Satellite Derived Seascapes Predict Occurrence of an Endangered Species in the Coastal Ocean

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Estimation and prediction of animal locations is key to reducing anthropogenic impacts and promoting the conservation and recovery of imperiled species. The recent listing of Atlantic Sturgeon as Endangered throughout much of their range in the U.S. has highlighted a need for better estimation and prediction of their occurrence to reduce interactions. Using dynamic seascapes derived from remote sensing reflectance at 443 nm, 555 nm, and sea surface temperature, we partitioned coastal waters of the mid-Atlantic on scales commensurate with the Atlantic Sturgeon spring migration. The seascapes were then matched with presence/absence records of 260-telemetered Atlantic Sturgeon on 156 passive acoustic receivers in the mid-Atlantic to determine seascape selectivity. We found that Atlantic Sturgeon exhibited preference for one particular seascape over other seascapes available in the coastal ocean. Utilizing real-time seascape maps to direct the sampling of a Slocum Electric Glider integrated with acoustic receivers, we resampled similar regions under varying environmental conditions to actively interrogate the seascapes, further establishing the link between a particular seascape and Atlantic Sturgeon locations. Additionally, these seascapes are a readily available product that can be utilized by industry and managers to reduce interactions with this Endangered Species.