

ELENA BARONII₁, SIMONA SANVITO₂, and FILIPPO GALIMBERTI₂

1: Dipartimento di Biologia, Università degli Studi di Firenze, Firenze, Italy

2: Elephant Seal Research Group, Sea Lion Island, Falkland Islands, www.eleseal.org

STRUCTURE AND FUNCTION OF FEMALE AND PUP CONTACT CALLS IN SOUTHERN ELEPHANT SEALS (*MIROUNGA LEONINA*)

Vocal recognition plays a crucial role in maintaining the mother–pup bond during the period of offspring dependence in most mammal species, and recognition requires individuality of signals. Many pinniped species are highly gregarious, and breed in large and dense colonies. Aggression towards pups can be frequent, and separation of the pup from the mother can be common. Therefore, an efficient mother-pup recognition system is essential for the survival of the pup. Southern elephant seals (*Mirounga leonina*; SES hereafter) breed in large harems, and, therefore, should have a well developed communication system to maintain the mother-pup bond during the suckling period. We studied individuality of contact calls of female and pup of SES at Sea Lion Island (Falklands Islands), during the 2014 breeding season. We recorded and analysed 104 calls of 29 females and 252 calls of 40 pups (at least 3 recordings per individual). We measured time, frequency and intensity parameters of calls, we classified calls based on their structural characteristics, and we calculated indices of individuality (repeatability and potential for individual coding). We showed that female calls were mainly tonal with a rich harmonic structure, while pup calls often had harsh, non harmonic, parts. Moreover, pups frequently showed non-linear acoustic phenomena, possibly related to stressful situations. Females emitted longer calls at lower frequencies than pups, as expected from their larger size. Frequency parameters measured on the harmonic part of the calls presented the highest level of individuality and repeatability compared to time and structure parameters, and, therefore, are the most likely candidates for individual recognition. All together, these results indicated that SES female and pup calls encode an individual signature that might allow individual recognition, although apparently not as strong as has been reported previously for other species of pinnipeds.