WHAT & WHO: Assessing fish utilisation of oyster habitats in two NSW estuaries, Botany Bay and Port Stephens. Research is being undertaken at Macquarie University by PhD student Francisco Martinez-Baena (supervisor: A/Prof Melanie Bishop) in partnership with UNSW (Brendan Lanham), James Cook University (Dr Ian McLeod) and NSW DPI (Drs Matt Taylor, Steve McOrrie, Mike Dove & Wayne O'Connor).

BACKGROUND: Our research is addressing the following questions: (1) the extent to which fish utilize remnant oyster reefs in south-east Australian estuaries for food and habitat; (2) how this role of remnant oyster reefs compares to that of other adjacent habitats, and to oyster farms, which comprise the largest aquaculture industry in NSW and add organic matter and structure to estuaries; and (3) how habitat context (i.e. the identity of adjacent habitat patches) influences this role of remnant oyster reefs. We are addressing these questions by coupling censuses of fish communities in two NSW estuaries, Botany Bay and Port Stephens, with behavioural observations, isotopic analyses and experiments, testing the hypotheses that: (1) oyster reefs will support distinct fish communities to adjacent seagrass beds, mangrove forests and bare sediments; (2) oyster farms will support similar abundances and richness of fish as oyster reefs, and, among oyster farms, fish communities will differ between bag and rack cultivation.

WHAT WAS FOUND: A pilot study in autumn 2017 and the first season of field sampling in winter of 2017 have been completed. To date, a total of 29 species have been found utilising oyster reefs of Botany Bay. Differences in community composition and age structure (juveniles, subadults and adults) of fish are expected between habitats and seasons. Furthermore, preliminary data suggest that oyster leases are important in providing food and refuge to fish, with fish abundances in some instances higher than adjacent natural habitats.

HOW WILL THIS HELP THE OYSTER INDUSTRY: There is growing interest in restoring the lost oyster reefs of south eastern Australia, to enhance fisheries productivity, improve water quality and stabilise shorelines. This study will determine the likely benefits to fisheries productivity of oyster reef restoration, and assess in which habitat contexts restoration aimed at enhancement of fisheries productivity is

likely to be most successful. Provision of shell substrate and spat to restoration projects represents a possible future income stream to oyster farmers. This study will also document the important role oyster farms play as habitat for fish, which although well-known among recreational fishermen and oyster farmers, is poorly documented in the scientific literature. In doing so, it will assist in promoting the environmental benefits to the wider public, and the scientific community, of oyster farming.

FURTHER INFORMATION: For further information visit https://www.shellfishrestoration.org.au/ or contact Paco at Macquarie University francisco.martinez-baena@hdr.mq.edu.au