

Identification of a novel *Neorickettsia* species in a Kemp's ridley sea turtle with granulomatous nephritis and development of a quantitative PCR assay

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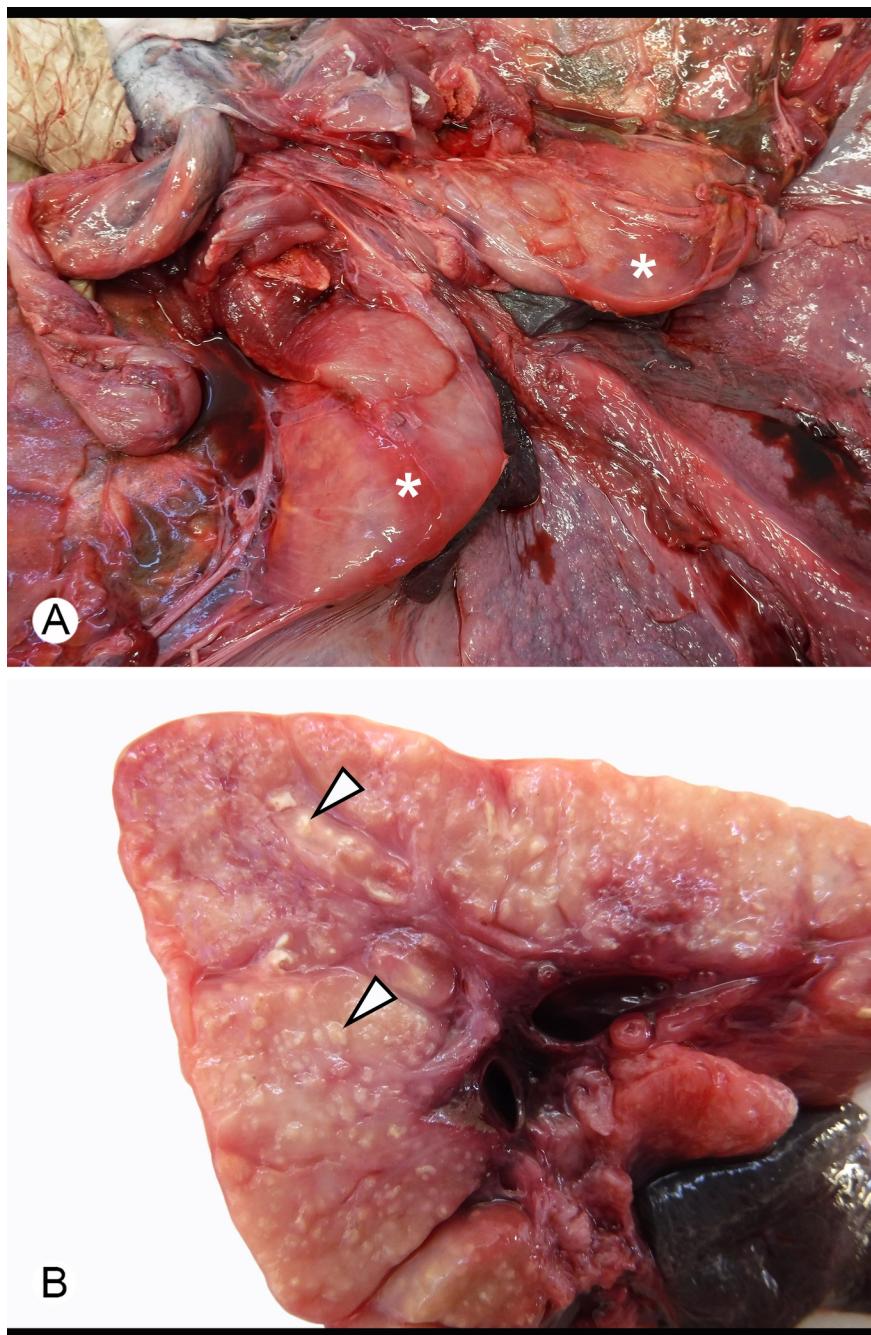
August 2, 2022

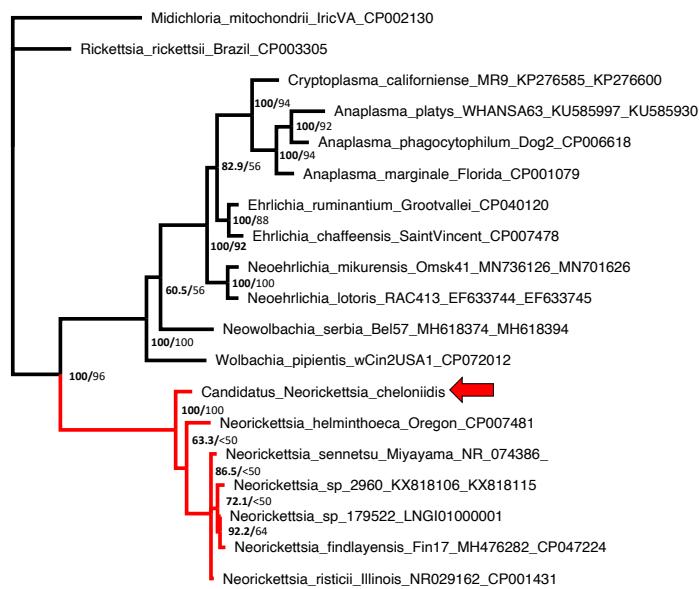
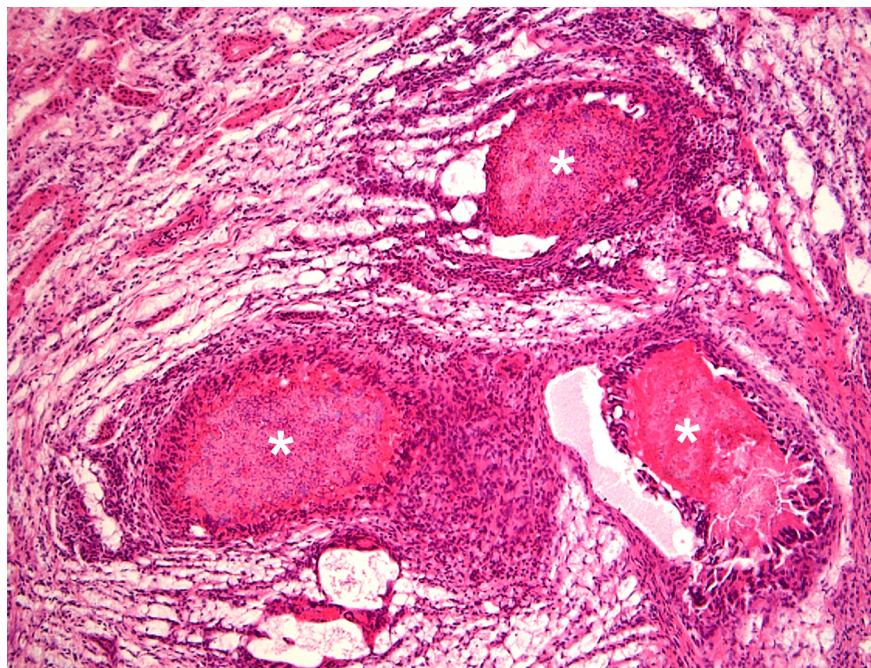
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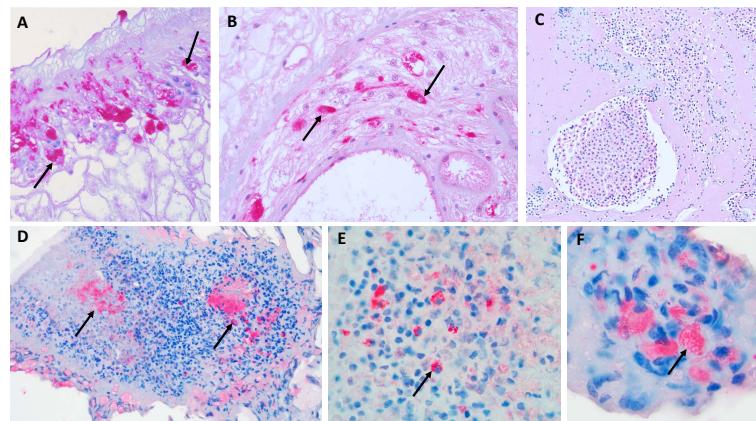
An adult male Kemp's ridley was found dead on the coast of Kenedy County, Texas in August 2019 with bilateral severe, diffuse granulomatous nephritis. Pan-bacterial 16S rRNA gene PCR and amplicon sequencing of affected tissue indicated the presence of a *Neorickettsia*. *Neorickettsia* is a genus of obligate intracellular Alphaproteobacteria that are transmitted by digenetic trematodes. For further characterization, primers were designed to amplify and sequence the *groEL* gene. Phylogenetic analysis found that the organism was distinct from other known species to a degree consistent with a novel species. Immunohistochemistry using an antibody directed against a *Neorickettsia* surface protein showed bacterial clusters within the renal granulomas. A species-specific quantitative PCR was designed, and detected the organism within the liver and colon of the index case. A qPCR survey of grossly normal kidneys opportunistically collected from additional stranded sea turtle kidneys detected this organism in five of 15 Kemp's ridley turtles, two of nine green turtles, and neither of two loggerhead turtles. Recognition of this novel organism in an endangered species is concerning; additional work is underway to further characterize the potential of this organism as a pathogen of sea turtles.

