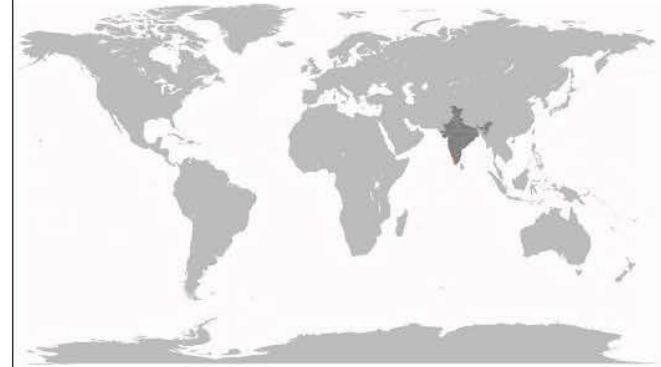


What they know: early warning early action with traditional fishers of southwestern India

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- Thiruvananthapuram district —home to over 50,000 artisanal fishers living in villages —has a coastline comprising sandy beaches, estuaries, rocky promontories, and granite seawalls erected to mitigate rampant erosion.



Local fishers predominantly use small boats, canoes, and rafts ranging from a few meters to approximately 34 feet (10 meters) in length.



As the Eastern Arabian Sea becomes stormier, traditional fishing communities living on the southwestern coast of India are increasingly exposed to occupational risks due to high winds and rough sea conditions.



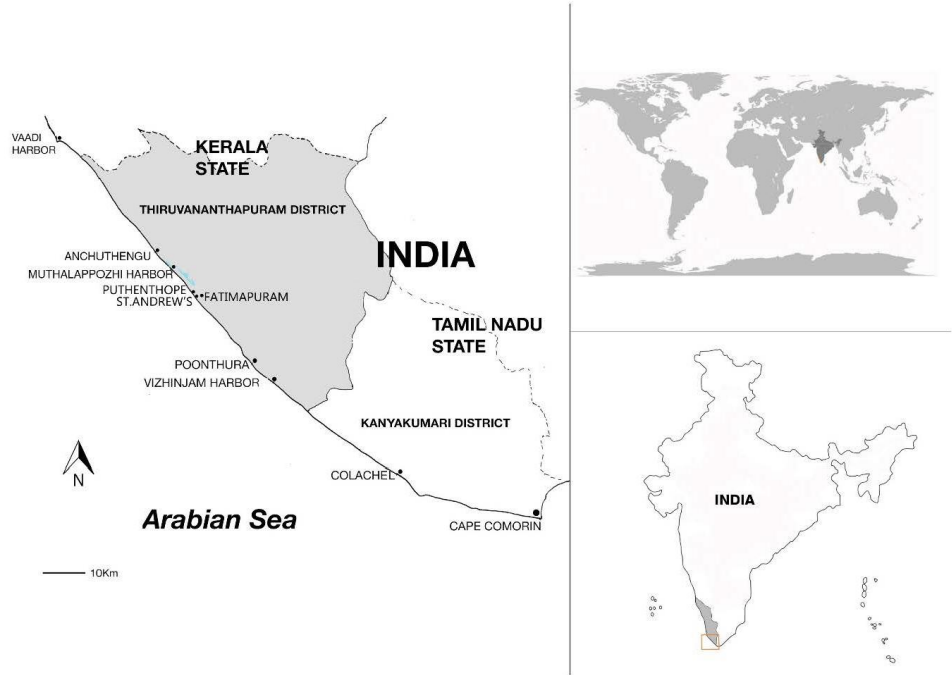
Between 2016 and 2021, 345 fishers reportedly died while fishing off the Kerala coast—145 km from Thiruvananthapuram alone **(Kumar, 2021)**. This figure does not include those who died in the sea in a very severe cyclonic storm in November 2017 that killed another 365, mostly from Thiruvananthapuram and the district of Kanyakumari on this southern side **(Martin et al 2022)**.

