

Fleet Coordination on the Water

Coordinating Multi-Vessel Groups with Meshtastic

Whether managing a sailing club race, leading a kayak tour, or keeping a cruising rally cohesive across an anchorage, coordinating multiple vessels has traditionally required constant VHF radio chatter, pre-agreed schedules, and visual signals. Meshtastic mesh networking reduces radio congestion, enables passive position awareness, and keeps groups connected without requiring constant active communication.

“ **Mesh is a coordination tool, not a rescue system.** It is best-effort - messages may not get through, and positions can be stale or missing. It does NOT replace marine VHF (Ch 16 distress / DSC), an EPIRB, a PLB, or AIS. Search and rescue and the Coast Guard do NOT monitor Meshtastic. Carry dedicated marine safety gear; use mesh only as a supplement.

Sailing Club Racing

- **Start line communication:** The Race Committee vessel carries a mesh node. Signals, postponements, and course changes are sent as text messages received by competing boats within mesh range without occupying the race channel.
- **Fleet position display:** Spectator boats and coach vessels see the entire fleet on the Meshtastic map. A coach can identify a struggling boat without VHF interruption.
- **Safety check-ins:** At the end of offshore races, each finisher can send a check-in message. Mesh check-ins can supplement, not replace, VHF roll call - treat a missing check-in as a possible comms failure and follow up via VHF / established safety procedure rather than assuming a boat is accounted for.

Kayak Tour Groups

A commercial kayak tour operator leading 8-12 paddlers over open water faces the challenge of communication between a lead guide and a sweep guide, neither of whom can easily use a VHF handset while paddling. Meshtastic on waterproofed deck-bag nodes allows:

- Lead-to-sweep text: "Rounding the point, group spread 500 m, holding for rest stop."
- Position tracking: The sweep guide can see the lead guide's last reported position even around a headland without visual contact (subject to mesh range and best-effort delivery).
- Emergency: A capsized-guide SOS reaches other group members and, if an internet-connected (MQTT) node happens to be in range, only people monitoring that private channel - NOT the Coast Guard or SAR. MQTT forwards only to subscribers of that broker/channel; it is not a distress mechanism and does not summon outside rescue. For a real water emergency use a VHF DSC distress call, EPIRB, or PLB. Mesh is not a distress service.

Cruising Rallies

A cruising rally of 15-20 boats uses mesh for safety coordination outside the net schedule:

- **Night watches:** Positions update on an interval (e.g. every 5 minutes). Periodic position updates aid general fleet awareness and cohesion. They are NOT a collision-avoidance system - vessels move significantly between updates and packets can drop. Maintain a proper visual / radar / AIS watch per COLREGs.
- **Arrival sequencing:** The lead boat sends waypoints for the anchorage and available depth. Following boats plan their approach without clogging the SSB net.
- **Social channel:** A secondary Meshtastic channel (separate PSK) serves as social chat, keeping the primary safety channel clean.

Dinghy Rescue Coordination

When a dinghy capsizes in a sailing regatta, multiple rescue boats may respond. A Meshtastic node on the committee boat and each rescue vessel can help the RC direct the closest rescue boat without radio congestion - as a coordination aid that supplements, not replaces, VHF for rescue. If the capsized boat's node was broadcasting position and its last packet was received, that last-known position may appear on rescue vessel maps - particularly useful in poor visibility or heavy wind noise that makes VHF difficult - but it may be stale or unavailable if the node was lost or submerged on capsize. Keep VHF as the primary distress and coordination channel.

Example Configuration: 10-Boat Sailing Club

An example configuration suitable for a ~10-boat club might be:

- **Hardware:** 10x Heltec V3 nodes in waterproof enclosures, mounted on stern rails with 3 dBi marine whip antennas, connected to 12V house bank
- **Meshtastic preset:** LongFast, custom channel "CLUB" with PSK distributed at the season briefing
- **GPS interval:** 3 minutes underway
- **Shore relay:** One Heltec V3 on the clubhouse rooftop (set to CLIENT or ROUTER_LATE; the dedicated ROUTER role is deprecated as of firmware 2.7.11) with MQTT enabled, bridging to the club's Telegram group for race results
- **Total cost:** Approximately \$600 hardware, zero ongoing subscription cost
- **Training:** 1-hour orientation at season start; new members pair phones and verify channel access

Limitations and Best Practices

Meshtastic is not a substitute for VHF DSC distress calling, EPIRB, AIS, or a PLB. Position it as an enhancement to existing safety equipment, not a replacement. Note that AIS itself is not the primary collision-avoidance tool - per USCG/COLREGs a proper visual and radar lookout is primary and AIS should never be solely relied upon. Range varies with conditions: wave-obscured horizons temporarily reduce range for low-mounted nodes, and multi-hop via other fleet vessels only helps when a powered relay node is actually in range. Always verify all fleet nodes are communicating at the pre-departure check-in before leaving the dock.

Revision #3

Created 2026-05-03 06:19:22 UTC by Mesh America Admin

Updated 2026-06-10 00:26:39 UTC by Mesh America Admin