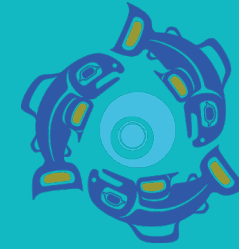




**NOAA
FISHERIES**



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Leveraging Passive Data from Private Recreational Fishing Apps to Support Offshore Wind Development

[ICES Journal of Marine Science, https://doi.org/10.1093/icesjms/fsad154](https://doi.org/10.1093/icesjms/fsad154)

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Primary Challenge is Understanding Where Private Anglers Fish

- Lack of spatial data on private angler trips
 - NOAA's MRIP survey only collects generic fishing locations
- High cost and complexity associated with developing new data streams

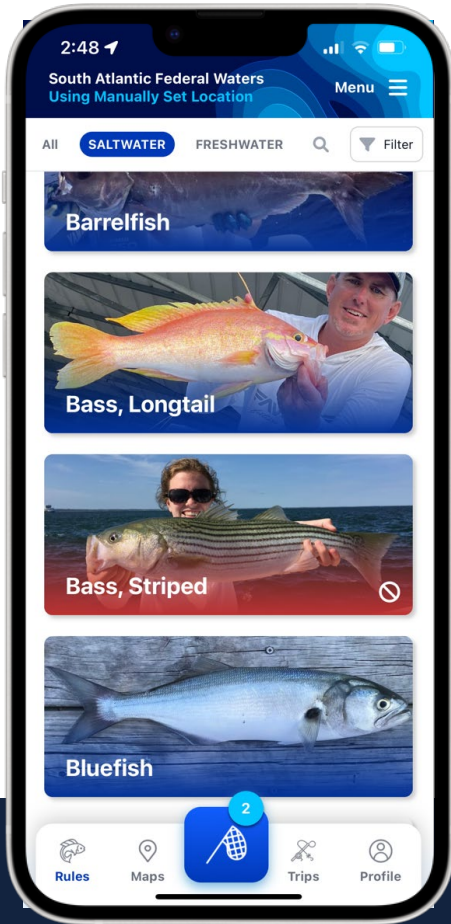


Possible Solution

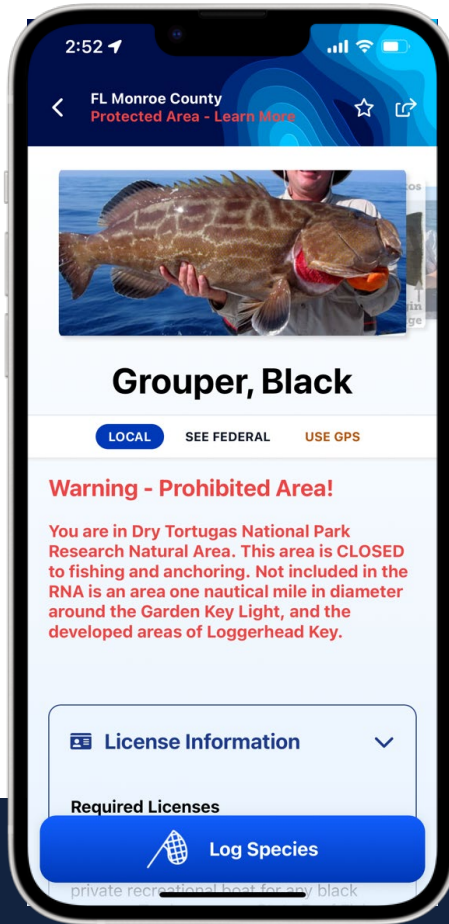
- Leveraging alternative data sources developed for other purposes



