SINCCOS NATIONAL CENTERS FOR COASTAL OCEAN SCIENCE

SCIENCE SERVING COASTAL COMMUNITE

NCCOS's Key Species and Bioinformatics Branch – assessing the ecological impacts of marine stressors through key biological indicator species

Jeff Guyon, PhD Branch Chief, Key Species and Bioinformatics Branch NCCOS Charleston

Volume 4; Key Species and Bioinformatics; p. 1 Fate & Effects of Contaminants Program Review, Sept 15-17, 2020



NOAA Trust Resources Health/Environmental Evaluations

Chemical Contaminants Biological Contaminants Physical Contaminants Physical Conditions

Actionable Science

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Key Species and Bioinformatics Branch

SCIENCE. SERVICE. STEWARDSHIP.

Branch Chief: Jeff Guyon, PhD (University of Notre Dame/Harvard Medical School)

Coral Health and Disease (CH&D) Program

Program Lead:Cheryl Woodley, PhD (Medical University of South Carolina)Federal Staff:Laura Webster, BS (College of Charleston), BS (MUSC)Contractors:Lisa May, MS (Austin Peay State University)Carl Miller, BS (Purdue University)Zac Moffitt, BS (University of South Carolina)Elizabeth Duselis, PhD (University of Virginia)Ron Kothera, MS (Clemson University)

Environmental Genetics (EG) Program

Program Lead: **<u>Thomas Greig</u>**, **PhD** (University of South Carolina)

Quantitative Ecology (QE) Program

Program Lead: Len Balthis, PhD (Medical University of South Carolina)

Coastal Marine Mammal Assessment (CMMA) Program

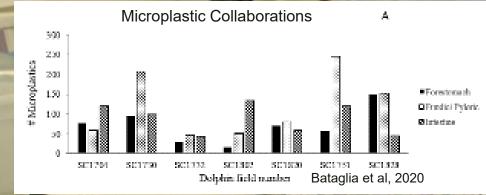
Program Lead: <u>Wayne McFee, MS</u> (Northeastern University) Part-time Contractor: Tessa Pfeiffer, MS (College of Charleston)

On the Web: www.....oaa.gov | On Twn..... @NOAA | On Facebook: NOAA

Coastal Marine Mammal Assessment Program

River otters as a model for chemical contamination

EEE E





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Fin tagging collaboration (oil)

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Partnerships









Marine Debris Program







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Coral Health and Disease Program

Stressor Detection & Biological Effects in Coral Reef Environments

- Chemical
- Physical
- Biological









Coral Reefs: Field Investigations & Training



Quantitative Ecology (QE) Program

Weeks Bay, AL

ere TX

Grand Bay, M8

NOAA/State Estuarine Research Reserves

Rookery

Bay, FL.

NOAA/NOS Physical Trust Resources Overall Habitat Quality Index ■ Poor (0) ■ Fair (3) ■ Good (5) <3 >4 Olympic Coest 🤇 den Michigan 🖬 🔘 Greater Facultones C atown Gra Potomac River Control Bank Monterey Bury Paciationaportexitations Water Quality Index Sediment Quality Index **Biological Condition** ■ Poor (0) ■ Fair (3) ■ Good (5) ■ Poor (0) ■ Fair (3) ■ Good (5) ■ Poor (0): B-IBI < 2 □ Fair (3) <3 ≥4 <3 ≥4 Good (5): $B-|B| \ge 3$ Manager Manager DO Interior Humanatan Witness ■ Poor (0): < 3 mg/L Fair (3) TOC ⊺oxicity¹ Contaminants² Good (5): $\geq 4 \text{ mg/L}$ ■ Poor (0): > 5% Poor (0): Both ■ Poor (0): > 0.058 □ Fair (3) ■ Fair (3) 1 of 2 □ Fair (3) ■ Good (5): < 3% Good (5): Neither ■ Good (5): < 0.02 pH (sal-corr) American Samba (U.S.): ■ Poor (0): < 7.22 ¹ Microtox ²Mean ERM Quotient C Rome Assi □ Fair (3) **NOAA/NOS National Marine Sanctuaries** ■ Good (5): > 7.35 Fecal Coliform Paddla Bay ■ Poor (0): > 400/100ml □ Fair (3) Lake Superior, WI Good (5): ≤ 43/100ml Walls, ME Eutrophication Index South Slough, Ol Old Woman Great Bay, NH Creck, OH Wequoit Bay, MA ■ Poor (0) ■ Fair (3) ■ Good (5) Narragansett Bay, R <3 >4 Hudson River, NY Incrues Cousteau. Delaware, DE San Francisco Chesapeake Bay, ND Bay, CA Chesapeake Bay, VA Elkhorn Slough, CA Chlorophyll a Total Nitrogen **Total Phosphorus** North Carolina, NC North Inlet-Winyah Bay, SC Poor (0): > 1.05mg/L ■ Poor (0): > 0.12mg/L ■ Poor (0): > 16.4µg/L ACE Besin, SC □ Fair (3) □ Fair (3) □ Fair (3) apelo Island, GA ■ Good (5): ≤ 11.5µg/L Tijuane River, Gé Good (5): ≤ 0.81ma/L Good (5): ≤ 0.10mg/L informatio Matanzaari Apalachicola, FI

Sampling indicators and scoring criteria used to derive indices of water quality, sediment quality, biological (benthic) condition, and overall habitat quality

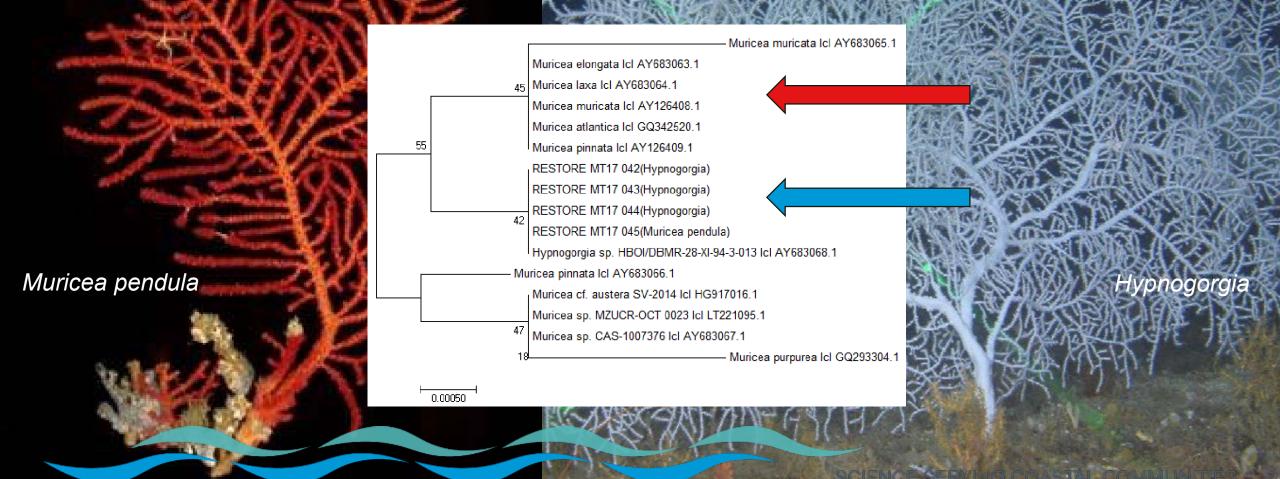
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Environmental Genetics Program

For an accurate damage assessment, what species may be impacted?



Role of the Key Species and Bioinformatics Branch

actionable science supporting NOAA trust resources