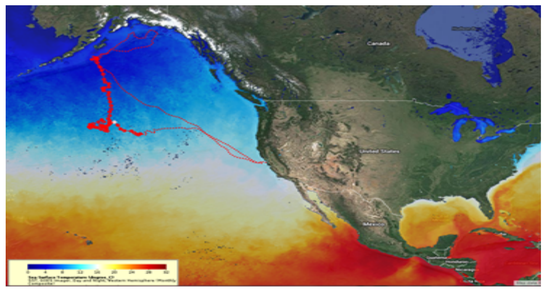
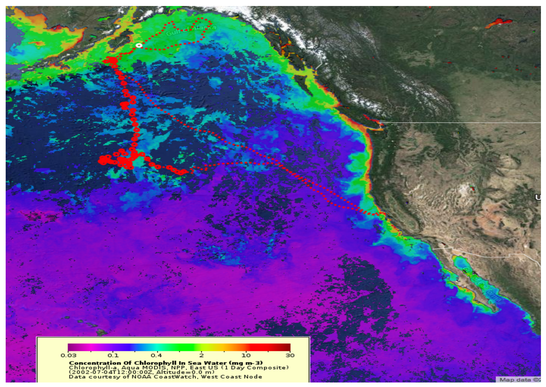
Following the Beasts

Elephant Seals



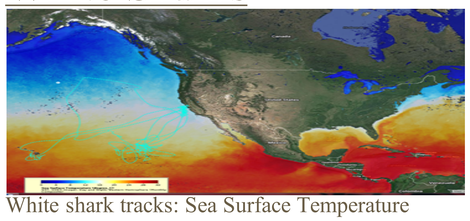
Elephant seal tracks: Sea Surface Temperature



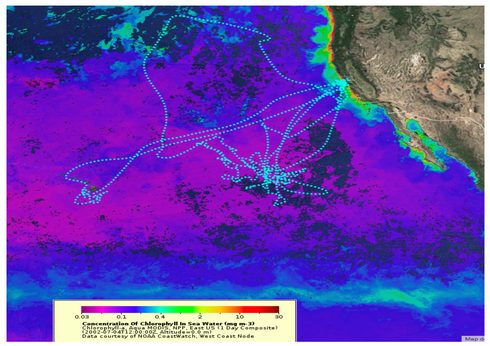
Elephant seal tracks: Chlorophyll Concentration

Elephant seals have interesting yearly cycles. They come back to land generally twice a year, once to give birth and mate and again to molt (shed skin and fur).They have a long migration for food, but generally will fast while on land. The sex of the seal can vary migration patterns. Females tend to look for food then make their way back to shore quickly, where males can spend more time mating and hunting for food. Elephant seals tend to start in the middle of the pacific, and after about 50 days of the cycle, quickly increase their speed directly towards the California coast

White Sharks



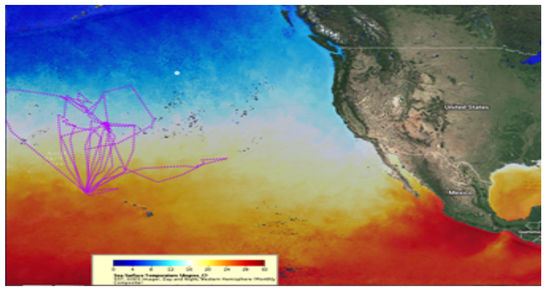
White shark tracks: Sea Surface Temperature



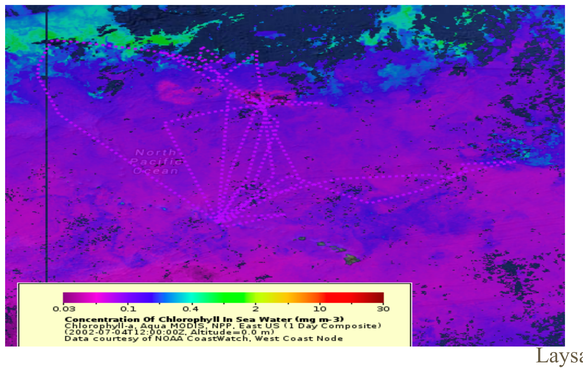
White shark tracks: Chlorophyll Concentration

