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# A Multi-Year Survey of Meiofaunal Abundance From the Northern Gulf of Mexico Continental Shelf and Slope

Stephen C. Landers, Frank A. Romano III, Paul M. Stewart, and Steve Ramroop

**This 3-yr (2007–09) survey documented meiofauna abundance across the northern Gulf of Mexico on the continental shelf and slope from south Texas to south Florida. Sediment samples were collected from depths ranging from 29 to 509 m (average = 132 m) on the National Oceanic and Atmospheric Admistration ship *Gordon Gunter* during the annual fall small pelagics fish-sampling cruise. A total of 259 sediment samples from 99 Shipek® grabs were analyzed. Meiofauna were isolated from the sediment by sieving (63-µm sieve) and concentrating the organisms via Ludox® centrifugation. Each year the two dominant animal groups were nematodes and copepods, followed by polychaetes, nauplii, kinorhynchs, priapulid loricate larvae, tardigrades, and Acari. Spearman correlations indicated that abundances of nematodes, copepods, polychaetes, and nauplii were positively related, and that all meiofauna groups decreased in abundance with increasing longitude (farther west). Abiotic variables such as salinity, temperature, and depth did not correlate with any meiofauna group. Distribution maps of the animals indicated a clear geographic trend that was supported statistically, in that the animal groups were more concentrated in Florida samples rather than the central and western continental shelf.**

## Introduction

Few long-term and large-scale studies of meiofauna exist despite their recognized importance in benthic ecosystems. The patchiness and unpredictability of meiofauna densities complicate the study of these animals, which require repeated sampling in order to make conclusions and interpretations regarding their distribution. Recent studies of Gulf of Mexico (GOM) meiobenthos from shallow to deep-sea areas (Fleeger and Chandler, 1983; Yingst and Rhoads, 1985; Pequegnat et al., 1990; Montagna and Harper, 1996; Escobar et al., 1997; Baguley et al., 2006a, 2006b; Escobar-Briones et al., 2008) report information regarding the distribution and density of various meiofaunal groups. These provided comparative data for this first study of the shelf/slope area of the entire northern GOM.

Though studies of deep-sea (Tietjen, 1971; Coull et al., 1977; Baguley et al., 2006a, 2006b) and near shore (Fleeger and Chandler, 1983) meiobenthos exist, only a few studies have focused on the meiobenthos of the continental shelf (Coull et al., 1982) and none concentrate on large areas of the Gulf shelf. This report presents data from a 3-yr study of continental shelf meiofauna, collected each October–November from 2007–09 from 99 sediment grabs and from a range of depths and locations. The goal of this study was to provide a general overview of meiofauna distribution and abundance along the northern Gulf shelf, and to determine if different animals in the meiofauna show correlation patterns that would be useful in understanding their community structure. The sampling area was extensive (southern Texas to southern Florida) and the data suggest relationships that may help explain the distribution of some meiofauna groups.

## Methods

*Field collection and meiofauna isolation.*—Sediment samples were collected from the northern GOM continental shelf and slope on the National Oceanic and Atmospheric Admistration (NOAA) ship *Gordon Gunter* during NOAA's annual small pelagics fish-sampling cruise, October–November 2007, 2008, and 2009. The same sampling cruise was chosen each year to avoid seasonal variations in meiofaunal abundances, and to provide consistency with regard to the general sampling area (offshore sites near the continental slope). During the 3 yr of collections, 259 sediment cores were examined from 99 separate grabs (Fig. 1). Sample sites were from the continental shelf and occasionally from the upper slope, with depths ranging from 29 to 509 m and an average sample depth of 132 m. Site selection was random (roughly every third fish-sampling location during the cruise) and coincided with the fish-sampling sites selected randomly by NOAA.

Samples were collected using a Shipek® grab, which collected a sample that left the top layer of

