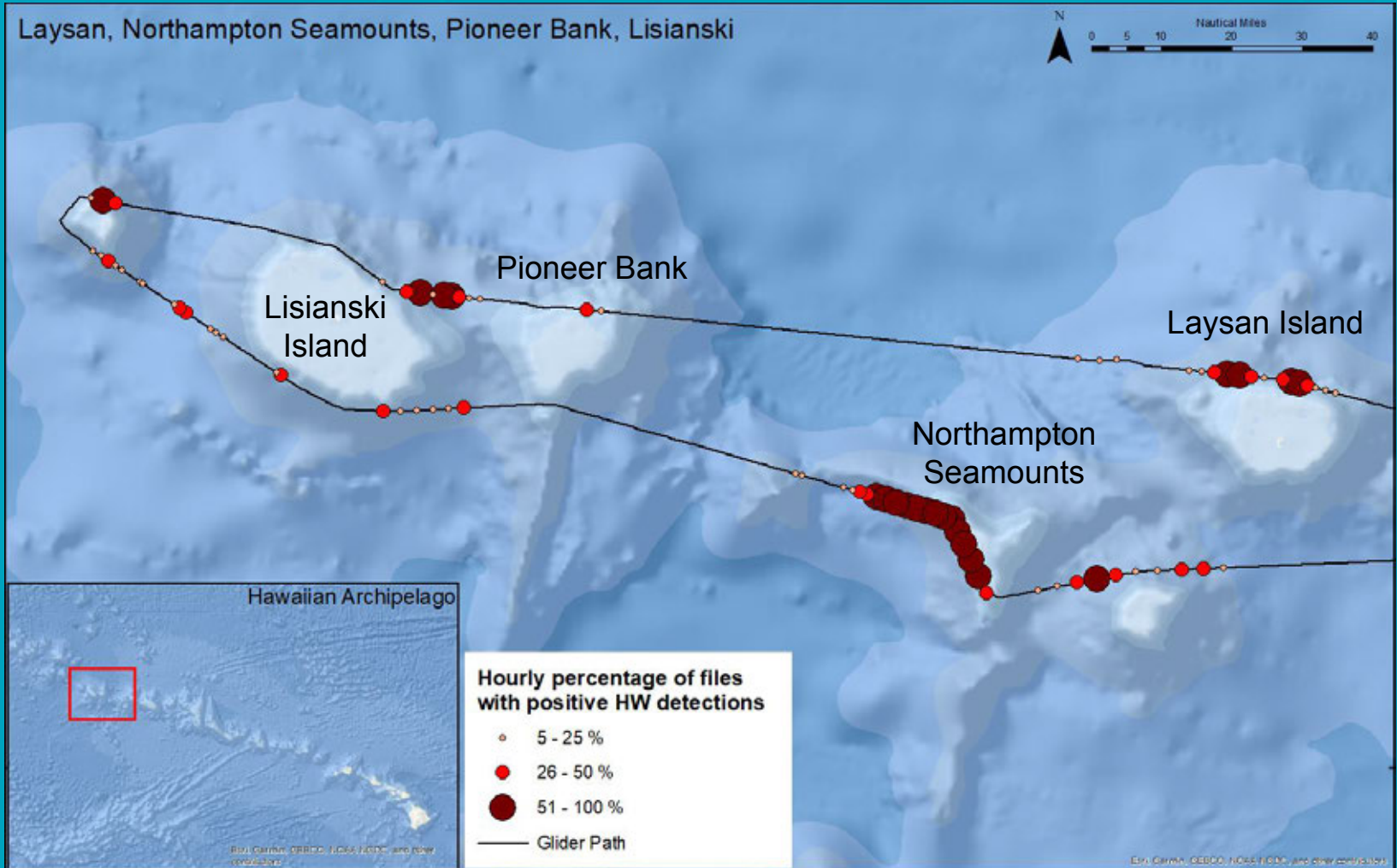


Wave Glider mission to PMNM





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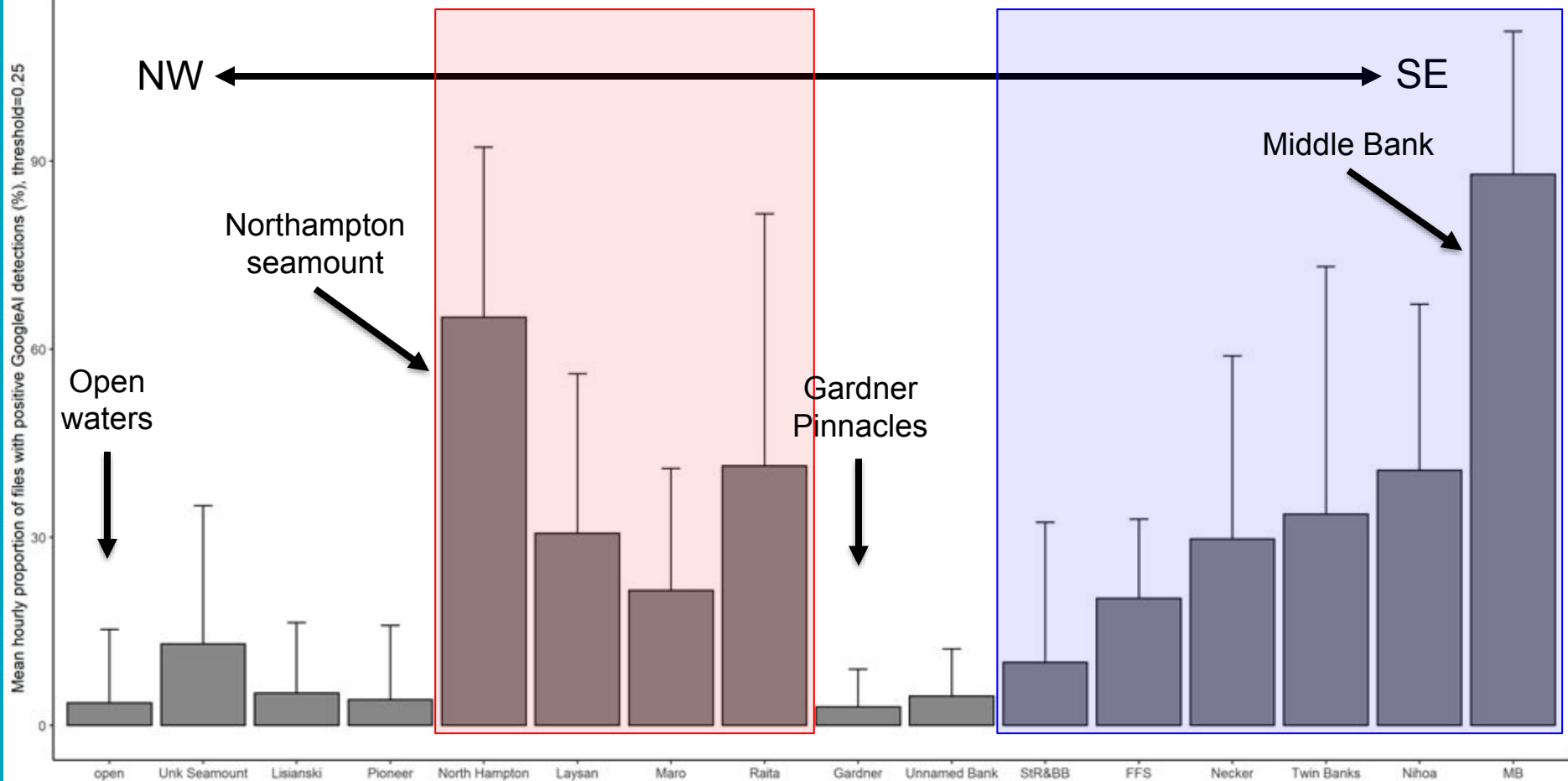




Wave Glider mission to PMNM



HUMPACS - PMNM Glider GoogleAI Humpback whale detections January 10 - March 14, 2020





Final thoughts



- Humpback whales are widely distributed across the Hawaiian archipelago
 - Both MHI and NWHI are important breeding habitats
 - An important consideration for population assessments
- The abundance of song in NWHI suggest that the population may be more structured than previously assumed.
 - Are they all Hawaii DPS whales?



Acknowledgements



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Caveat: Results presented are preliminary until published

