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Loggerhead turtles are good ocean-observers in stratified mid-latitude regions, *Patel et al.*

Prime loggerhead (*Caretta caretta*) foraging habitat in the Mid-Atlantic Bight overlaps with water features that are often difficult to assess in oceanographic models. Using animal-borne data loggers, the authors assessed 1) how loggerhead diving behavior is advantageous for collecting water column profiles of complex water features, and 2) how these animal-borne data loggers will improve spatio-temporal data resolution in this region. Between 2009 and 2016, 167 deployed satellite tags collectively yielded 19,000 depth and temperature water column profiles. The authors determined that collecting data this way requires less effort than traditional methods, like ship surveys or satellite imaging due to both financial and environmental factors. These profiles may be used to ground-truth and improve accuracy of remotely sensed data and climate forecasts, as well as help inform relevant stakeholders on the overall ecology of the region.

Journal article | NEFSC Turtle Website | Data

Photo courtesy of Patel et al. (2018); Permit No. 16556.

Movements and dive behaviour of a toothfish-depredating killer and sperm whale, *Towers et al.*

This study tracks whale predation on Patagonian

Recent Publications

Population Studies

Wildermann et al.

Informing research priorities for immature sea turtles through expert elicitation. 2018. *Endangered Species Research.* Read More

Bal et al.

Characterizing the strength of density dependence in at-risk species through Bayesian model averaging. 2018. *Ecological Modelling.* Read More

Arkoosh et al.

Dietary exposure to a binary mixture of polybrominated diphenyl ethers alters innate immunity and disease susceptibility in juvenile Chinook salmon (*Oncorhynchus tshawytscha*). 2018. *Ecotoxicology and environmental safety.* Read More

Harstad et al.

Winter-rearing temperature affects growth profiles, age of maturation, and smolt-to-adult returns for yearling summer Chinook Salmon in the upper Columbia River basin. 2018. *North American Journal of*

toothfish off South Georgia in the Southern Ocean commercial, demersal, longline fishery. One adult female killer whale (*Orcinus orca*) and one adult male sperm whale (*Physeter macrocephalus*) were satellite tagged in 2015, yielding 260 and 348 locations over 14.6 and 18 days, respectively. The study revealed that whales would change their behavior with fishing activity. Whales approached ships and dove deeper, faster, and for longer periods of time compared to natural foraging. Killer whales sometimes exceeded known diving depths by hundreds of meters. The sperm whale's maximum dive depths were occasionally positively correlated with the depth of the nearest longline. The study also suggests possible strategies for reducing future interactions.

Journal article | News Story (Vice) | News Story (Naked Science) | National Geographic Video

Photo courtesy of Jared Towers. Permits for this work were provided by the Government of South Georgia and South Sandwich Islands and the New Zealand Department of Conservation. Science Permit No. SCI/2015/006 and Wildlife and Protected Areas Ordinance No. WPA/2015/010

Genomic signatures of population bottleneck and recovery in Northwest Atlantic pinnipeds, *Cammen et al.*

Studying demographic changes in genomic diversity can provide insights on pinniped populations dynamics. The authors used double-digest restriction site-associated DNA sequencing and Bayesian models to estimate demographic history from over 8,700 gray seal (*Halichoerus grypus atlantica*) loci and 3,700 harbor seal (*Phoca vitulina vitulina*) loci sampled over the past half-century in the Northwest Atlantic. By comparing genetic diversity in populations' genomes to models simulating genetic diversity for different expansion and bottleneck scenarios, the researchers determined that: 1) bottleneck events exhibited the strongest data signals in the genomes, 2) the population expanded after the last glacial maximum and experienced a bottleneck in the mid-20th century, and 3) genomic diversity has not expanded following population recovery. These results are consistent with archeological records and help to explain processes that influence genetic diversity during recovery.

Journal article

Photo courtesy of Cammen et al. (2018).

Gravity of human impacts mediates coral reef conservation gains, *Cinner et al.*

Marine reserves that prohibit fishing are a key management tool among conservation practitioners

Fisheries Management. Read More

Wringe et al.

Development and evaluation of SNP panels for the detection of hybridization between wild and escaped Atlantic salmon (*Salmo salar*) in the West Atlantic. 2018. *Canadian Journal of Fisheries and Aquatic Sciences.* Read More

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Prevalence of polygyny in a critically endangered marine turtle population. 2018. *Journal of Experimental Marine Biology and Ecology.* Read More

Conservation

Waples et al.

Genomics and conservation units: The genetic basis of adult migration timing in Pacific salmonids. 2018. *Evolutionary Applications.* Read More

Harborne et al.

Modelling and mapping regional-scale patterns of fishing impact and fish stocks to support coral-reef management in Micronesia. 2018. *Diversity and Distributions.* Read More

Scales et al.

Fisheries bycatch risk to marine megafauna is intensified in Lagrangian coherent structures. 2018. *Proceedings of the National Academy of Sciences.* Read More

McNeill et al.

Trends in fishery-dependent captures of sea turtles in a western North Atlantic foraging region. 2018. *Endangered Species Research.* Read More

Harrison et al.

The political biogeography of migratory marine predators. 2018. *Nature Ecology & Evolution.* Read More

Mustafa et al.

State of knowledge: Antarctic wildlife response to unmanned aerial systems. 2018. *Polar Biology.* Read More

Foraging and Habitat Use

worldwide. The authors studied nearly 1800 reef sites across the tropics to determine how human activity influences two key conservation outcomes in marine reserves: biomass of reef fish and the probability of encountering a top predator. The intensity of human pressure was calculated using a novel "gravity" metric that accounts for how large and far away human populations are from reefs. Linear mixed-effect models show that human impact was the strongest predictor of fish biomass and whether top predators would be present. In fact, the models showed that top predators were 100 times more likely in remote reserves than in reserves near people, and top predators were rarely seen on reefs that did not have protection. The study sites included some of the most remote and some of the most heavily impacted reefs. The gradient of human pressure was used to find out how impactful reef conservation was, where implementation could make the biggest difference, and the pros and cons of placing marine reserves in different locations. The difference between fished sites and reserves were considered "conservation gains." Conservation gains for fish biomass was highest where human pressure was moderate. Conservation gains for top predators were highest in areas with low human impact. The study highlights the challenging ecological trade-offs that managers need to consider when establishing and managing reserve sites.

Journal article | News Story (Coral ARC) | Video | Video

Photo courtesy of Nick Graham.

Litz et al.

Energy dynamics of subyearling Chinook salmon reveal the importance of piscivory to short-term growth during early marine residence. 2018. *Fisheries Oceanography.* Read More

Sinclair et al.

The diet of free-ranging male Steller sea lions (*Eumetopias jubatus*) in the eastern Bering Sea: a retrospective analysis based on stomach contents of an endangered pinniped. 2018. *Canadian Journal of Zoology.* Read More

Habitat

Wright et al.

Acoustic detection of North Pacific right whales in a high-traffic Aleutian Pass, 2009-2015. 2018. *Endangered Species Research.* Read More

Fleming et al.

Combining acoustic and visual detections in habitat models of Dall's porpoise. 2018. *Ecological Modelling*. Read More

Saarman et al.

An ecological framework for informing permitting decisions on scientific activities in protected areas. 2018. *PloS one*. Read More

Naman et al.

The energetic consequences of habitat structure for forest stream salmonids. 2018. *Journal of Animal Ecology.* Read More

Behaviour

Lewis et al.

Context-dependent variability in blue whale acoustic behaviour. 2018. *Royal Society Open Science*. Read More

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