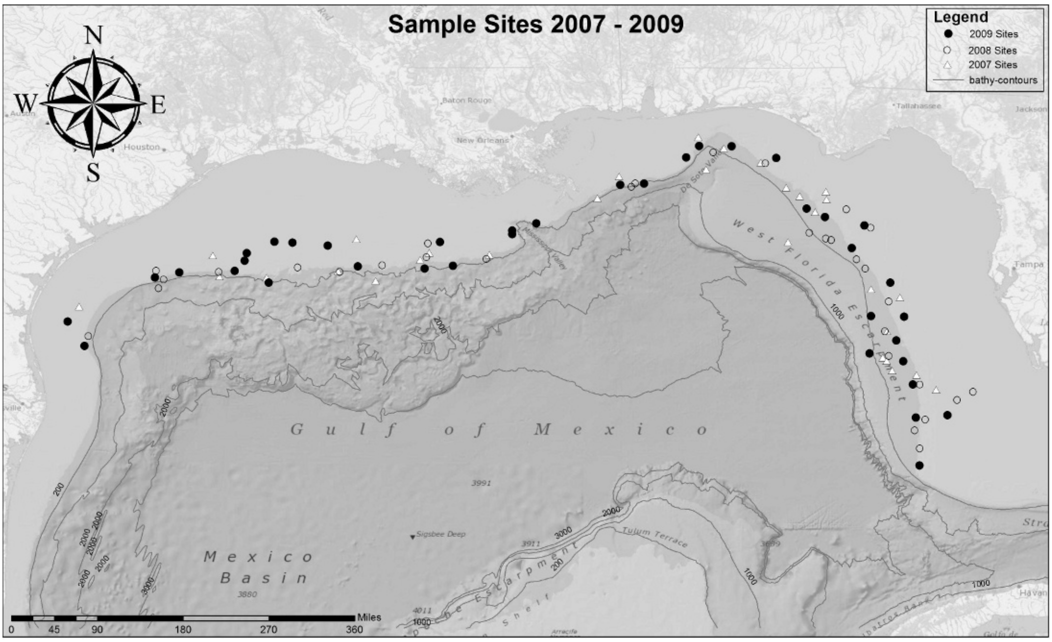


Fig. 1. Sample sites 2007–09. Site depths varied from 29 to 509 m (mean = 132 m).

the sediment undisturbed. Multiple cores from each grab were taken using a polyvinyl chloride tube (4.4 cm inner diameter, cross-sectional area = 15.2 cm$^2$) to a depth of 5 cm. Location, sample depth, salinity, and dissolved oxygen were recorded by NOAA at each site. The sediment was fixed for a minimum of 24 hr in 10% buffered formalin and then sieved through either a 500- or 333-μm presieve and then a 63-μm final sieve (Coull et al., 1982; Giere, 1993). Meiofauna were then recovered from the 63-μm catch using Ludox® centrifugation (Burgess, 2001; Montagna, 2001). Meiofauna were stored in ethanol and later counted using a counting wheel mounted under a stereomicroscope at Troy University and Jacksonville State University. Animals were identified to major taxonomic groups using Higgins and Thiel (1988). Animal groups that could not be identified with confidence were omitted from the count.

*Analysis.*—SPSS 11.0® software was used for the cross-correlation (Spearman's rho) analysis. Though every effort was made to analyze three or four cores from each Shipek® grab sample, this was not always possible. Averages per site were calculated for the meiofauna at each of the 99 grabs. In two instances sample bottles from the same grab were combined on the ship. Counts from those bottles were divided later for averaging. Longitude was converted to positive values (i.e., 88°W rather than − 88°) for the correlations, to avoid confusion. Cross-correlational analysis was done for all 99 grabs over the 3 yr of collection, for individual years of the study in order to examine temporal changes, and for separate areas in the Gulf to examine regional differences. Bray–Curtis similarity analysis and cluster analysis of square root–transformed data was also used to examine regional differences in meiofauna relationships.

For map construction [geographic information systems (GIS) mapping used ArcGIS® 10], the data are represented by the 99 sampling sites. Each site is represented using an average site value though some sites had a greater number of sediment cores than others. The Nematoda, Copepoda, Polychaeta, and nauplii distribution maps (Figs. 2–5) were constructed to show abundance relative to the percentage of the mean of all 99 sites. Due to their low abundance, kinorhynchs, priapulids, tardigrades, and Acari were mapped simply by their presence or absence at each grab site (Figs. 6, 7).

## Results

*General.*—Over 33,300 animals were identified to group level during the study. Animal abundances varied from year to year, though the nematode/copepod ratios were similar, ranging from 7.6 to 11.1 (Table 1). Nematodes were the most dominant member of the meiofauna followed by copepods and polychaetes. The average density of animals/10 cm$^2$ ranged from 66.6 to 122.4. The nine animal groups reported in the study and their abundances are listed in Tables 1 and 2.


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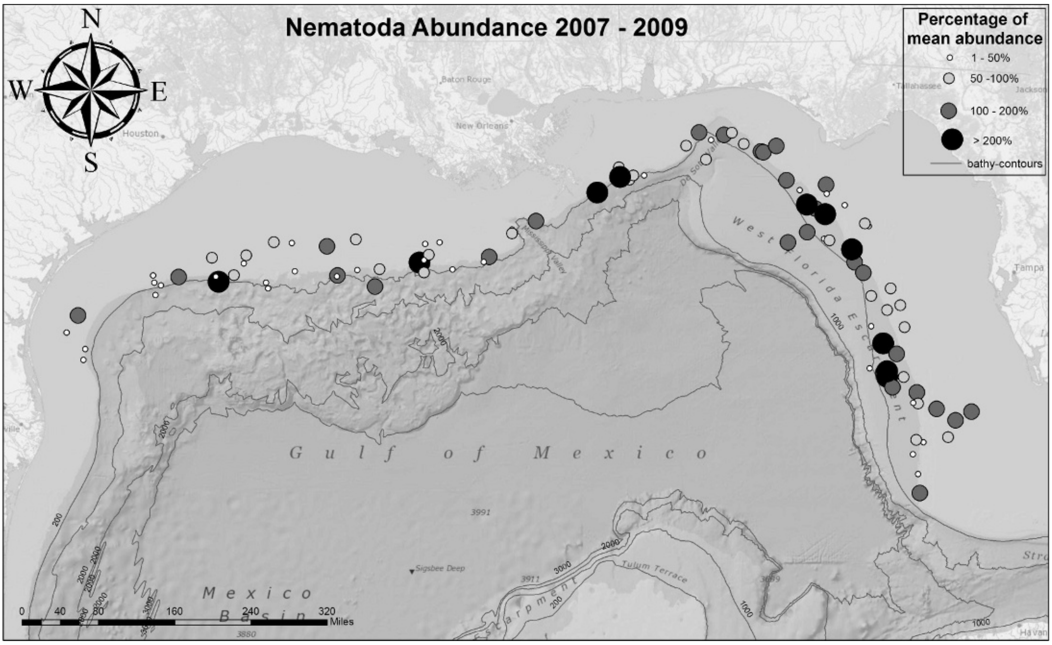


Fig. 2. Nematode abundance 2007–09, mapped as a percentage of the mean value for all grabs; 70% of above-mean locations are in Florida.

