

To understand how this generalist marine predator uses the resources of the Gulf to maintain a permanent population, we are genetically characterising the plankton community on a seasonal basis and conducting a DNA diet study of whale scat. Our proof-of-concept study used high-throughput amplicon sequencing and DNA barcoding to identify taxa in 3 sample types: (1) whale scat (n=4), (2) water samples taken concurrently the scat to account for what is in the water vs in the scat and (3) plankton community samples (n=5), collected with vertical plankton net tows. We used the 18S gene to take a broad approach to identifying prey items in the scat and to effectively characterise the plankton community. This confirmed previous observations that Bryde's whales target krill and copepod species. However, we also found plankton species in the scat and community plankton samples that were not found in the matched water samples to the scat, with higher species richness in the scat samples (Shannon diversity = 0.63) than the matched water samples (0.07), although not as high as in the plankton community samples (0.85). This suggested that taxa such as Polychaeta, Hydrozoa and Tentaculata form part of the diet of Bryde's whales in the Hauraki Gulf and that the whales are likely feeding on plankton aggregations. The preliminary data thus support the theory the Bryde's whale has a diverse diet. DNA-based diet studies using high-throughput amplicon sequencing of barcoding genes are an effective, non-invasive method for determining the prey of generalist marine predators without *a priori* hypotheses on diet composition. Ongoing work will inform the importance of the Hauraki Gulf to this generalist predator and establish seasonal effects on Bryde's prey preferences and foraging behaviours.

Remember the Titans: individual vocal signatures reinforce dominance relationships among male northern elephant seals

Casey, Caroline¹; Reichmuth, Colleen²; Fregosi, Selene³; Charrier, Isabelle⁴; Mathevon, Nicolas⁵

(1) Department of Ecology and Evolutionary Biology, University of California Santa Cruz, 100 Shaffer Road, Santa Cruz, California, 95060, USA

(2) Institute of Marine Sciences, Long Marine Laboratory, 100 Shaffer Road, Santa Cruz, California, 95060, USA

(3) Cooperative Institute for Marine Resources Studies, Oregon State University and NOAA Pacific Marine Environmental Laboratory, 2030 SE Marine Science Drive, Newport, Oregon, 97365, USA

(4) Equipe Communications Acoustiques, Université Paris Sud, 15 Rue Georges Clemenceau, Orsay, 91400, France

(5) Laboratoire de Biologie Animale, Université Jean Monnet, 15 rue Ambroise Paré, Saint Etienne, 42023, France

Corresponding author: cbcasey@ucsc.edu

Social recognition is essential for species with colonial breeding systems. Typical environmental conditions are noisy and complex, and there are advantages to possessing distinctive features that aid in individual identification. Northern elephant seals (*Mirounga angustirostris*) are colonial breeders that operate in one of the most competitive social systems known among mammals. Adult males establish dominance hierarchies that determine access to harems of estrous females during a protracted and energetically demanding breeding season. While dominance relationships may be established through physical fights, they are maintained through stereotypic displays that elicit predictable behavioral responses from spatially separated individuals. To determine whether reliable differences exist in the acoustic displays of individuals and whether these differences function to convey identity, we behaviorally and acoustically sampled male northern elephant seals over two consecutive breeding seasons. Vocalizations were digitally recorded during competitive interactions and analyzed for spectral, temporal, and amplitude characteristics. A cross-validated discriminant function analysis performed on nine call features revealed small differences within—and significant differences between—the calls produced by 17 adult males reliably present at the study site. This finding supports the hypothesis that acoustic displays are reliable individual signatures that males learn to recognize during the breeding season. To test this, we conducted two field playback

experiments. We first exposed 10 individuals to the vocalizations of familiar subordinate and dominant rivals, and found significant and predictable differential behavioral responses consistent with relative hierarchical status. To determine whether these reactions were dependent on prior experience, we then exposed 10 foreign males of similar status to the same playback treatments and observed no differential responses. The results demonstrate that these unique acoustic signals serve as individual vocal signatures, and males likely remember the identity of their rivals based on call features that have been associated with the outcome of previous competitive interactions.

Cetacean monitoring in South coast of the mainland Portugal

Castro, Joana^{1,2}; Cid, André^{2,1}; Fonseca, Catarina²; Galego, Sara^{2,4}; Laborde, Marina^{1,3}

(1) Faculdade de Ciências da Universidade de Lisboa, Campus da FCUL, Campo Grande, Lisboa, 1749-016, Portugal

(2) AIMM - Marine Environment Research Association, R. Maestro Frederico Freitas Nº15 - 1º andar, Lisboa, 1500-399, Portugal

(3) Centro de Oceanografia, Faculdade de Ciências, Universidade de Lisboa, Campus da FCUL, Campo Grande, Lisboa, 1749-016, Portugal

(4) Faculdade de Ciências e Tecnologia, Universidade do Algarve, Campus de Gambelas, Faro, 8005-139, Portugal

Corresponding author: jmadeiracastro@gmail.com

Information available on the occurrence and distribution of cetaceans in mainland Portugal is very limited, and most of the information comes from strandings and localized and limited surveys. Since 2010, a low-cost project, using whale watching boats as platforms of opportunity was established in the South coast of Portugal, in the Algarve region. This allowed the collection of more consistent data in the area. From 2010 to 2012, four companies with a total of seven boats were used during summer period (May to October). A total effort of 3768 hours was done in these whale watching platforms. As a result, nine species of cetaceans, both odontocetes and mysticetes, were reported. Odontocetes accounted for 97% of the total number of sightings. During these three years, a total of 1477 cetaceans sightings were recorded. The most sighted species was the short-beaked common dolphin (*Delphinus delphis*) with 1062 sightings, followed by the bottlenose dolphin (*Tursiops truncatus*) with 239 sightings, the harbour porpoise (*Phocoena phocoena*) with 86 sightings, the Risso's dolphin (*Grampus griseus*) with 40 sightings, the striped dolphin (*Stenella coeruleoalba*) with 4 sightings and killer whale (*Orcinus orca*) was sighted only once. Regarding the mysticetes, four species were identified – 30 sightings of minke whale (*Balaenoptera acutorostrata*), 3 sightings of fin whale (*Balaenoptera physalus*), 1 sighting of humpback whale (*Megaptera novaeangliae*) and 1 sighting of sei whale (*Balaenoptera borealis*). Most of the animals were found near the coast line. These results strongly suggest that the South coast of Portugal is an important area for different species of cetaceans. Further studies on behaviour, habitat use and photo identification are essential to better understand the importance of the region, and to look at possible residence patterns of the different species.

A link between dolphin social structure and trawlers in the northern Adriatic Sea

Centrih, Tina¹; Kotnjek, Polona¹; Hace, Ana¹; Genov, Tilen¹

(1) Morigenos - Slovenian Marine Mammal Society, Kidricevo nabrežje 4, Piran, 6330, Slovenia

Corresponding author: centrih.tina@gmail.com

We studied the social structure of bottlenose dolphins (*Tursiops truncatus*) in the northern Adriatic Sea and compared it with patterns of area usage and interactions with fisheries. We used nine years of photo-identification data (2003 – 2011), collected under the framework of a long-term study of bottlenose dolphin ecology. Out of 123 identified individuals, 38 were sighted ≥ 4 times and in ≥ 2 different years. These were used in the analyses, as they represented animals with some level of site fidelity to the area. Association patterns and standard lagged association rates were calculated, using the half-weight index of