Toothless, dwarf dolphin, a case study in evolution

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A life restoration of Inermorostrum xenops dolphins

Scientists on Wednesday unveiled an extinct species of toothless, whiskered and objectively cute mini-dolphin that plied Earth's oceans some 30 million years ago.

With only a fossilised cranium—found in a river near Charleston, South

Carolina—to work with, the researchers were able to reconstruct the snub-nosed mammal's evolutionary saga, describe its facial features and figure out what it snacked on.

Just over a metre (three feet) from snout to tail, Inermorostrum xenops was half the size of the common bottlenose dolphin.

Ironically, the pint-size Flipper was an early offshoot from one of the two main groupings of cetaceans called Odontoceti, or "toothed whale", that includes sperm whales and orca.

This group also developed a radar-like capacity to navigate and detect objects by emitting sounds, called echolocation.

The other branch, baleen whales, are filter feeders that strain huge volumes of ocean water to net tiny, shrimp-like krill or plankton—think humpback or the gargantuan blue.

"Inermorostrum took only four million years to evolve from ancestral whales with precisely occluding teeth"—matching top and bottom—"into a toothless, suction feeding specialist," explained Robert Boessenecker, a professor at the College of Charleston and lead author of a study in the British Royal Society journal Proceedings B.

During those four million years—a brief interlude on the evolutionary clock—I. xenops lost its pearly whites, saw its snout and mouth shrink and developed super muscular lips.

"This last feature is perhaps the most critical," said Boessenecker, who deduced the dolphin's powerful smackers from a series of deep artery channels clearly designed to nourish extensive soft tissue.

"Short snouts typically occur in Odontoceti that are adept at suction

feeding—the smaller the oral opening, the greater the suction," he said in a statement.

Absent dentition, I. xenops' diet would have consisted exclusively of small fish, squid and other soft-bodied creatures. Because its nose was bent downward, the researchers suspect it prowled the ocean floor in search of prey.

The dwarf dolphins were not the only "toothed whales" undergoing rapid evolution at that time.

During the Oligocene age, 25 to 35 million years ago, other echolocating cetaceans developed long, toothy snouts specialised in catching fish.

The researchers also found that both short and long snouts evolved independently numerous times, suggesting that natural selection is not an arbitrary process.

Some dolphins, such as the modern bottlenose, settled on a happy medium between the extremes, "the optimum length as it permits both fish catching and suction feeding," Boessenecker added.

More information: *Proceedings of the Royal Society B*(2017). Doi: 10.1098/rspb.2017.0531