*Statistical analysis.*—The cross-correlational data provided many positive correlations with a statistical significance at the < 0.05, < 0.01, and < 0.001 confidence levels (Table 3). The significant correlations at the < 0.001 level suggest a relationship among the dominant meiofauna members: nematodes, copepods, polychaetes, and nauplii. Additionally the data support a significant negative correlation with all animal groups (except loriciferans, n = 2

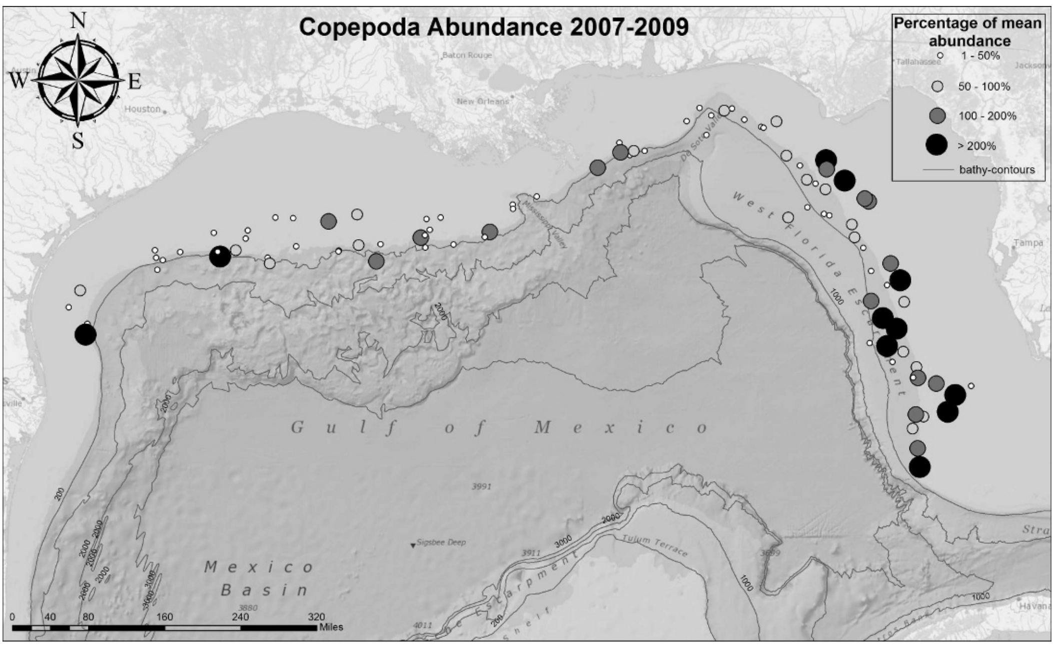


Fig. 3. Copepod abundance 2007–09, mapped as a percentage of the mean value for all grabs; 67% of above-mean locations are in Florida.

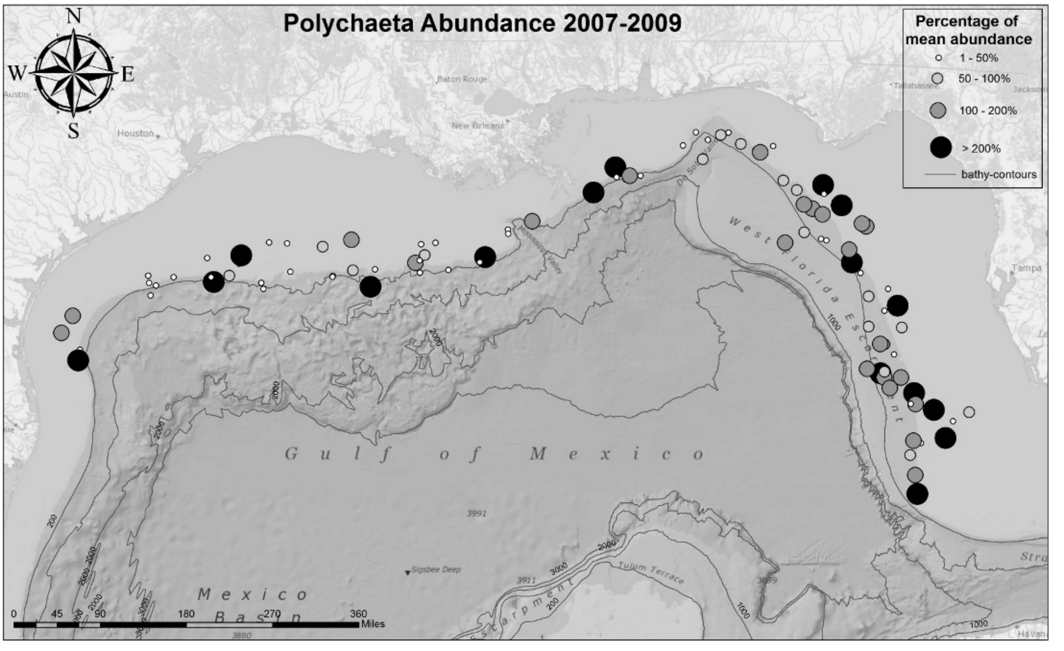


Fig. 4. Polychaete abundance 2007–09, mapped as a percentage of the mean value for all grabs; 66% of above-mean locations are in Florida.

