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Ms. Janet Coit
Assistant Administrator, NOAA Fisheries
U.S. Department of Commerce
1404 Constitution Ave., NW
Washington, DC 20230

Dr. Jon Hare
Science and Research Director,
Northeast Fisheries Science Center
166 Water Street
Woods Hole, MA 02543

January 31, 2023

Re: Comments on the Northeast Fisheries Science Center, Draft Ropeless Roadmap: A Strategy to Develop On-Demand Fishing

Dear Assistant Administrator Janet Coit and Director Dr. Jon Hare,

The Pew Charitable Trusts is writing in support of and suggests improvements to the Draft Ropeless Roadmap: A Strategy to Develop On-Demand Fishing (Ropeless Roadmap). We appreciate the steps that NOAA Fisheries has made toward incorporating on-demand technologies into trap/pot fisheries on both the east and west coasts. As the need for larger and longer seasonal restricted areas increases to protect marine mammals, especially the critically endangered North Atlantic right whale, the integration of on-demand fishing represents the best solution to both reduce illegal entanglements and continue profitable fishing communities.

While Pew appreciates NOAA Fisheries' efforts in developing the Ropeless Roadmap, there are critical gaps in the draft plan that must be addressed. Specifically, the Ropeless Roadmap fails to outline a strategy to overcome gear conflict and geolocation challenges, ensure interoperability, or to outline experimental fishing phases. As a "living document" and to accommodate the growing demand for on-demand fishing systems, we believe it is essential for the Ropeless Roadmap to be updated to include clear goals and objectives, describe what success looks like, and provide reasonable timelines by which they will be completed.

1. Gear conflict

NOAA Fisheries identified "Resolving Gear Conflict" as the current phase in the steps towards the broader adoption of on-demand fishing gear but does not clearly identify acoustic-based location marking as the main method for locating gear on the seafloor in high density fishing locations. Although most commercially available on-demand systems rely on GPS to locate gear, it is not possible to lessen gear conflict in high density fishing areas with these GPS systems as they cannot reflect where gear is located on the seafloor. In contrast, systems that rely on acoustics

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to locate gear can provide sufficient accuracy to reduce gear conflict and to meet the same standards that are currently provided by traditional gear with a visible surface buoy. Unfortunately, the development of acoustic gear location marking is lagging. Therefore, NOAA Fisheries should coherently define high density fishing and articulate that it is essential for on-demand devices to rely on acoustic gear location marking in high density fishing areas.

Current regulations specify that fixed fishing gear must use uniquely marked buoys to minimize gear conflict.[1] Therefore, future regulations that allow on-demand fishing will need to require gear location marking devices to minimize gear conflict. NOAA Fisheries must require that each on-demand system conform to specifications that guarantees that the system minimizes conflict with all users.

2. Interoperability

NOAA Fisheries stated in the Ropeless Roadmap: "it is critical that this geolocation system rely on open-source rather than proprietary technology." The Ropeless Roadmap, however, fails to expand upon this or identify a development pathway to interoperability, which presents challenges for widespread commercial adoption.

Currently, most on-demand gear manufacturers are developing devices with proprietary location marking i.e., designs to detect and communicate with only their own systems. All on-demand systems are currently not, but must be, interoperable, regardless of the manufacturer. This is critical for two reasons. First, this approach would encourage competition among manufacturers to produce systems that are as low cost as possible while also meeting fishermen's needs. Second, only a single transducer and receiver would be required for each fishing and enforcement vessel. This would allow the vessels to detect and report locations of on-demand trawls on the seafloor regardless of the manufacturer.

To achieve interoperability, NOAA Fisheries should clearly state that eventually (on a clear timeline), no on-demand fishing system may be fished legally if it does not adopt specifications which consist of open standards and protocols for acoustic localization and communication. These specifications should explain the concept of interoperability and be based upon requirements identified by on-demand fishing gear users and stakeholders. Once this is formally announced,

[1] Regulations 50 CFR 229.32(b) and (c). Authorization of Commercial Fisheries under the Marine Mammal Protection Act of 1972, Atlantic large whale take reduction plan regulations.

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manufacturers would conform, and Congressionally-appropriated funds could then be made available to support the development, adoption, and implementations of open-source technologies.

3. Cloud database

NOAA Fisheries stated in the Ropeless Roadmap: "the best, most universal system would have both interoperable acoustics and a centralized database system that could provide real-time locations to approaching and passing vessels." To that end, NOAA Fisheries has partnered with EarthRanger to visualize data from different on-demand manufacturers on a web-based platform. We support this effort but offer the following comments and suggestions.

First, enforcement officials will need to have access to all data in real time (via the cloud and at sea) to adequately monitor fisheries. This requires that acoustics to signal and locate gear be interoperable, so vessels can receive near real-time locations from deployed gear around them, and then update the cloud database with their location positions. Fixed-gear fishing trawls can move after being set, either due to weather, strong ocean currents, or due to unintended interactions with mobile fishing vessels. If trawls with on-demand gear move, vessels require an on-demand systems transducer to update the new gear position, notify the owner, and update the new position information in the cloud. Therefore, GPS positions of fixed-gear fishing locations sent to the cloud are not entirely accurate representations of where this gear is on the seafloor. For real-time information, at sea acoustic systems and the cloud-based platform need to operate together to effectively combat gear conflict and lost gear.