Traditional Knowledge Use in EWEA

How artisanal fishers in southwestern India read sea, sky and social signals to act on early warnings

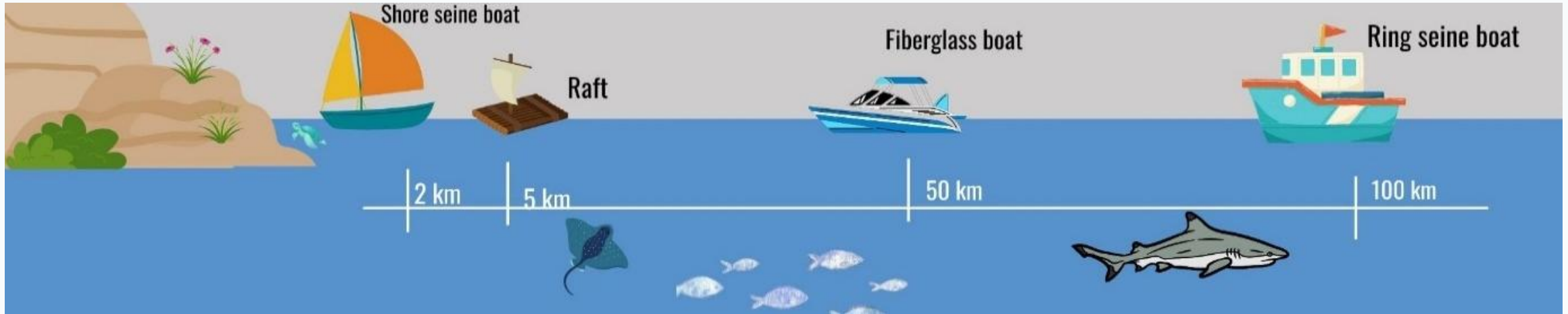
Early Warning Early Action

Traditional ecological knowledge



Why traditional knowledge matters

The local EWEA problem is not just receiving forecasts, but making them actionable.



Stormier seas

Monsoon winds, swells and cyclones create high-risk windows for small craft.

Livelihood trade-offs

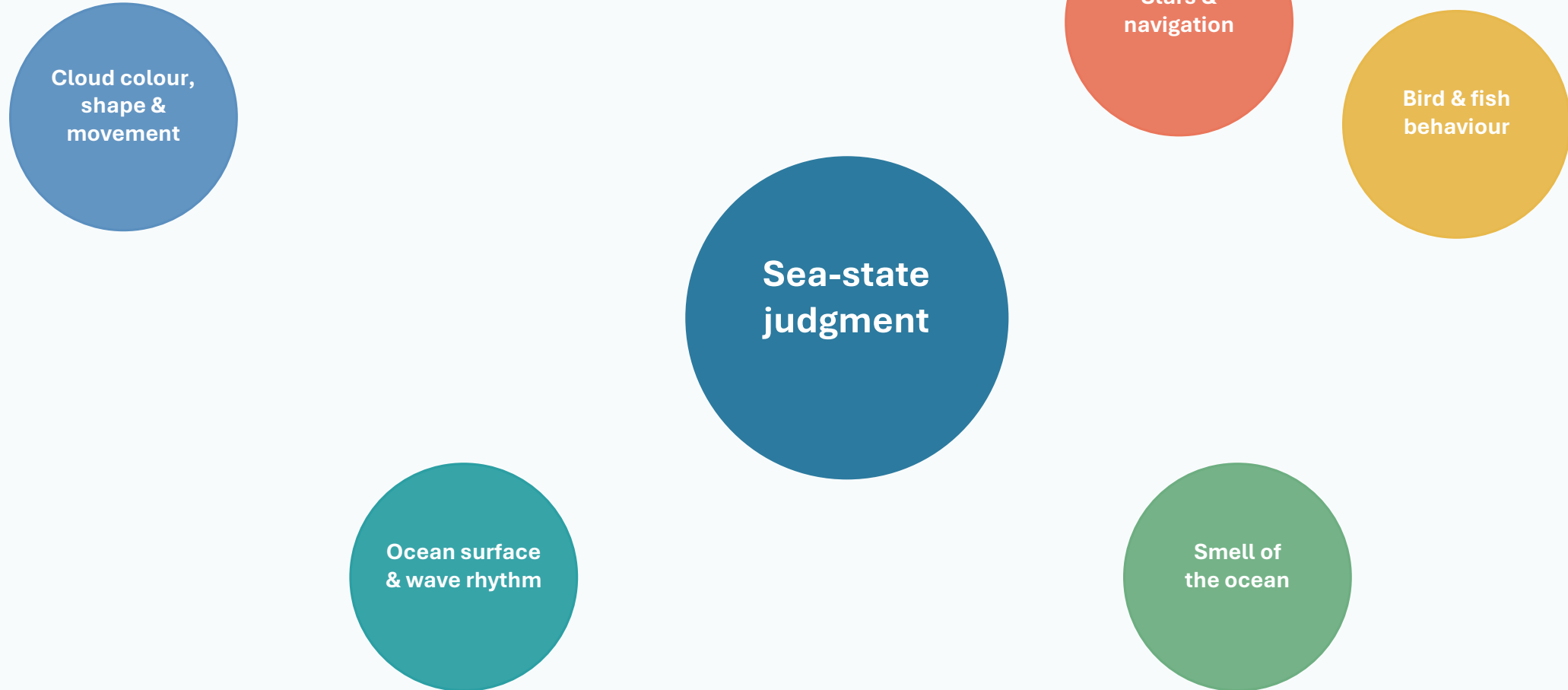
The same seasons can bring more fish, pushing crews to weigh safety against income.