individuals) and longitude. This negative correlation suggests that general meiofauna abundance levels decrease as sampling occurs in a westerly direction.

Correlations separating Florida from the rest of the Gulf were analyzed to explore the increase in meiofauna abundance in that region (Table 4). These data reveal relationships in Florida

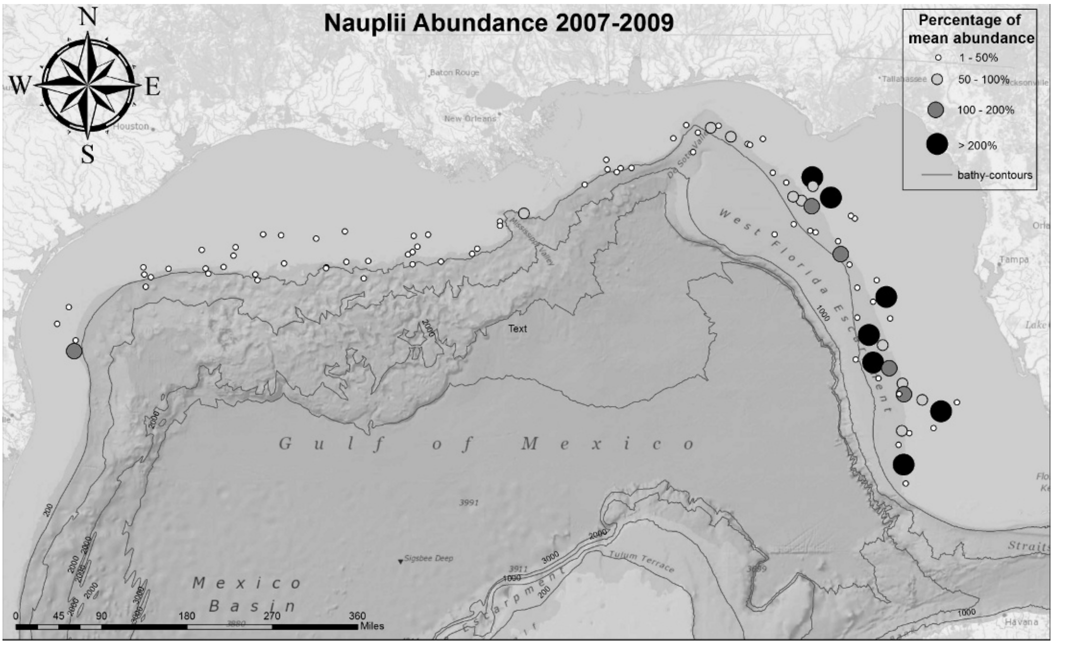


Fig. 5. Nauplii abundance 2007–09, mapped as a percentage of the mean value for all grabs; 92% of above-mean locations are in Florida.


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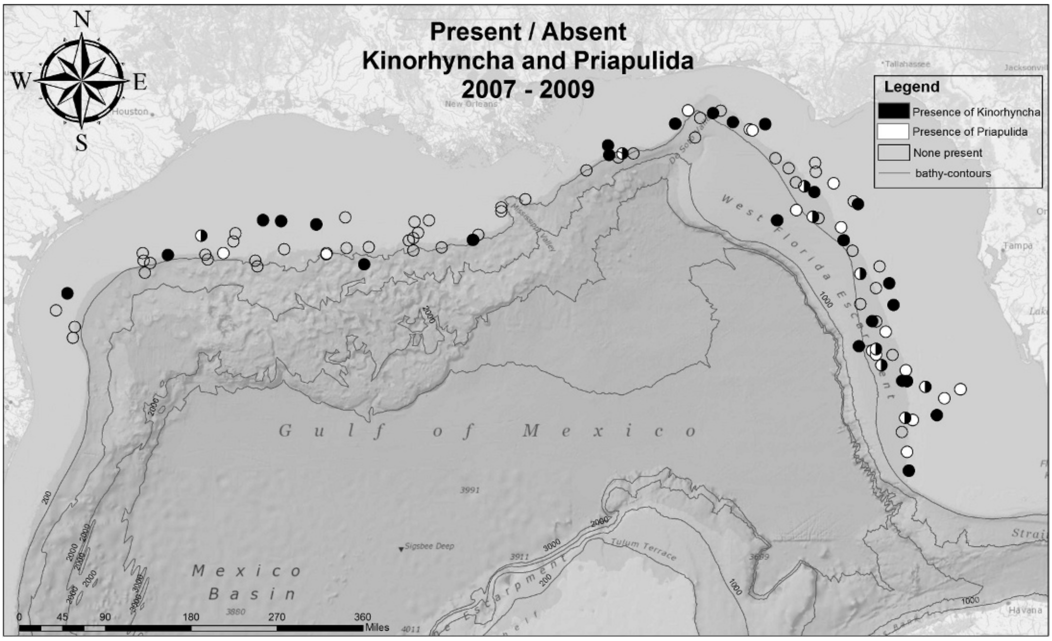


