



SCHOOL OF OCEAN SCIENCE AND ENGINEERING



Student Spotlight on Christian Hayes

Degree path: Ph.D.

Course of study: Coastal Sciences

I earned an M.S. in Biology from Loma Linda University

Interests

- 1) the role of aquatic plants as habitat for coastal animals
- 2) human impacts on the ecology of coastal systems
- 3) the ecology and conservation of marine reptiles.

Summary of USM Dissertation research

Seagrass meadows are important nursery environments for many juvenile fish and invertebrate species that provide enhanced food supplies and protection from predation. The role of seagrass bed structural complexity as a driver of nekton recruitment dynamics and faunal community structure is well known, but few studies have directly compared relationships between seagrass nursery function and complexity over large areas. My dissertation work involves an unprecedented large-scale investigation of patterns and drivers of nekton community structure in turtlegrass (*Thalassia testudinum*) dominated seagrass beds across the Gulf of Mexico (GOM), from Florida to Texas. The project is funded by the NOAA RESTORE Science Program and involves collaborative, simultaneous surveys and experiments to investigate relationships between nekton habitat use and seagrass structural complexity across the GOM. Results from this research indicate that nekton communities in seagrass systems differ across the northern GOM and that community differences may

be partially driven by differences in seagrass complexity among sites. This data will be used by partnering scientists to develop habitat specific production models for key fisheries species which in turn will better enable resource managers to predict future changes in fishery production and ensure future sustainable fisheries.

Other research interests

I am also interested in the intersections between marine tourism and conservation work and for my master's research I conducted in-water observations of hawksbill sea turtles (*Eretmochelys imbricata*) and collected turtle sightings surveys from dive shops in a marine protected area in Roatán Honduras, to determine if differences in dive site use and SCUBA diver interactions affected sea turtle behaviors. I am currently a collaborator on two ongoing hawksbill studies, one which tests the accuracy and effectiveness of using photo-id software to identify sea turtles in-situ and a second study which examines how hawksbills may strategically forage for coral reef prey items to maximize energy content

Campus/ community involvement

I am a member of the Marine and Estuarine Graduate Student Association (MEGSA) and the American Fisheries Society University of Southern Mississippi Subunit (AFS-USM). I have served as a science judge for the Hurricane Bowl (2018) as well as a Volunteer for the Pathways to Possibilities event (2019) and am active as a piano accompanist in my local church. I have regularly

presented my research for a wide variety of audiences at venues such as the Gulf Coast Research Lab Science Cafe and the Graduate student summer workshop series. I have also participated in the Professionals in Preparation Program at USM.

Why I chose USM

USM offered me the opportunity to do conduct meaningful and practical research in the marine environment and helped me hone the research and teaching skills I need for a future career in academia.