Second, mobile fishermen operating in the location of on-demand fishing gear need to know where fixed fishing gear is located. For all systems to operate together, it may require that mobile fishing vessels install a transducer in their vessel. Another potential solution would be the development of "black box" technology which would include a processor and a satellite modem in a single device. This approach would be similar to a VMS black box transceiver. The black box would regularly push and pull location data to and from the EarthRanger cloud hub and would display location data on any mobile vessel's chart plotter. This would allow mobile vessels to see the last location that a ropeless system shared to the cloud. Although it wouldn't be as close to real-time as if the mobile vessel had their own transducer to triangulate on-demand gear on the seafloor as they drive by, it could be enough to reduce gear conflict.

Third, chart plotting companies have yet to establish communication protocols to receive gear positions from the seafloor and display them on charts. This needs to be solved so that when the cloud is unavailable, fishermen are still able to see the gear from a sufficient distance away.

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Lastly, there are limitations to transmitting gear positions from an on-demand system while at sea. To access the EarthRanger platform, users would need a cellular or satellite connection. Currently, most lobster vessels download position data before departing on a fishing trip. For offshore fisheries, often out of cell phone range, access via satellite is expensive due to high satellite communication costs. Therefore, long-term solutions must be developed with offshore fisheries in mind.

NOAA Fisheries must continue to make regular progress on all these issues, taking the lead and publishing policies in a timely way, so that gear conflict is resolved before it begins.

4. Experimental Fishing

NOAA Fisheries identifies "Expanding Experimental Fishing: 2023 and Beyond" as the next phase in the broader adoption of on-demand fishing. This section of the Ropeless Roadmap focuses on potential regulatory scenarios but fails to expand upon research goals or a timeline for action. NOAA Fisheries should outline a sequence of experimental fishery testing phases. The phases should begin with comparisons between on-demand and traditional fishing methods, and eventually trial on-demand systems during real fishing operations to determine operational feasibility of system retrievals, acoustic reporting, and chart-plotter displays.

To date, many permit holders in the American lobster fishery have been resistant to transitioning to on-demand fishing. Meanwhile, some fishery participants have been willing collaborators in testing ropeless gear and finding solutions to gear conflict through location marking. NOAA Fisheries has helped these early adopters borrow gear and work together with manufacturers. However, soon the fishery will be beyond this phase where a small portion of fishermen are using on-demand gear. With a right whale population estimate of 356 individual whales[2] and 70 breeding females[3] and continuing and ongoing mortality and serious injury occurring at a rate of 24 whales

[2] Pettis, et. al. (2021). North Atlantic Right Whale Consortium 2020 Annual Report Card. ("2020 Annual Report Card") p. 4

[3] The Guardian (Oct. 30, 2020). Humans pushing North Atlantic right whale to extinction faster than believed.. ("New modeling says just 356 remain – down from 409 last year. The 70 breeding females could disappear in 10-20 years.; CBC News (Oct. 26, 2020). New population estimate suggests only 356 North Atlantic right whales left. (paraphrasing Phillip Hamilton Senior Scientist at the Anderson Cabot Center for Ocean Life at the New England Aquarium, "there are roughly 70 breeding females in the population. He said low birth rates coupled with whale deaths means there could be no females left in the next 10 to 20 years."); Hamilton, P., Senior Scientist, New England Aquarium, Personal Communication, (Dec 2020). "The number of "presumed alive" calving females photographed in the last six years is 82, however this number is problematic as it is showing a pattern of

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per year,[4] NOAA Fisheries is running out of time to turn the tide. Changes in fishing methods for trap/pot fisheries in the U.S. and Canada are essential to prevent the extinction of the North Atlantic right whale. NOAA Fisheries must update the Ropeless Roadmap to include a detailed implementation process and timeline so that on-demand gear will be fully operational before the next round of rulemaking to reduce right whale entanglements in the Northeast trap/pot fishery is finalized.

Sincerely,

Peter Baker
Director, Northern Oceans Conservation
The Pew Charitable Trusts

Leah Baumwell
Principal Associate, U.S. and Atlantic Canada Oceans
The Pew Charitable Trusts

overestimating the number of calving females - as some are being lost each year to entanglement, ship strikes, etc. The number of NARW calving females photographed alive in the last three years is 68 and is a more firm and current number. There are also 52 adult females that have not calved yet of which some will calve and some won't."; *see also* Annual Report Card at p. 6 stating that in 2020 there were approximately 77 available cows.

[4] October 26, 2020 NOAA Fisheries Statement on the Preliminary North Atlantic Right Whale Annual Population Estimate. Email from Colleen Coogan at NOAA Fisheries to NOAA Fisheries to Atlantic Large Whale Take Reduction Team ("TRT").