Fig. 6. Kinorhynch and Priapulida loricate larva distribution 2007–09, mapped as present or absent; 69% of kinorhynch and 84% of priapulida locations are in Florida.

between copepods, polychaetes, nauplii, mites, and tardigrades— animal groups shown by GIS mapping to be concentrated in Florida (next section). Nematode abundance did not correlate strongly with other animal groups in Florida, as they did in Texas through Alabama, possibly due to their more uniform distribution in the Gulf compared to other meiofauna groups. Bray–Curtis similarity analysis of square root–transformed data and cluster analysis were used to

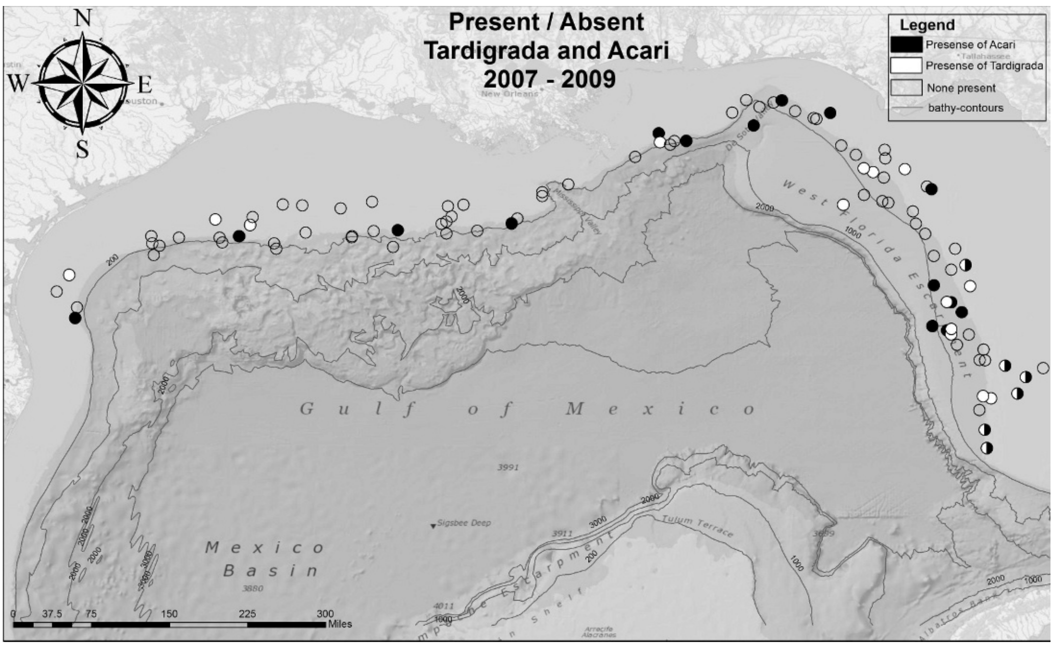


Fig. 7. Tardigrada and Acari distribution 2007–09, mapped as present or absent; 80% of tardigrada and 71% of Acari locations are in Florida.

TABLE 1. Density averages from 99 grabs, 2007–09.

| | 2007 | 2008 | 2009 |
|---|---|---|---|
| No. of grabs | 29 | 32 | 38 |
| Animal density/10 cm$^2$ | 122.4 | 66.6 | 74.8 |
| Nematode density/10 cm$^2$ | 106.6 | 53.3 | 65.2 |
| Copepod density/10 cm$^2$ | 9.6 | 7.0 | 6.3 |
| Nematode/copepod ratio | 11.1 | 7.6 | 10.3 |

examine regional differences between the Texas coastal sites (longitude > 94°W), central northern Gulf sites (87.5–94°W longitude) and Florida sites (< 87.5°W longitude) for each year. These analyses did not reveal any clear regional similarities for animal communities.

Temporal differences also existed in total animal abundance and in correlations between groups (Tables 1, 2, and 5). The most obvious difference was found in 2008, in which the overall abundance was significantly less than in the other years, though in 2008 the cross-correlational analyses had the highest degree of relationship. This disparity especially involved copepod relationships, in which the 2008 correlations were higher than in 2007 and 2009. Copepod density was similar during all 3 yr, varying from 6.3 to 9.6 animals/10cm$^2$, suggesting that the 2008 copepod correlations may be driven more by the variability in the other animal groups.

