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Undergraduate Research in Biology: Aquatic

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10:15-11:15 AM (Learning Commons, 1310)
Undergraduate Research in Biology: Aquatic
Chair: Dr. David Gauthier, Department of Biological Sciences

Experimental Oral Transmission of *Mycobacterium shottsii* and *M. pseudoshottsii* to Chesapeake Bay Striped Bass (*Morone saxatilis*)

By Brittany St.Jacques, Ashley Moye, Brandon Rowan (Mentor: Dr. David Gauthier)

The bacterial disease, mycobacteriosis, is present in Chesapeake Bay striped bass (*Morone saxatilis*) at high endemic levels. Mycobacteria isolated from these fish are predominantly two novel species: *Mycobacterium pseudoshottsii* and *M. shottsii*. Despite a century of research on finfish mycobacteriosis, only one paper has demonstrated transmission by biologically relevant exposure routes, while other accounts remain anecdotal. This work examined experimental oral transmission of *M. pseudoshottsii* and *M. shottsii* to striped bass, via amended gel-based feed. *M. pseudoshottsii* was recovered from spleens of 10% of exposed striped bass, indicating that ingestion is a viable natural transmission mode for this pathogen.

Studying the Oral Route of Transmission for *Mycobacterium marinum* to *Danio rerio*

By Ashley Moye, Brittany St.Jacques, Brandon Rowan (Mentor: Dr. David Gauthier)

The route of transmission of pathogenic *Mycobacterium* spp. to fishes is not well understood. The suggested routes of transmission include: ingesting prey infected with *Mycobacterium* spp.; direct contact; or aqueous exposure via the skin, gills or intestine. The purpose of this study was to investigate the oral exposure route by inoculating a gelatin-based food with two doses of *Mycobacterium marinum* (1218R) and feeding to the model species, *Danio rerio* (zebrafish), over a period of four weeks. Mycobacterial presence in internal organs was determined by qPCR and bacteriology. Preliminary results suggest that *Danio rerio* are refractory to oral infection with *Mycobacterium marinum*.

Marine Species Distribution and Spatial Analysis – Applications in Marine Conservation

By Angela Goodpaster (Mentors: Drs. Heather Harwell and Kent Carpenter)

The Global Marine Species Assessment, headquartered at ODU, is a unit of the Species Programme of the International Union for Conservation of Nature. The GMSA is compiling into a database global and regional distribution ranges of marine species that are reviewed by a network of scientists. Spatial analyses from these species distributions reveal patterns of species richness, concentrations of threats and threatened species and gaps in coverage of marine protected areas related to threatened species. These geospatial data can then be used to create awareness of conservation needs and influence conservation policy.

A review of the Indo-Pacific *Canthigaster solandri* complex

By Emilie Stump (Mentors: Drs. Heather Harwell and Kent Carpenter)

Canthigaster solandri was considered to be among the most widespread and variable members of the genus *Canthigaster* (the sharpnose pufferfishes), with a distribution extending from East Africa to the Hawaiian Islands. Genetic and morphological evidence support the existence of three species in the *C. solandri* complex: *C. solandri* Richardson 1845, *C. papua* Bleeker 1848, and *C. petersii* Bianconi 1850, which we resurrect as a valid Indian Ocean species based on divergence in the CO1 gene. While a substantial amount of intra-specific variation in coloration is observable within *C. solandri*, *C. papua*, and *C. petersii*, a combination of color characters can be used to reliably separate these species.