

SP 321

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This month's regular report is on SP 321, a 249 cm male *Tursiops truncatus* recovered dead from Sea Rim State Park, Jefferson County, Texas, December 8, 1998. This was a large, probably off-shore male, with many signs of a long and active life. We found quite a few things. First, although we do not have the tooth age on it, we estimate that it is an old animal. This is based on body size, external marks, tooth wear, and constellation of disease findings. There was evidence of recent and rapid weight loss. It had many old or chronic lesions. There were many adhesions (fibrous scar connections) of the serosal surfaces, all of which were old and dense. The serosal surfaces are the membranes that line the body cavities; the pleura, the peritoneum, and the pericardium. Serosal adhesions result from inflammation in the past, now scarred and inactive.

A striking finding was hydrocephalus complicating chronic lymphocytic meningitis. Hydrocephalus is "water on the brain". Hydrocephalus can be either externa or interna. Hydrocephalus externa is too much fluid around the brain, usually resulting from brain injury or shrinkage. Hydrocephalus interna is dilation of the inner chambers of the brain (ventricles) by fluid because it cannot escape through the normal exits. A substantial portion of the fluid around the brain, the cerebrospinal fluid (CSF), is actively secreted inside the ventricles, and escapes through small openings. This allows normal circulation of the fluid. This animal had chronic meningitis, probably caused by a virus, which resulted in scarring of the meninges, with obstruction to flow of CSF. This results in a pressure buildup inside the ventricles, which in turn interferes with blood flow through the fine vessels of the brain. As a result the brain atrophies or shrinks from the inside out. The space produced by brain atrophy is filled with the watery CSF.

This animal also had severe arthritis of the joint between the neck vertebrae and the base of the skull, and both flipper joints, one of which was fused and immobile. There was also parasitism of the stomach, with encystment of worms in the wall of the third chamber, which produced many large and tumor-like masses. We do not have a specific identification of the worm beyond calling it a trematode or fluke. There weren't any worms free in the stomach. All had burrowed into the stomach wall, where they produced masses of eggs, and provoked a vigorous scarring reaction, which produced the "tumors" we observed. This might have been enough to impair normal peristaltic movement of the stomach. The esophagus and first gastric chamber were stuffed and distended with kelp; also, small amount of sand; a few small mussel shells and one bubble gum wrapper. The stomach was so distended it nearly filled the abdomen.

This animal also had a well-developed case of pulmonary angiomatosis, the strange proliferation of blood vessels in lungs and the related lymph nodes, that has become so common in our Tursiops over the past few years. There was evidence of old and current lungworm infestation. In addition, the heart had old small scars, and very marked acute contraction band necrosis, which we attribute to terminal events.

Comment: This case presents some complex issues. First, he has evidence of chronic disease, the angiomatosis, which could be debilitating. The serosal adhesions suggest that there has been at least one episode of serious illness in the past, from which he recovered. We have not seen the encystment of trematodes in the stomach wall before. It also appears to be chronic, and therefore sustainable. The joint disease is severe, but not the first case we have seen with fixation of a joint, or severe joint destruction. Because of the scarring and fusion, it also had to be chronic, and not directly fatal. Finally, there is the

meningitis and hydrocephalus. We cannot know how much loss of motor or sensory function this animal suffered, or whether he was functioning below the normal mental capacity of a dolphin. Observations on fluke infestation in the brain of other species indicate that dolphins can remain functional with large stroke-like lesions. In spite of all these impediments, he was functional enough to maintain body weight up until very near the end. I never lose my awe over the toughness of our bottlenose dolphins, and their ability to sustain life carrying what would seem to be an insupportable burden of disease. We can only fantasize about the meaning of the eating of vast amounts of kelp in the last hours of life. Was he acting out some last impulse to survive, or was it just agonal confusion?