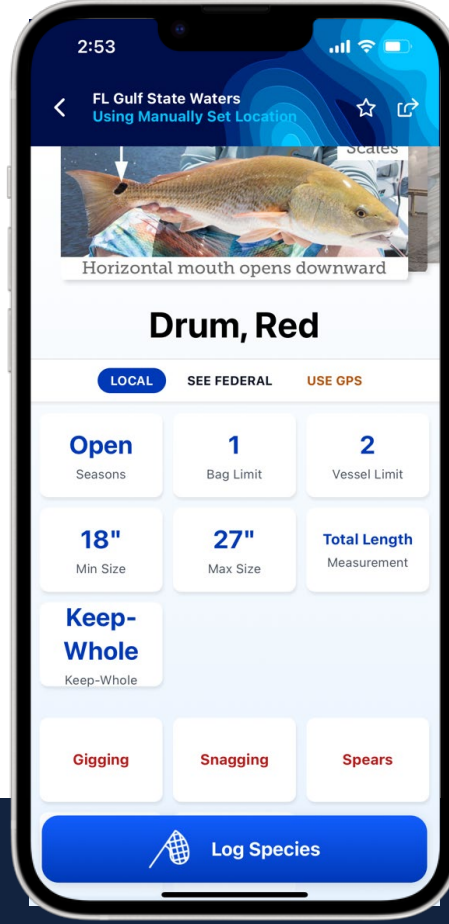
Fish Rules App



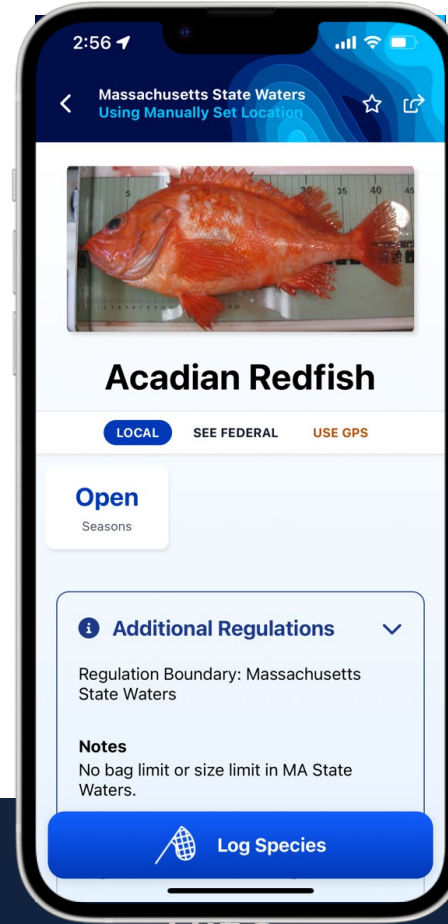
List & Pictures



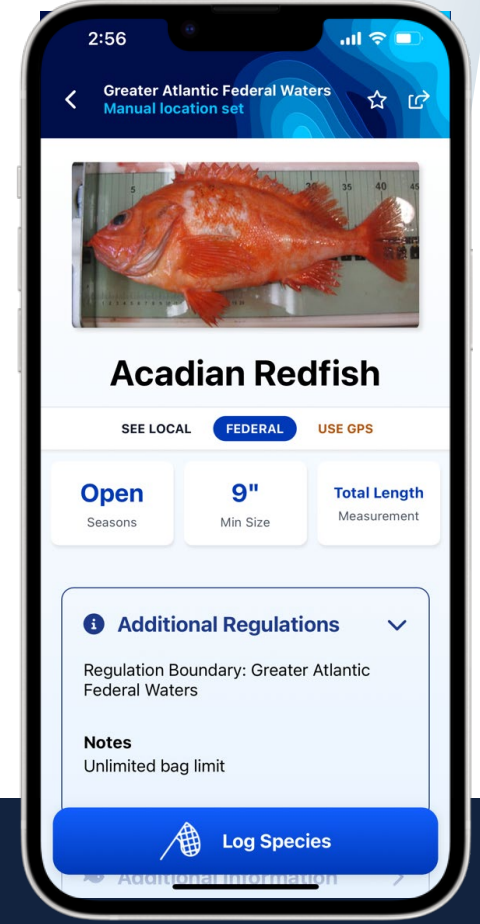
MPAs



Regulation Details



Site-specific Regulations



Minimize Confusion



Fish Rules App

- Can we use anonymized Fish Rules georeferenced search data to understand the spatial distribution of private recreational fishing?
 - **Offshore wind energy development**
 - Area management
 - Marine spatial planning
 - Offshore aquaculture development



Assessment Method

Step 1

- Scan for clusters of species' regulation views in Fish Rules
- Test whether the distribution of points (latitude, longitude) representing anonymous anglers accessing species-specific regulations were spatially uniform or whether the points were clustered in space
 - Kulldorff's flexible spatial scan statistic



Assessment Method

Step 2

- Assess whether the clusters have any meaningful linkage to actual fishing activity
- Test each cluster's ability to explain known species-specific fishing locations from an independent data set
 - For-hire logbook data from Northeast vessel trip reports
- First order stochastic dominance test



Assessment Method

Step 3

- Any species clusters identified in step 1 and validated in step 2 were compared across 26 offshore wind energy lease areas in the Northeast