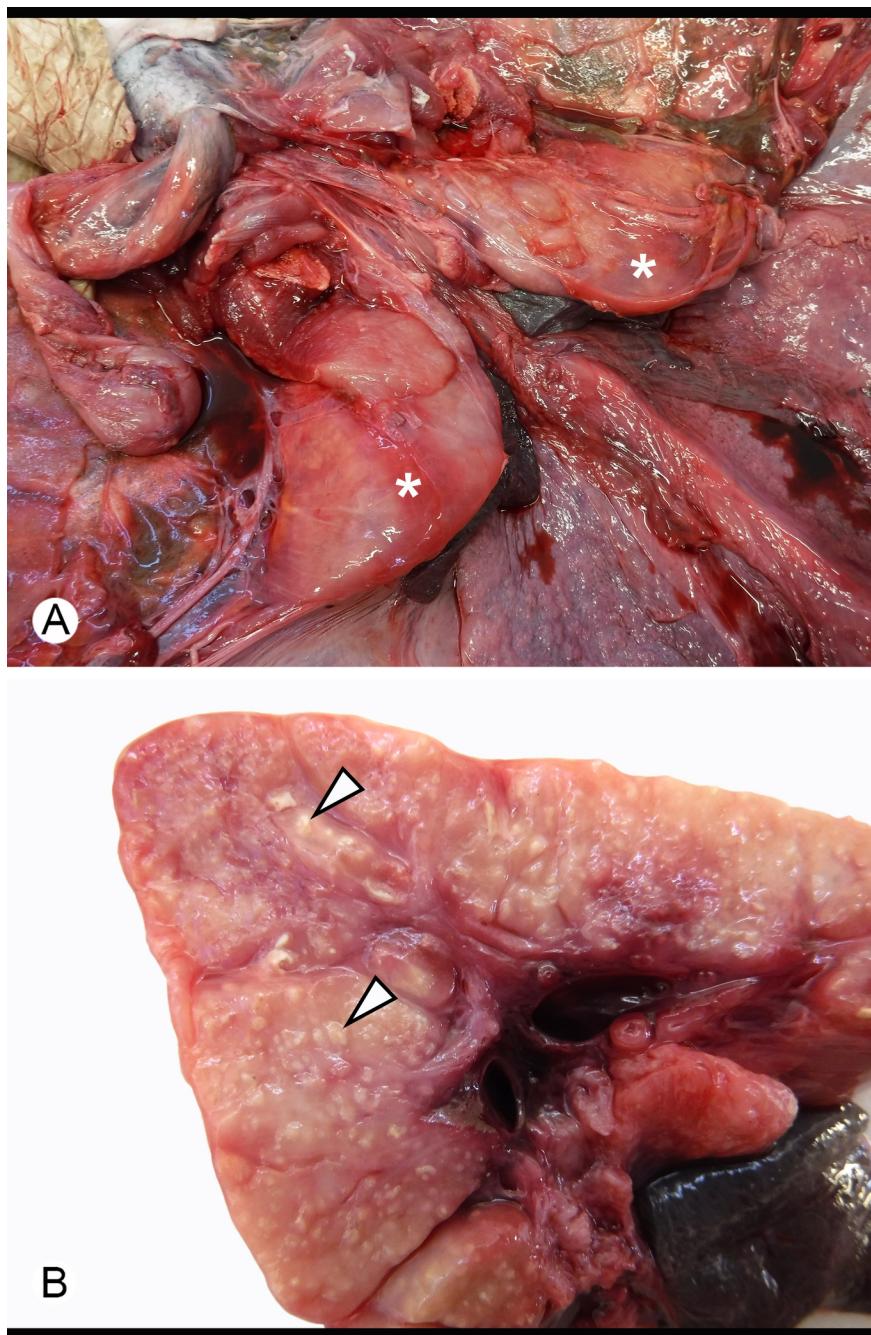
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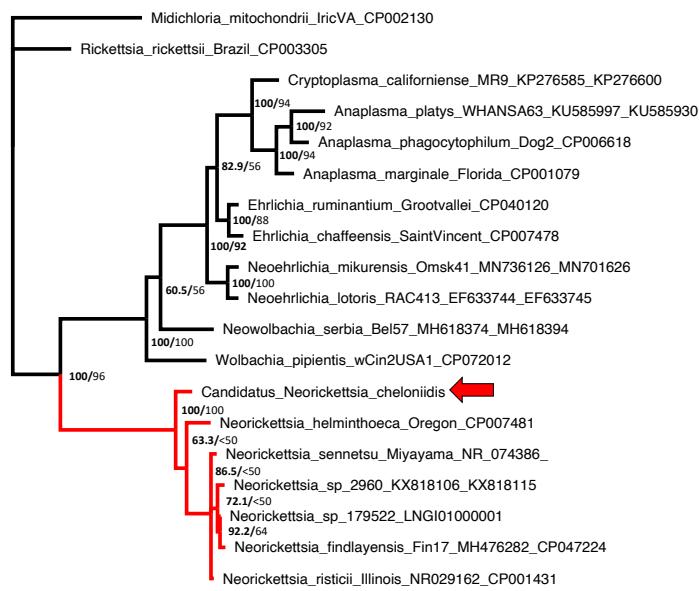
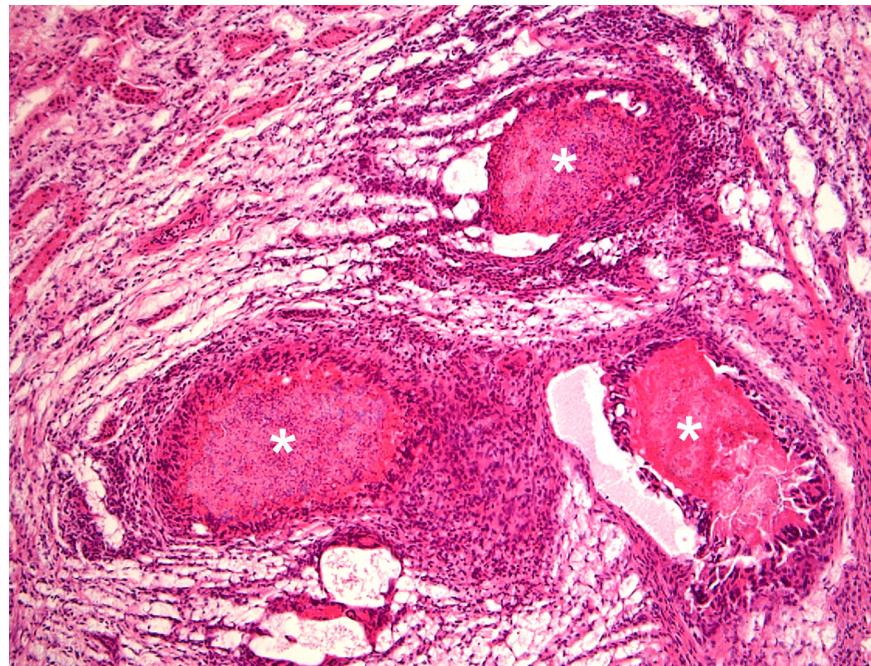
Final *Neorickettsia*.docx available at <https://authorea.com/users/498812/articles/579518-identification-of-a-novel-neorickettsia-species-in-a-kemp-s-ridley-sea-turtle-with-granulomatous-nephritis-and-development-of-a-quantitative-pcr-assay>