*Distribution maps.*—Distribution maps indicated regional differences among the meiofauna that were supported by the statistical analysis. Sites with an above average abundance for nematodes (> 73/10 cm$^2$), copepods(> 7.5/10 cm$^2$), polychaetes (> 3.1/10 cm$^2$), and nauplii (> 1.4/10 cm$^2$) were more prevalent toward the east, in Florida (Figs. 2–5). Though Florida accounted for 54% of the sites in this survey (54/99), the above average sites for nematodes (70%), copepods (67%), polychaetes (66%), and nauplii (92%) were disproportionately found in Florida. Distribution maps for the less abundant animals (Figs. 6 and 7) revealed a similar trend, with kinorhynch (69%), priapulid (84%), tardigrade (80%), and Acari (71%) positive sites in Florida. All of the distribution maps are supported by the Spearman correlations, which reveal a negative correlation with longitude for all animal groups, indicating a higher prevalence at more eastern longitudes (Florida) than western longitudes (Texas).

## DISCUSSION

This study documented meiofauna densities along the U.S. GOM continental shelf/slope area and has corroborated the patchiness inherent in meiofauna studies reported earlier (Coull et al., 1977, 1982). Our sampling revealed large deviations from the mean between grab sites for the four most abundant animal groups (nematodes, up to + 675% of the mean at some sites; copepods, up to + 985%; polychaetes, up to + 549%; nauplii, up to + 3,450%). The 3 yr of data from 99 sites showed significant positive correlations among the four most prevalent animal groups: nematodes, copepods, polychaetes, and nauplii. These groups have been reported earlier as dominant components of the meiofaunal community (Yingst and Rhoads, 1985; Escobar et al., 1997; Baguley et al., 2006a). Positive correlations between these groups across the Gulf suggest that meiofaunal communities are consistent with respect to these taxa. Positive correlations were not present between the less abundant animal groups, reflecting their patchy and rarer occurrence. Some colocalization of rarer phyla was anticipated but not observed. In particular, the scalidophoran taxa Kinorhyncha and Priapulida were anticipated to colocalize due to similar feeding mechanisms. Though

TABLE 2. Total abundance of meiofauna animals, 2007–09. Nema = nematodes, Cop = copepods, Poly = polychaetes, Naup = nauplii, Kino = kinorhynchs, Priap = priapulida loricate larve, Tard = tardigrades, Acar = Acari, Lor = loriciferans.

| | Nema (%) | Cop (%) | Poly (%) | Naup | Kino | Priap | Tard | Acar | Lor |
|---|---|---|---|---|---|---|---|---|---|
| 2007 | 13,562 (87.7) | 1,097 (7.1) | 641 (4.1) | 69 | 38 | 30 | 13 | 8 | 1 |
| 2008 | 5,043 (81.5) | 633 (10.2) | 237 (3.8) | 209 | 14 | 25 | 13 | 12 | 1 |
| 2009 | 10,262 (87.4) | 960 (8.2) | 379 (3.2) | 62 | 29 | 11 | 13 | 16 | 0 |
| Total | 28,867 | 2,690 | 1,257 | 340 | 81 | 66 | 39 | 36 | 2 |


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Table 3. Correlation analysis (Spearman) between animal groups and abiotic factors 2007–09 (N = 99). Nema = nematodes, Cop = copepods, Poly = polychaetes, Naup = nauplii, Kino = kinorhynchs, Priap = priapulida loricate larve, Tard = tardigrades, Acar = Acari, Lor = loriciferans.

| Variable | Nema | Cop | Poly | Naup | Kino | Priap | Tard | Acar | Lor |
|---|---|---|---|---|---|---|---|---|---|
| Copepoda | 0.500*** | | | | | | | | |
| Polychaeta | 0.498*** | 0.630*** | | | | | | | |
| Nauplii | 0.352*** | 0.556*** | 0.362*** | | | | | | |
| Kinorhyncha | 0.281** | 0.252* | 0.257* | 0.231* | | | | | |
| Priapulida | 0.269** | 0.224* | 0.158 | 0.264** | 0.076 | | | | |
| Tardigrada | 0.200* | 0.402*** | 0.191 | 0.337** | 0.322** | 0.337** | | | |
| Acari | −0.040 | 0.265** | 0.183 | 0.199* | 0.126 | 0.090 | 0.134 | | |
| Loricifera | 0.149 | 0.155 | 0.191 | 0.185 | 0.205* | 0.043 | 0.129 | 0.104 | |
| Latitude | 0.098 | −0.238* | −0.121 | −0.214* | −0.047 | −0.213* | −0.303** | −0.198* | −0.153 |
| Longitude | −0.283** | −0.472*** | −0.361*** | −0.430*** | −0.220* | −0.368*** | −0.353*** | −0.266** | −0.133 |
| Dissolved oxygen | 0.065 | 0.314** | 0.273** | 0.111 | 0.069 | 0.148 | 0.252* | 0.170 | −0.095 |
| Salinity | 0.016 | 0.138 | 0.061 | 0.000 | 0.140 | 0.065 | 0.103 | 0.068 | −0.084 |
| Temperature | −0.123 | 0.078 | 0.030 | −0.025 | 0.082 | 0.016 | 0.154 | 0.092 | −0.099 |
| Sample depth | 0.127 | −0.018 | −0.025 | 0.044 | −0.031 | −0.001 | −0.087 | 0.001 | 0.101 |

* $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$.

both were found more abundantly in Florida than in the rest of the Gulf, there was no correlation between the two groups and their co-occurrence. Despite the general trend of decreased abundance with depth in the Gulf and the southeastern United States (Coull et al., 1982; Pequegnat et al., 1990; Baguley et al., 2006a), our study did not show a significant correlation between depth and abundance, likely because our collections were typically taken between 50 and 196 m (83/99 grabs), providing little depth variation for our statistical analysis.

