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## Dataset for: “Shifts in habitat use and demography of American lobsters in coastal Maine (USA) over the past quarter century”

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## **Dataset for manuscript “Shifts in habitat, habitat use, and demography of American lobsters in coastal Maine over the past quarter century.”**

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**Abstract:** Some species are so linked to specific habitats that their habitat association almost becomes a species-defining character. Habitat association is now used in conservation by managers and policy makers to protect endangered habitats or species. The American lobster, *Homarus americanus*, is among the most valuable fisheries species in North America and among the best studied benthic marine invertebrates in the world. Its populations and habitats have been studied and detailed in publications for over 35 years. This lobster was known to dwell in shelters and their populations had historically been concentrated in shelter-providing boulder habitat. Our study revisited 20 long-term monitored sites at 10 m depth along more than 320 km of the Gulf of Maine. Surprisingly, we recorded fundamental changes in lobster habitat use and distribution. Specifically, lobster population densities in boulder habitats declined 60% while densities on featureless ledge and sediment habitats increased 633% and 280% respectively from 2000 to 2019. Lobster rock shelter occupancy declined in recent years, but average body size increased, due in part to declines in smaller size classes. These demographic changes may be driven by reduced intraspecific competition resulting from the lower population densities. Habitat changes at our monitored sites included declines in kelp abundance, increases in diminutive algal turfs, and nearly 3°C warming of benthic water temperature some of which may have contributed indirectly to those shifts. While these changes in shallow water habitat and demography have implications for the lobster fishery and stock assessments it also illustrates a previously undescribed behavioral plasticity.

**Dataset Description:** The data include count, size, sex, number of claws, and shelter use of lobster in addition to substrate type, percent cover of kelp and other macroalgae. The data are included in six .csv format files: (1) data from 1993-1995, (2) 1996-2000, (3) 2019, (4) 2021, (5) study site locations revisited in 2019 and 2021, and (6) metadata describing the other files. Zipped folder containing datafiles is found in “Additional Files” at DigitalCommons@UMaine.