

ABUNDANCE AND DISTRIBUTION OF TWO SPECIES OF *Squilla* (CRUSTACEA: STOMATOPODA: SQUILLIDAE) IN THE NORTHERN GULF OF MEXICO

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ABSTRACT: Stomatopods (mantis shrimps) are predatory benthic crustaceans. Mantis shrimp in the genus *Squilla* are frequent bycatch animals unintentionally collected in conjunction with the shrimp fishery in the Gulf of Mexico (GOM). Their carcasses are discarded instead of being retained for human consumption, fish meal, or other protein-based food products. The size, depth, salinity, and temperature distributions of these species, as well as their abundance based on gender, were examined to gain biological information that would be necessary if a fishery were to develop in the GOM. I collected samples ($n = 2,854$) of *Squilla empusa* and *Squilla chydæa* in the northern GOM at depths of 1–96 m at 56 stations. *Squilla chydæa* was generally collected in greater abundance and in deeper water compared to *S. empusa*, even though the biomass of *S. empusa* collected in this study was larger than that of *S. chydæa*. For both species, individuals were larger in body length and wet weight in the winter, but more individuals were collected in the summer. Female *S. chydæa* dominated the catch in summer; there was no seasonal difference in sex ratio for *S. empusa*. The potential for commercial harvesting of mantis shrimp in the northern GOM is discussed and compared to other mantis shrimp fisheries.

THE INFLUENCE OF HABITAT AND FISHING ON REEF FISH ASSEMBLAGES IN CUBA

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ABSTRACT: The abundance of selected fish species was estimated using the stationary visual census technique in the northwestern region of the Cuban shelf. A total of 26,809 individuals of 32 species were counted in 1,172 stationary point censuses made at 10 reef sites along the coast. We found that the abundance patterns were most probably the consequence of the presence/absence of mangroves and seagrass beds in adjacent lagoon areas. A second factor influencing the spatial variation appeared to be overfishing on an east-west gradient, with lower abundances of commercially targeted species near Havana City in the east.

RESUMEN: La abundancia de especies de peces seleccionadas fue estimada usando una técnica de censo visual estacionario en la región noroccidental de la plataforma cubana. Se realizaron 1,172 censos puntuales estacionarios en 10 sitios arrecifales a lo largo de la costa. Se contaron en total 26,809 individuos pertenecientes a 32 especies. Se encontró que los patrones de distribución de abundancia son muy probablemente la consecuencia de la presencia o no de manglares y pastizales marinos en las áreas lagunares adyacentes. Un segundo factor que influye en la variación espacial parece ser un gradiente de sobrepesca en la dirección este-oeste, con abundancias menores de peces comerciales cerca de la Ciudad de La Habana, en el este.

SEAGRASS LOSS IN BELIZE: STUDIES OF TURTLEGRASS (*THALASSIA TESTUDINUM*) HABITAT USING REMOTE SENSING AND GROUND-TRUTH DATA

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ABSTRACT: Spatial and temporal change in turtlegrass (*Thalassia testudinum*) habitat of the South Water Caye Marine Reserve (SWCMR) in Belize were analyzed using satellite images backed up with ground-truth data. We had two primary objectives. First, we wanted to determine areal expanse of seagrass across a large area (~12 km by 3 km) of the SWCMR, and address its change over time. We used paired satellite images taken during 2001 and 2005 to determine coverage by seagrass and measure temporal variables. These analyses recorded an overall seagrass loss of 1.8% (52.3 ha) during the 4 yr period. Secondly, we wanted to determine whether seagrass gains or losses were consistent across the study area. Replicate sampling was used as a statistical basis and confirmed a significant loss of seagrass across the region. It also helped identify two regions of significant seagrass loss; one 600 ha area lost 12.4% of its seagrass; another 240 ha area lost nearly 40%. These components helped us assess seagrass habitat in an area perceived as critical to Belize fisheries, and provided the scale and statistical rigor necessary to adequately assess a broad region of study. The salient results from our study were not the magnitude of seagrass loss *per se*, but the loss in seagrass habitat from an area that is thought to be relatively pristine. Seagrass-habitat loss in this region of the Caribbean Sea may be evidence that even near-pristine areas can be impacted by anthropogenic factors. Determining the causes of habitat loss may help prevent loss of productivity, habitat, and livelihood for the associated human and nonhuman communities.