Meiofauna are influenced by many factors in addition to depth, such as particulate organic matter and other nutrients. Baguley et al. (2006a) reported higher meiofauna concentrations with increased proximity to the Mississippi River outflow as well as within canyons (Mississippi Trough and the DeSoto Canyon) in the northeastern Gulf. In that study the samples were obtained at much greater depths than the current study. Our study did not sample the Mississippi Trough, but made many collections in or near the DeSoto Canyon, where we observed animal densities (nematodes, copepods, polychaetes, and nauplii) generally lower than mean values (Figs. 2–5). We report instead higher than average values for most meiofauna groups to the east of the DeSoto Canyon and southward along the Florida peninsula. The overall trend indicated an increased abundance of some animal groups with decreasing longitude, with higher Florida meiofauna densities than found Texas–Alabama. Spearman correlations and distribution maps for all sites indicate a clear increase in meiofauna abundance in Florida compared to the rest of the northern Gulf. This overall trend in the GOM has been reported earlier by Baguley et al. (2006a) in more northern locations of the Florida panhandle near the Mississippi River outflow, and also by Soltwedel (2000). Abundances of meiofauna in the northeastern Gulf have been attributed in part to an interaction between the Loop Current and the Mississippi River outflow, with meiofauna abundance increases likely due to increased particular organic matter in the area (Baguley et al., 2006a).

Pequenat et al. (1990) reported that ‘‘the Gulf can be divided into two major sediment provinces, carbonate to the east of DeSoto Canyon and southward along the Florida coast, and terrigenous to the west of DeSoto Canyon past Louisiana and Texas thence southward along the Mexican coast…''. This carbonate type of sandy sediment has a larger grain size than the fine sediment to the west of DeSoto Canyon and may play an important role by influencing the

TABLE 4. 2007–09 correlations in Florida vs the rest of the northern Gulf. Cop = copepods, Poly = polychaetes, Naup = nauplii, Kino = kinorhynchs, Priap = priapulida loricate larve, Tard = tardigrades, Acar = Acari, Lor = loriciferans, FL = Florida, TX = Texas, AL = Alabama.

| Variable | Cop | Poly | Naup | Kino | Priap | Tard | Acar | Longitude |
|---|---|---|---|---|---|---|---|---|
| FL Nematoda | 0.160 | 0.234 | 0.297* | 0.173 | 0.271* | 0.147 | −0.152 | 0.085 |
| FLCopepoda | | 0.494*** | 0.549*** | 0.229 | 0.147 | 0.509*** | 0.321* | −0.474*** |
| FLPolychaeta | | | 0.379** | 0.334* | 0.136 | 0.292* | 0.192 | −0.262 |
| FLNauplii | | | | 0.213 | 0.199 | 0.390** | 0.109 | −0.284* |
| TX–AL Nematoda | 0.747*** | 0.584*** | 0.316* | 0.355* | 0.171 | 0.150 | 0.040 | −0.358* |
| TX–AL Copepoda | | 0.600*** | 0.495** | 0.170 | 0.131 | 0.102 | 0.129 | −0.257 |
| TX–AL Polychaeta | | | 0.190 | 0.118 | −0.012 | −0.155 | 0.101 | −0.208 |
| TX–AL Nauplii | | | | 0.088 | 0.167 | 0.015 | 0.139 | 0.039 |

* $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$.

meiofauna community. Though the sediments are variable from site to site, our data suggest a difference in the meiofauna distribution between these two sediment provinces. Future collections will need to include granulometry analysis for each sediment collection to further understand the relationships between meiofauna abundance and sediment type. In addition to collecting in the DeSoto Canyon and northern Florida areas, our sampling extended to southern Florida, which also revealed higher than average animal densities. Thus our collections may have revealed two (among many) factors influencing meiofauna densities along the Florida peninsula: favorable sediment characteristics and increased nutrient availability from the Mississippi River outflow and Loop Current.

This is the first study to focus on the continental shelf/slope region in the GOM, and demonstrated a lower density of nematodes and copepods than previously reported in the Gulf and southern United States (Table 6). However, the nematode/copepod ratio, argued in the earlier literature with regard to its usefulness in assessing pollution studies (Coull et al., 1981, Raffaelli and Mason, 1981), fell within the range reported from those same studies (Table 6). The lower recovery that we experienced may be a result of our sampling area, near the edge of the continental shelf and primarily between 50 and 196 m in depth.