White sharks are apex predators found throughout the pacific. They spend their late summer to early winter time around coastal regions while moving back into the deep oceanic habitat for the rest of the year. Although it is not clear why they exhibit these behavior, some assume that these migratory patterns are highly influenced by prey availability. As a means of adaptation to this vast environment it inhabits, the white shark had developed certain traits that ensure its capability to of catching prey as well as surviving the elements. Among these many adaptations are countershading to aid in hunting, streamline pointed body to decrease resistance while swimming long distances, and production of the fatty acid squalene which the shark uses to its advantage while staying afloat.

Laysan Albatross



Laysan albatross tracks: Sea Surface Temperature



Laysan albatross tracks: Chlorophyll Concentration

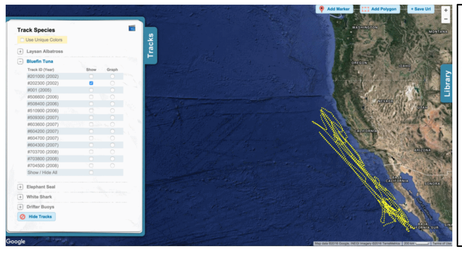
Young adolescents fly their first year of life, and will not return to land again for about 3-5 years. They return to solid ground during breeding season, and fly among the pacific during the rest of the year. They gather in the northern pacific waters, Up near Alaska or Russia, or the southern edge of the Bering Sea. They migrate south to Hawaiian islands, during October months, and north again in warmer months, June and July.

Sonar Testing

For environmentalists and cetacean lovers, the detrimental effects of navy sonar testing on wildlife is a known fact. While extensive research has been done on the physical effects of sonar on marine animals, we decided to investigate to what extent these sound waves can affect the migratory patterns of these species.

"Masking and auditory damage will affect the ability of individual animals to detect acoustic cues...vital for navigation, location of food, social interaction (including cooperative feeding bouts and the maternal bond), mating and migration.". (Perry, Clare)

"Simmonds and Mayer (1997) have speculated that a spate of multiple sperm whale strandings...could have resulted from a deflection in the normal southerly migration route due to seismic and other industrial noise…" (Perry, Clare)



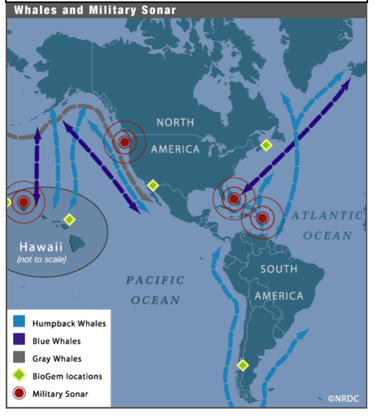
An example of the data collected

"Migrating animals have exhibited avoidance of noise by detouring around sound sources. Two series of field studies (Malme et al. 1983, 1984; Richardson et al. 1985, 1990) demonstrated that gray and bowhead whales avoided continuous industrial noise at average received levels of around 120 dB." (L.S. Weilgart)

Navy sonar can read dB of 200 dB.

Unfortunately, of the data collected, we were unable to prove that there is a correlation between changes in migration patterns and sites of navy sonar tests. Little data was available to collect and interpret, and even less was available on where and when the navy conducts their sonar tests. More field research must be done on the impact of this sound pollution to further prove that sonar tests affect migrational patterns.

This figure demonstrates how certain whale migratory paths coincide with known military sonar testing sites



References

Stewart, B. S. (1997). Ontogeny of Differential Migration and Sexual Seggretation in Northern Elephant Seals. *Journal of mammalogy, (4). 1101.*

Perry, C. (n.d.). *A Review of the Impact of Anthropogenic Noise on Cetaceans* [Scholarly project]. Oceantracks.org

http://www.extremescience.com/great-white-shark.htm

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