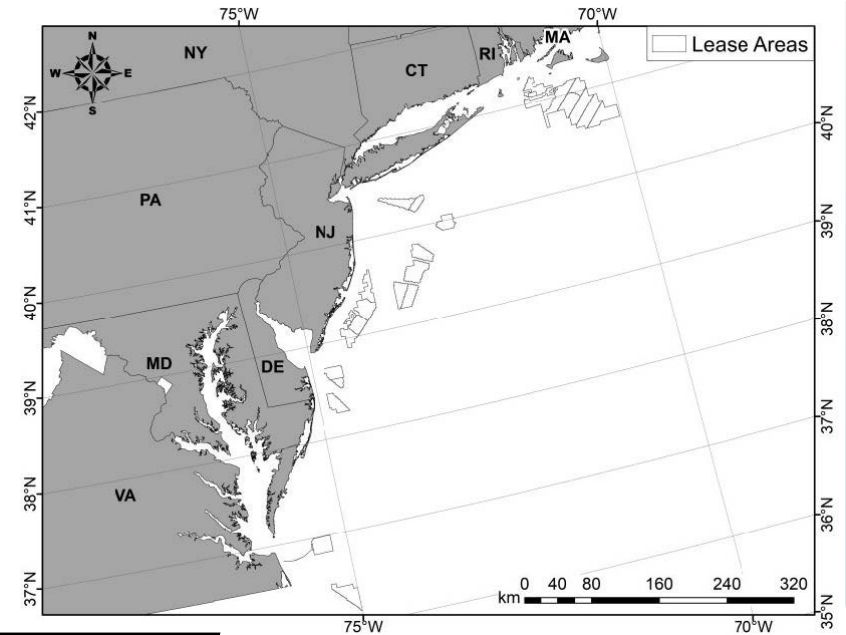


Results

- Step 1: The flexible scan statistic found 24 clusters across 11 species
- Step 2: The for-hire VTR data showed that harvest of these 11 species within the clusters was statistically higher than outside of the clusters
 - Suggests that Fish Rules views can be used to identify species-specific fishing locations
- Step 3: Of the 26 wind lease areas identified in the Northeast, all but 7 overlap the Fish Rules clusters to some degree