Meiofauna studies are difficult to compare because of many variables: meiofauna patchiness, sampling location, sieve size, sorting method (manual picking or Ludox centrifugation), time of year, and sampling depth. The studies listed in Table 6 vary with respect to many of these factors. One factor that is particularly interesting is the use of Ludox centrifugation to concentrate the animals rather than handpicking them from the sediment. Escobar-Briones et al. (2008) directly compared the two methods of sorting meiofauna from deep locations on the western slope in the GOM. They observed a marked decrease in animal abun-

TABLE 5. 2007–09 individual year correlations for the four major meiofauna groups. Nema = nematodes, Cop = copepods, Poly = polychaetes, Naup = nauplii, Kino = kinorhynchs, Priap = priapulida loricate larve, Tard = tardigrades, Acar = Acari, Lor = loriciferans.

| Variable | Cop | Poly | Naup | Kino | Priap | Tard | Acar | Longitude |
|---|---|---|---|---|---|---|---|---|
| 2007 Nematoda | 0.566** | 0.563** | 0.212 | 0.058 | 0.050 | 0.047 | −0.203 | 0.093 |
| 2007 Copepoda | | 0.661*** | 0.496** | 0.111 | −0.211 | 0.113 | −0.032 | −0.167 |
| 2007 Polychaeta | | | 0.250 | 0.072 | −0.103 | 0.000 | 0.142 | −0.076 |
| 2007 Nauplii | | | | 0.296 | 0.210 | 0.321 | 0.189 | −0.465* |
| 2008 Nematoda | 0.573** | 0.516** | 0.550** | 0.338 | 0.469** | 0.352* | 0.059 | −0.583*** |
| 2008 Copepoda | | 0.689*** | 0.754*** | 0.423* | 0.477** | 0.642*** | 0.342 | −0.706*** |
| 2008 Polychaeta | | | 0.460** | 0.414* | 0.380* | 0.311 | 0.068 | −0.608*** |
| 2008 Nauplii | | | | 0.442* | 0.372* | 0.610*** | 0.325 | −0.610*** |
| 2009 Nematoda | 0.383* | 0.210 | 0.406* | 0.240 | 0.308 | 0.209 | −0.039 | −0.369* |
| 2009 Copepoda | | 0.470** | 0.531** | 0.131 | 0.306 | 0.302 | 0.361* | −0.511** |
| 2009 Polychaeta | | | 0.505** | 0.184 | 0.135 | 0.167 | 0.329* | −0.312 |
| 2009 Nauplii | | | | 0.009 | 0.191 | 0.124 | 0.127 | −0.208 |

* $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$.


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Table 6. Comparison of meiofauna recovery densities (per 10 $cm^2$) in the southern United States. N/C = nematode/copepod ratio, GOM = Gulf of Mexico.

| Reference | Nematode density | Copepod density | N/C ratio | Depth (m) | Sieve (μm) | Location | Sorting method |
|---|---|---|---|---|---|---|---|
| Current study | 53–109 | 6.3–9.6 | 7.6–11.1 | 29–509 (mean = 132) | 63 | Northern GOM shelf | Ludox |
| Escobar-Briones et al., 2008 | ~ 150 | ~ 75 | ~ 2 | 1,630 | 42 | Western GOM slope | Manual |
| Escobar-Briones et al., 2008 | ~ 50 | ~ 50 | ~ 1 | 1,630 | 42 | Western GOM slope | Ludox |
| Coull et al., 1977 | 199 | 47 | 4.2 | 400 | 42 | North Carolina | Manual |
| Coull et al., 1977 | 532 | 21 | 25.3 | 800 | 42 | North Carolina | Manual |
| Coull et al., 1977 | 22 | 1.4 | 15.7 | 4,000 | 42 | North Carolina | Manual |
| Pequegnat et al., 1990 | 414 | 128 | 3.2 | 360–2,827 | 63 | Louisiana–western Florida slope | Manual |
| Montagna and Harper, 1996 | 757 | 161 | 4.7 | 29–157 | 63 | Northwest GOM | Manual |
| Baguley et al., 2006a | 1,747 | 311 | 5.6 | 212–3,725 | 45 | North central GOM | Ludox |
| Yingst and Rhoads, 1985 | 176 | 99 | 1.8 | 90–223 | 44 | Flower Gardens, Texas | Manual |

dance using centrifugation though the samples were first counted manually and then remixed with sediment for centrifugation, which may have increased sample loss because of the extra handling. Conversely, Burgess (2001) reported a recovery of > 95% for meiofauna from Texas marine sediment using Ludox. Our collections, using Ludox, have been remarkably consistent with respect to nematode recovery as a proportion of the total animal abundance from year to year (81.5–87.7% each year) and have shown consistency in the recovery of the less common animal groups from year to year. In our future collections (we have already collected 2010 and 2011 data for a post–Deepwater Horizon study) we will need to experiment with sieve sizes and sorting methods to provide more consistent comparisons.

In summary, this study reports that the four dominant members of the meiofauna: nematodes, copepods, polychaetes, and nauplii, increase in abundance together among collection sites in the northern GOM. Statistical analysis and distribution maps suggest a disproportionate localization of meiofauna groups along the Florida coast when compared to other geographic areas, possibly due to nutrient availability and sediment characteristics. Obviously there are many dynamics that influence the distribution and community structure of the meiofauna: annual variability, sediment type, particulate organic matter/nutrient availability, and possibly interactions between meiofauna groups that favor their establishment in different areas of the Gulf. This report provides baseline data that will be useful in future studies of Gulf meiofauna. In particular, studies are underway to assess potential effects of the Deepwater Horizon oil spill on meiofauna abundance and distribution, and to see if meiofauna can be used as indicators of pollution or habitat disturbance.

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