

INTERPRETATION OF ACOUSTIC TAG SIGNALS OF TRANSPLANTED BLACK ROCKFISH

Carolyn Huston, Jeff Marliave, David Welch

Simon Fraser University, Vancouver Aquarium, Kintama Research

The Department of Fisheries and Oceans (DFO) Canada created several Rockfish Conservation Areas (RCAs) off of the British Columbia coast to address local depletion concerns. Criticisms of the initial program include fears that rockfish might occur in transient, not permanent populations. Also, the greatest rockfish abundances were sometimes observed outside of the designated RCAs.

In order to gather more behavioural information about black rockfish, VEMCO receivers were deployed near Pt. Atkinson (near West Vancouver) in late 2004. Simultaneously, several radio tagged black rockfish were released near the receivers in a collaborative effort between the Vancouver Aquarium and the Pacific Ocean Shelf Tracking Project (POST).

Using acoustic tags is a relatively new technology that results in high volumes of data. The current research focuses on developing methods to make the fish detection data more interpretable. We have focused our efforts on graphical techniques, with a particular emphasis on using circular data methods. Acoustic signal detection data is collected in the time dimension, making it suitable for transformation to circular data.

Our results show that the tagged black rockfish exhibit high site fidelity and relatively small home ranges – rockfish viewed in the same area on different days are likely the same fish. Presence and absence information on different receivers tend to co-occur for some tagged rockfish indicating the presence of social groupings. The availability of detailed information about the underwater site topography in conjunction with the detection data has allowed us to hypothesize where rockfish might preferentially be located. This information will be useful in designing future studies of black rockfish behaviour, as well as in site selection for future RCAs and black rockfish releases.