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A New Species of Kitefin Shark (Squaliformes: Dalatiidae: *Mollisquama mississippiensis*) from the Gulf of Mexico.

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A new Western North Atlantic Ocean species of kitefin shark, *Mollisquama mississippiensis* **sp. nov.**, was captured during a NOAA/NMFS midwater trawling survey to assess predator/prey trophodynamics for sperm whales (*Physeter microcephalus*). The new species designation is based on five diagnostic features not found on the only other known pocket shark specimen — *Mollisquama parini* Dolganov that was captured in the eastern South Pacific Ocean. Diagnostic features include a putative pit organ, photophores irregularly distributed along many areas of the body, 16 distinct ventral-abdominal photophore aggregations, and two differences associated with the dentition. Other potential diagnostic features are 10 fewer vertebrae than *Mollisquama parini* and six morphometric proportional differences that exceeded +/- 20%. The unique pocket gland that produces and expels luminous fluid was examined with high-resolution synchrotron scans and by histological analysis.