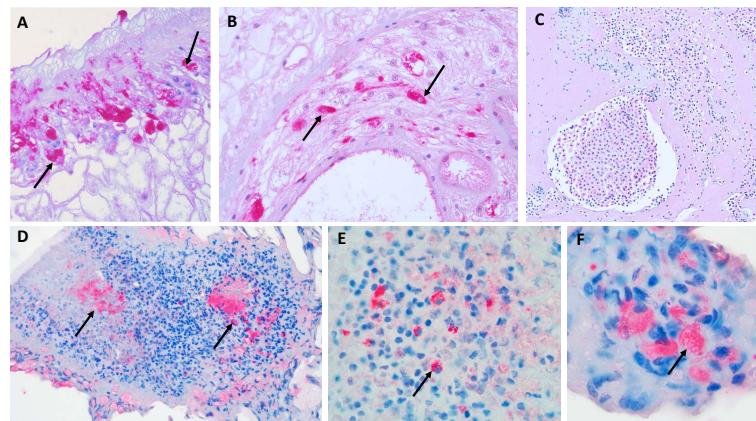












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Neorickettsia final chart.xlsx available at <https://authorea.com/users/498812/articles/579518-identification-of-a-novel-neorickettsia-species-in-a-kemp-s-ridley-sea-turtle-with-granulomatous-nephritis-and-development-of-a-quantitative-pcr-assay>