



Earth Matters

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A giant vacation

Studies have revealed where the colossal basking shark heads for his winter break, writes ocean correspondent, *Cheryl Samantha Owen* from Save Our Seas

Birds do it, bees do it, even educated fleas do it. Migrate in search of a more abundant food supply - that is. Why should the world's second largest fish, with a mouth almost as wide as a piano, be any different? Each year hundreds of basking sharks disappear from the cold waters of the Atlantic and Pacific Oceans after spending the summer feasting in these productive, temperate regions. This annual vanishing act has long remained a mystery to scientists, but new evidence has surfaced that solves the riddle of how you lose a five-tonne fish? The answer: they take tropical vacations. A study recently published by the journal *Current Biology* supports the findings by Doctor Mahmood Shiviji, a marine biologist with the Save Our Seas Foundation (SOSF), on the long distance migrations of basking sharks. Previously thought to be restricted to the temperate latitudes, these ten metre-long sharks have now been recorded heading to warm-water hideaways in the tropics, and they have even crossed the equator.

Doctor Greg Skomal and study co-authors from the Massachusetts Division of Marine Fisheries tagged 25 basking sharks between 2004 and 2006 with satellite tags that recorded the depth, temperature and light as the sharks swam. After popping off on a pre-programmed date the tags transmitted the collected data directly to the scientists. What they found astounded them. "When a tag popped up in the Caribbean Sea, I was really blown away," says Skomal. Of the 18 tags that successfully transmitted data, ten significantly broadened the known range of basking sharks as they journeyed into areas that included the Sargasso Sea, the Bahamas, the Puerto Rico Trench, and the Caribbean Sea. Most surprising, was one shark that spent a month at the Amazon River mouth before resuming its journey south to the coast of Brazil, where the tag surfaced.

Doctor Gore documented a similarly impressive journey, when she revealed that a female basking shark tagged off the Isle of Man travelled 9,589km across the Atlantic to the waters off the Newfoundland shelf. On her journey she reached a maximum depth of 1,264 metres. This was the first conclusive evidence for basking sharks' use of the deep mid-ocean, a record dive depth for tagged sharks, and perhaps more importantly the first evidence that the species migrates across oceans or between hemispheres. According to Doctor Gore, "These results gave the first link between the European and American basking shark populations, and what was once thought to be two discrete populations is very likely to be effectively a single one unit. "The species has managed to

avoid detection in tropical waters to date because it travels at depth, making dives over 1,000 metres," adds Doctor Skomal.

Why do they disappear and travel so far? Little is known about these giant sharks, whose humble diet consists of microscopic organisms known as plankton, but food may not be the only factor driving them on. Another theory behind their ocean basin-scale migrations is that they are heading to undiscovered mating or birthing and nursery grounds. The genetics work of Doctor Mahmood Shiviji, at the Save Our Seas Shark Research Centre in Florida, suggests that these sharks move around extensively and interbreed. His results show an

extremely low genetic diversity worldwide, meaning they all individually belong to one extremely vulnerable population.

Saving Sharks: Although they are listed as vulnerable on the IUCN Red List of Threatened Species, basking sharks have been caught up in the unsustainable demand for fins to supply the Asian demand for shark fin soup, and their fins are worth \$50,000 on the black market. Whether it is in search of a mate, more food, or simply the warmth of the tropics, these gentle giants are open to exploitation in waters where they are not protected. Given that the estimated global population size is less than 10,000, this leaves them with a precarious future. "International collaboration with governments and scientists and the protection of basking sharks across all ocean regions is essential if this species is to survive," urges Doctor Gore.