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SOCIAL NETWORK ANALYSIS OF KILLER WHALES (*ORCINUS ORCA*) OF THE FALKLAND ISLANDS

Killer whales (*Orcinus orca*) are a charismatic top predator species with a worldwide distribution. A notable aspect of killer whale biology is their complex sociality, based on a dynamic and hierarchical social system, and on long-term bonds between related individuals. Social network analysis (SNA) is a new and powerful tool to study complex social systems. In 2013 we began a long-term study of killer whales at Sea Lion Island, a hotspot of killer whale sightings in the Falkland Islands. We collected killer whale association data during observation periods carried out from land, using standard sampling techniques. We found that: 1) the basic social unit of Sea Lion Island killer whales is the mother-calf association, that can include up to four generations of calves; 2) multiple mother-calf pairs can be associated in pods, that are stable social units that last at least for the whole length of the season (September-March); 3) different pods, and non pod individuals, are sometimes associated together, in particular during predation events, that can involve up to 11 individuals; 4) transient killer whales, i.e. individuals that are observed at Sea Lion Island for just a few hours to a few days, can be associated to resident individuals; 5) within each social unit, short term association between specific individuals is variable in time and space, but shows repeatable patterns, that points toward specific social preferences of the different individuals; 6) some individuals show specific social skills, and can act as recruiters of new killer whales. A current development of the project is the study of association in videos taken from a drone. Preliminary results show that the full association pattern that can be observed in the drone videos can be quite different from the partial association pattern than can be observed at the surface.