DETERMINING SALINITY-TOLERANCE OF GIANT SALVINIA USING CHLOROPHYLL FLUORESCENCE

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ABSTRACT: *Salvinia molesta* Mitchell, a floating invasive aquatic plant, is one of the top 10 worst invasive aquatic weeds in the world. It was discovered in the lower Pascagoula River in 2005 and evidence suggests that this non-native species is spreading along the northern Gulf of Mexico. These plants exhibit rapid growth and nutrient uptake rates, allowing them to out compete other plants in similar habitats. Distributional observations suggest that non-native *S. molesta* is able to survive in salinities of up to 7 ppt in the lower Pascagoula River. The response of *S. molesta* to three salinity levels (0, 5, 10 ppt) was tested using chlorophyll fluorescence. The health of the plants was measured over a period of one month, using a log scale series of observation intensities (hourly, daily, weekly). Plant responses indicated an acute salinity effect after about 4-6 hrs and then a gradual chronic decline. Compared to initial measurements, the final actual quantum yield ($\Delta F/F_m'$) dropped by 5%, 6% and 29%, while the final potential quantum yield (F_v/F_m) dropped 6%, 27% and 39% in the 0, 5, and 10 ppt treatments, respectively. Only plants in the 0 ppt treatment showed significant new growth. Plants in 5 ppt appeared to maintain themselves, but plants at 10 ppt all exhibited signs of severe stress and loss of color, turgor, and tissue viability after 10 d. Tolerance to brackish salinities has been reported in the past, and has implications for the use of the biological control agent, the weevil *Cyrtobagous salviniae*, that can only tolerate freshwater conditions.

MORPHOLOGICAL CHARACTERISTICS OF EARLY LIFE HISTORY STAGES OF THE BLUE CRAB, *CALLINECTES SAPIDUS* RATHBUN, FROM THE NORTHERN GULF OF MEXICO WITH A COMPARISON OF STUDIES FROM THE ATLANTIC SEABOARD

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ABSTRACT: Zoeae, megalopae, and early crab stages of *Callinectes sapidus* Rathbun, 1896 were described from the northern Gulf of Mexico (nGOM). Observations during this study were based on larvae reared in the laboratory through the early crab stages and on megalopae and early crab stages collected in the wild. Gulf of Mexico data are compared with similar information for the southeast Atlantic coast of the United States. Size and setation of *C. sapidus* larvae reared from nGOM stocks were different than those in published descriptions of larvae reared from Atlantic populations. Seasonal differences in size were noted in both reared and wild caught specimens. Zoal stages I, II and III of larvae cultured in the spring were larger than corresponding larvae hatched in the summer/fall. Data sets on zoal stages IV and V were incomplete; however, seasonal differences in measurements on all structures tended to be smaller in the summer/fall reared larvae. No seasonal differences were observed for the sixth and seventh zoal stages, megalopal stage and first crabs. Spring reared larvae had higher survival rates when reared at optimal temperature (25°C) and required fewer zoal stages (6) to reach the megalopal stage. Megalopae and first crabs collected from the plankton exhibited distinct seasonal variations and were larger in the spring than in fall.

SHORT COMMUNICATION

**A COMPARISON OF FISH POPULATIONS IN SHALLOW
COASTAL LAGOONS WITH CONTRASTING SHOALGRASS
(*HALODULE WRIGHTII*) COVER IN THE NORTHCENTRAL
GULF OF MEXICO**

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SHORT COMMUNICATION

**FIRST RECORDS OF THE SEAGRASS PARASITE *PLASMODIOPHORA*
DIPLANTHERAE FROM THE NORTHCENTRAL GULF OF MEXICO**

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SHORT COMMUNICATION

**MACROFAUNA ASSOCIATED WITH UNGROUNDED PROP
ROOTS OF *RHIZOPHORA MANGLE* IN VERACRUZ AND
QUINTANA ROO, MEXICO**

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SHORT COMMUNICATION

**AGE ESTIMATES OF TWO LARGE MISTY GROUPE,
EPINEPHELUS MYSTACINUS (SERRANIDAE) FROM BERMUDA
WITH A COMPARISON OF THE AGE OF TROPICAL
GROUPERS IN THE WESTERN ATLANTIC**

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SHORT COMMUNICATION

**NOTE ON THE NATURAL AND CULTURAL HISTORY OF
HURRICANE BALLS**

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