

ACOUSTICS2008/214

Passive acoustic detection of grouper sound production

David Mann^a, James Locascio^a, Michelle Schärer^b, Chris Koenig^c, Michael Nemeth^b, Misty Nelson^a, Felicia Coleman^c and Richard Appeldoorn^b

^aUniversity of South Florida, College of Marine Science, 140 7th Ave. S., St. Petersburg, FL 33701, USA

^bUniversity of Puerto Rico-Mayaguez, Department of Marine Sciences, Isla Magueyes, La Parguera, 00667 Lajas, Puerto Rico

^cFlorida State University, Coastal and Marine Laboratory, St. Teresa Beach, FL 32358, USA

Passive acoustic recordings were used to study the behavior of red hind (*Epinephelus guttatus*) at spawning aggregation sites off of Puerto Rico and Mona Island, and goliath grouper (*Epinephelus itajara*) and red grouper (*Epinephelus morio*) on the West Florida Shelf. The sounds produced by each species were unique, low-frequency pulsed sounds and associated with reproductive-related behavior. Male red hind produced sounds composed of a series of pulses that graded into a tonal-like sound, mostly during territorial patrolling. Long-term acoustic recorder (LARS) data from the west coast of Puerto Rico and Mona Island showed similar diel periodicities of sound production of red hind, but had different monthly peaks in sound production. Goliath grouper sounds consisted of low-frequency individual pulses (50-100 Hz) that are consistent with sounds produced by a large fish, and showed lunar periodicity in sound production. Peaks in sound production occurred nightly after midnight, but sounds were also produced throughout the day. Sound production and spawning by red grouper was recorded using a remotely operated vehicle (ROV) at depths of 80-100 m. Passive acoustic techniques can provide synoptic, long-term time series of sound production associated with reproductive activities of soniferous species at widely spaced sites.