Last-mile interpretation

Warnings become useful only when fishers translate them into place-specific decisions.

What fishers “listen” to

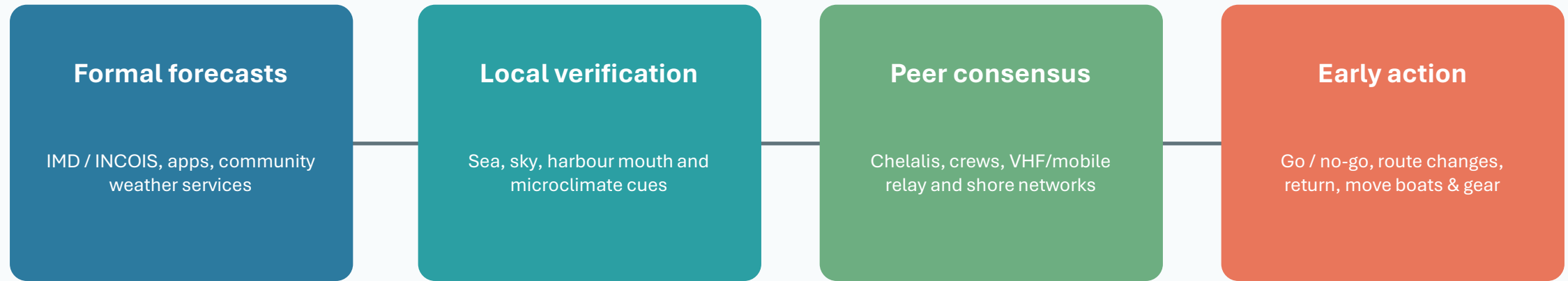
Traditional knowledge is a sensory, embodied and collective way of reading marine risk.



Experienced fishers use subtle cues—such as pauses between wave sets and changes in wind speed—to judge when to cross the surf zone or return.

Traditional knowledge is used with—not instead of—forecasts

Most younger fishers synthesize apps, official warnings, peer advice and direct observation.



Feedback loop: repeated experience shapes trust, interpretation and future decisions

Early actions shaped by traditional knowledge

Actions are practical, local and constrained by craft type, distance offshore and infrastructure.



Raft and shore seine fishers often avoid monsoon fishing.



Crews alter timing, course or fishing grounds when conditions shift.



Fiberglass and ring seine crews haul nets and head back when wind or waves intensify.



During swell forecasts, boats and gear are moved inland or to safer harbours.

Knowledge enables action; support systems determine whether action is feasible

Design principles for EWEA that respects traditional knowledge

Shift from one-way alerts to co-produced, locally trusted early action systems.

1

Co-produce forecasts

Use fisher feedback to localize warnings by harbour, reef, beach and nearshore hazard zone.

2

Translate into decisions

Link wind, swell and wave information to clear triggers for craft-specific action.

3

Use trusted channels

Combine official alerts with churches, peer networks, community media, VHF and WhatsApp.

4

Enable action

Pair warnings with safe harbours, drills, compensation, insurance and search-and-rescue planning.