

Oystercatchers' (*Haematopus ostralegus*) prey selection strategy indicates environmental stress in estuarine environments

R. Nagarajan¹, Stephen E.G. Lea¹ & John D. Goss-Custard²

⁽¹⁾School of Psychology, Washington Singer Laboratories, Perry Road, University of Exeter, Exeter EX4 4QG, UK. r.nagarajan@ex.ac.uk ⁽²⁾Goss-Custard, J.D., Centre for Ecology and Hydrology (CEH), Dorset, Winfrith Technology Centre, Winfrith, Dorchester DT2 8ZD, UK.

Individual Behaviour Based Model developed using Oystercatchers (*Haematopus ostralegus*) as an indicator species is successful in predicting the impacts of environmental changes. At its heart is a food depletion model which assumes that consumers will tend to starve in highly depleted areas and seasons. Oystercatchers migrate to estuaries in SW England in the autumn, and spend the winter there feeding mainly on common edible Mussels (*Mytilus edulis*). The mean length of opened mussels was 45.1 ± 0.81mm at the beginning of winter during September and remained similar until October (range 31.1–58.7mm). Immediately afterwards, opened mussel length declined to 42.2 ± 0.31mm during November and the same downward trend continued to reach 34.9 ± 0.45mm during January. Then mean mussel size increased until the end of the season. Mussel feeding Oystercatchers selectively forage on thin-shelled mussels, therefore the changes in mussel length selection could be associated with changes in shell thickness. The climatic changes across the winter season predominantly increase rainfall and runoff and decrease temperature, which induces environmental stress in estuarine ecosystems such as decline in salinity and freezing of substrate. These stress conditions, especially the decrease in salinity, cause shell thinning across the season. The oystercatchers respond to the environmental stress conditions by changing their prey length selection. The result suggests that the Oystercatchers act as bio-indicators of environmental stress.