modeled, increasing resolution in environmental data, accounting for the effects of moving animals, incorporating potential mitigation and avoidance, and developing additional statistics to inform results. These prospective changes will be explored considering the best available science and evaluated to determine their potential to better understand the acoustic impact of Navy activities on marine species.

Genomic estimates of effective population size for blue whales.

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Estimation of effective population size (Ne) and abundance (census size, Nc) remains challenging to derive for wildlife species, particularly for those with wide ranging distributions, high mobility and cryptic behaviours. Ne and Nc are key parameters for the conservation and management of wildlife because they can determine the degree to which populations are at risk. While Nc impacts demographic and ecological processes, Ne affects genetic drift, loss of genetic diversity and levels of inbreeding. Genetic methods have recently gained popularity for estimating Ne due to the development of various statistical approaches, and the availability of user-friendly software. Blue whales (*Balaenoptera musculus*) were reduced to very low numbers during the whaling era, with some subspecies and populations impacted more heavily than others. Here we estimate contemporary Ne for populations of three blue whale subspecies (*B. m. musculus*, *B. m. intermedia*, and *B. m. brevicauda*) using a single-sample estimator based on the Linkage Disequilibrium (LD) method, and a panel of >15,000 unlinked single nucleotide polymorphism (SNP) loci. Samples (n= 277) originated from Antarctica, Eastern South Indian, Western South Pacific, Eastern North Pacific, Eastern Tropical Pacific, and Eastern South Pacific. Population genomic analysis in general indicated higher differentiation and low contemporary migration rates between subspecies, and lower differentiation and moderate migration rates between populations within subspecies. Ne estimates ranged from 43 to 455 (mean= 240, SD= 140), depending on the population, and Ne/Nc (for populations with Nc estimates available) ranged from 2 to 41% (mean= 0.20, SD= 0.17). Simulations indicated that factors impacting robustness of estimates include migration rates, strength of bottlenecks, sample sizes and scheme, and choice of parameters for estimation. This study identifies issues to be considered when planning genomic estimates of Ne for cetacean populations, and assists in interpreting estimates within a conservation management context.

Updating a photo-id catalog of bottlenose dolphin off Catania.

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Updating a photo-id catalog of bottlenose dolphin off Catania.

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To fill the gap of data on presence, distribution and social interactions of cetaceans off the coast of Catania, after a decade of interruption of the photo-identification works in the Gulf of Catania (Ionian Sea, Italy), the Marecamp association decided to update an existing old catalog of dorsal fin of bottlenose dolphins living in the area (Monaco et al., 2010). The visual method of Würsig & Würsig and the computer-assisted programs DARWIN (Stanley, 1995) and SOCPROG were used (Whitehead, 2009).

The old catalog contained 39 individuals identified from 1997 to 2008 while the new one permitted to update many reference photos of 3 previous classified specimens and also to add new items, reaching 49 bottlenose dolphins photo-identified until 2018. We collected 320 new photos during 2 hours of sighting overall, for a total effort of 90 hours of monitoring.

According to fission-fusion grouping patterns typical of medium size bottlenose dolphins' herds, we saw some confirmed individuals of the catalog maintain relationships between them, while other individuals, confirmed matches and not, established new social associations, moving North-South and back across the Gulf.

Using mark-recapture principles for population study and observing the high slope of the discovery curve, we found that the investigated population has not been still completely identified. Moreover, ongoing studies with some Sicilian organizations are conducting in order to verify any old and/or new relationships with specimens from adjacent areas to the Gulf and to better comprehend population dynamics.

Using U.S. law to protect endangered marine mammals from entanglement and promote ropeless fishing gear.

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The U.S. Endangered Species Act (ESA) has been described as the most comprehensive legislation for the preservation of endangered species ever enacted by any nation. The ESA is expressly designed to prevent extinction and promote recovery of imperiled species.

We will provide a brief overview of how the ESA works. We will highlight a case study of entanglements of large whales in fishing gear off the U.S. West Coast and how the powerful ESA was brought to bear on the whale entanglement problem.

We will describe how reported entanglements of large whales began increasing in 2014, breaking historical records each of the past four years. Preliminary data from the U.S. National Marine Fisheries Service indicate that at least 45 whale entanglements were reported in 2018. The data show that there were 71 reported large whale entanglements in 2017, up from 62 in 2015 and 30 in 2014. Before that, whale entanglement reports averaged fewer than 10 per year. We will briefly describe suspected causes of the increase in entanglements, including climate change, shifting fishing effort, and increasing whale populations.

We will also describe how, in 2019, use of the ESA, resulted in a time area closure to protect whales during their migration, plans to adopt a science-based risk assessment management program, and incentives to develop and adopt ropeless fishing gear.

Effects of limited dispersal by sea otters (Enhydra lutris) on population dynamics; Relevance to the threatened Southwest Alaska distinct population segment.

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Small, isolated populations with limited dispersal capabilities are demographically independent at relatively small spatial scales, and at risk of demographic and genetic constraints to sustainability. Our data from across Alaska indicate that densities and trajectories of sea otters differ among regions separated by <100km. The Southwest Alaska stock of sea otters presents an interesting case, having experienced two discrete population reductions, and understanding population health and sustainability is important, given the Threatened status of the stock. Sea otters were hunted to near extinction in the 18th and 19th centuries, with just 2 remnant colonies surviving in the western Aleutian Islands. Population recovery over the 20th century was slow due to their limited dispersal capabilities and high site-fidelity, but by 1985 sea otters had recolonized most of their former habitat in the western Aleutians. Beginning in the late 1980's, the Southwest Alaska stock suffered another major population reduction (~90%) due to killer whale (*Orcinus orca*) predation. In contrast to pre-decline distributions, the remaining sea otters are concentrated in a few colonies that occur in sheltered habitats. This distribution likely protects them from predation, however the patchy distribution combined with high fidelity likely acts to reduce demographic