

Fin Whale and the Dye Marker

From 1974 to 1977 biologists from the University of California, Santa Cruz, under contract for the United States Department of the Interior's Bureau of Land Management, have conducted monthly aerial surveys of whales and dolphins in the Southern California Bight. On the afternoon of 22 January 1977, the authors, Tom Dohl, Project Manager for the survey, and Paul Sund, while flying in a small observation plane off San Clemente Island, sighted a whale about five nautical miles from China Point. The animal was lying motionless on its left side just below the sea surface; and in this position the white baleen and lower lip on the right side of the whale were plainly visible, making possible its positive identification as a fin whale (*Balaenoptera physalus*).

Soon afterward we noticed a disturbance about two miles away. Because the fin whale was not moving, we decided to mark its location with floating fluorescent dye marks, investigate the new activity, and return. We dropped five dye markers in a 300-meter ring around the whale.

We flew back to the area after about

four minutes and relocated the fin whale, which was approaching the dye plume extending from one of the markers. As biologists, we immediately considered this behavior noteworthy because it appeared to be an example of the awareness and curiosity of the whale toward unusual objects in the ocean. We observed and photographed this animal for more than twenty-two minutes.

The whale somehow had sensed and located the dye plume, and moved along it from an area of low dye concentration toward the source. The animal's mouth was slightly agape, but we did not observe any perceptible disturbance of the plume and supposed that the whale was not "tasting" the dye. It appeared that the whale most likely was visually keying on the plume from below and within. It had assumed an arcuate position conforming to the shape of the plume and continued to maintain this posture while swimming toward the dye source. This behavior was most noteworthy since it demonstrated the animal's active awareness of the form and boundaries of the plume.

This incident brought to mind a similar event that one of us had observed on 23 January 1973, while flying off Monterey, California, during an aerial photo-system testing exercise. At that time similar dye markers plus smoke flares were dropped from the aircraft to mark the approximate locations of gray whales. On two occasions whales altered their direction to approach and presumably "investigate" the objects.

This observation raises a number of questions that remain to be answered:

How and why did the whale become aware of so small an object as the dye marker (approximately 1" x 1" x 3")?

How did it sense the concentration of the dye; why did it swim into the plume at an area of low concentration and proceed along it toward the source? How did it sense the arcuate form of the plume and why did the whale mimic that shape while swimming along the plume toward the marker?

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*After dropping a dye marker into the water, scientists watched from a research plane as the fin whale (*Balaenoptera physalus*) first approached the tail of the dye plume, then took a parallel position to it as it swam toward the source, and finally passed the small globe emitting the dye.*