Wind Lease Area Overlay Results

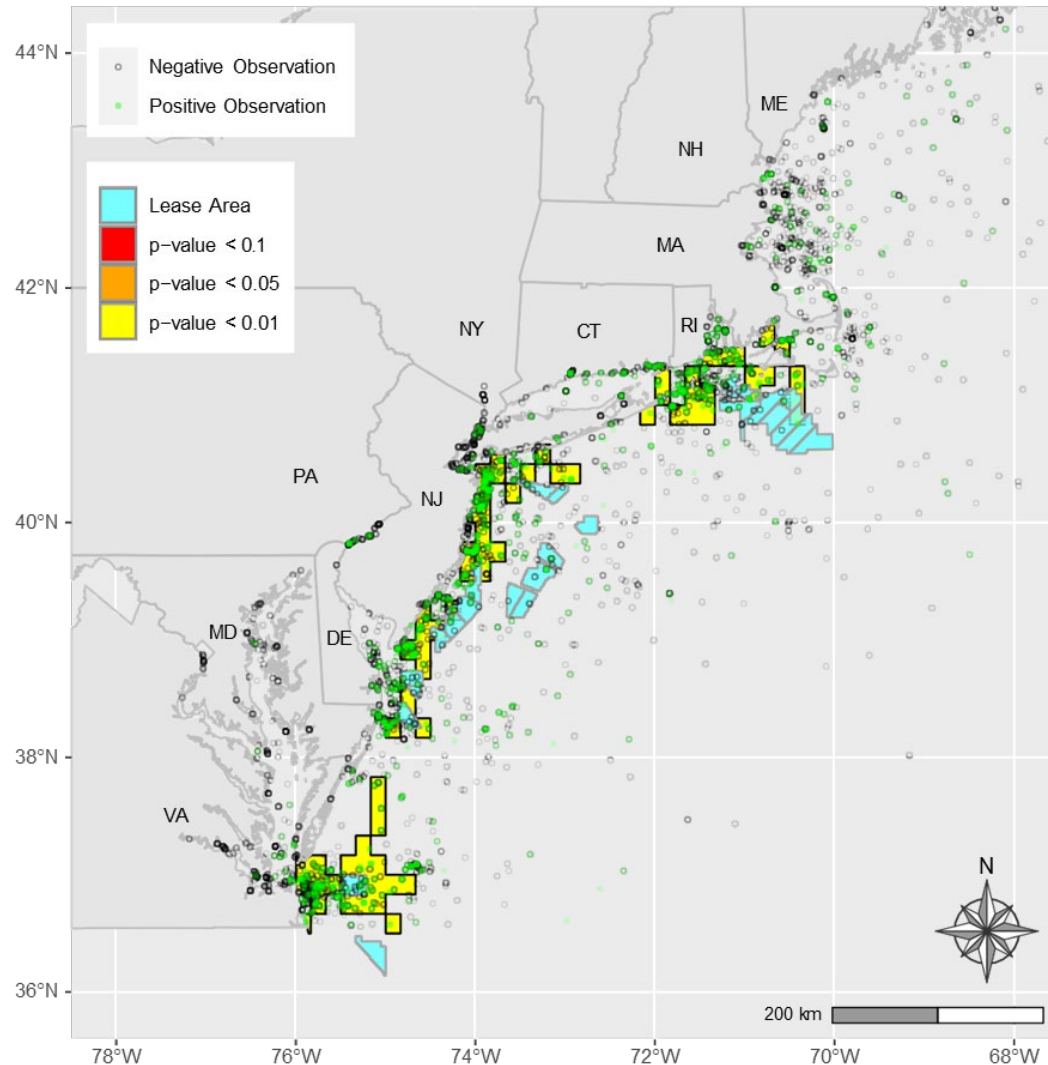


Percentage of each wind energy area overlapping a FishRules species cluster

	Atlantic cod	Black sea bass	Bluefish	Haddock	Red drum	Scup	Striped bass	Summer flounder	Tautog	Windowpane flounder	Winter flounder
OCS-A 0482 - GSOE I	-	45.13	45.39	-	-	-	-	61.73	-	-	-
OCS-A 0483 - Virginia Electric	-	47.78	-	-	55.06	-	-	-	-	-	-
OCS-A 0486 - Revolution	43.87	23.10	-	68.84	-	34.17	-	1.14	23.10	-	-
OCS-A 0487 - Sunrise	82.46	17.37	-	71.16	-	11.30	-	-	17.54	-	-
OCS-A 0490 - US	-	53.31	11.85	-	-	-	-	56.84	-	-	-
OCS-A 0497 - Virginia DOE	-	14.76	-	-	93.65	-	-	-	-	-	-
OCS-A 0498 - Ocean	-	23.78	-	-	-	1.38	-	82.26	88.42	-	-
OCS-A 0499 - Atlantic Shores South	-	13.26	-	-	-	74.46	-	15.59	13.26	-	-
OCS-A 0500 - Bay State	51.59	0.22	-	51.37	-	-	-	0.22	19.38	-	-
OCS-A 0501 - Vineyard	51.95	63.63	-	-	-	-	-	51.59	-	-	-
OCS-A 0512 - Empire	-	10.01	-	-	-	31.29	0.21	31.08	-	31.37	22.07
OCS-A 0517 - South Fork	100.00	-	-	100.00	-	-	-	-	-	-	-
OCS-A 0519 - Skipjack	-	44.70	45.07	-	-	-	-	99.63	-	-	-
OCS-A 0520 - Beacon	0.79	35.45	-	-	-	-	-	0.79	-	-	-
OCS-A 0521 - SouthCoast	-	3.88	-	-	-	-	-	-	-	-	-
OCS-A 0532 - Orsted	-	61.60	-	-	-	-	-	28.66	68.07	-	-
OCS-A 0534 - Park City	0.71	0.78	-	0.53	-	-	-	0.18	33.72	-	-
OCS-A 0539 - Community	-	-	-	-	-	-	-	-	-	24.56	-
OCS-A 0549 - Atlantic Shores North	-	34.76	-	-	-	47.45	-	9.26	-	8.74	0.51



Black Sea Bass



- Positive observation indicates black sea bass regulations were accessed in Fish Rules (highlighted in green)
- A negative observation indicates regulation views for another species
- Squares illustrate the location and significance level of the 4 black sea bass clusters
- The 4 clusters overlap 17 wind lease areas, which are highlighted in blue

Conclusions

- Recreational fishing app data (Fish Rules) can be used to inform ocean use management
- Low-cost, non-invasive approach for quantifying species-specific spatial and temporal patterns of private angler use of marine resources
- Provides a baseline for identifying recreational fishing user groups who could be impacted by spatial management decisions
- Clusters can be reassessed on an ongoing basis for monitoring changes during/after wind turbine development



Next Steps

- Evaluate the representativeness of Fish Rules users
- Examine the feasibility of developing offshore site choice behavioral models of fishing
 - Estimate the value of access to the offshore wind sites
- Can we characterize recreational fishing coastal community engagement?
- Extension of this research using other recreational fishing apps (e.g. Fishbrain)

