

Infauna abundance from seagrass bed core samples collected in Back Sound, North Carolina in June and July of 2013

Website: <https://www.bco-dmo.org/dataset/748860>

Data Type: Other Field Results

Version: 2

Version Date: 2018-06-18

Project

» [Collaborative Research: Habitat fragmentation effects on fish diversity at landscape scales: experimental tests of multiple mechanisms](#) (Habitat Fragmentation)

Contributors	Affiliation	Role
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Abstract

Infauna abundance from seagrass bed core samples collected in Back Sound, North Carolina in June and July of 2013.

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Coverage

Spatial Extent: N:34.70648 E:-76.37371 S:34.06503 W:-76.62355

Temporal Extent: 2013-06-13 - 2013-07-26

Dataset Description

These data were published in Yeager et al. (2019). See "Related Datasets" section for other datasets from the same core samples.

Methods & Sampling

We sampled 86 sites within seagrass habitats throughout Back Sound, North Carolina, USA (3442' N to 3439' N, 7637' W to 7631' W) during July 2013. Sampling sites were located across 21 seagrass landscapes which were defined by 200m x 80m rectangles (matching common isolated bed size and shape within our system). These landscapes were previously selected to represent independent gradients in both total seagrass cover (260-11,764 m²) and landscape patchiness (1-75 individual patches; Yeager et al. 2016). Sampling sites in the current study were haphazardly placed across all 21 landscapes, but always located within seagrass itself, and not the unvegetated matrix.

Seagrass core sampling and laboratory processing:

One core sample was taken from each sampling site. Each core measured 30 cm in diameter and captured the above ground seagrass habitat as well as the top 10 cm of the sediment surface. All cores were taken within 2 h of low tide and the GPS location of each core was marked with a Garmin 72H handheld unit (Garmin International, Olathe, Kansas, USA). Low-tide depth was measured in situ at each site at the time of sampling to the nearest 10 cm.

Core samples were taken back to the lab and screened using a 500-µm sieve; benthic macrofauna were sorted from larger debris and seagrass tissue and transferred to a 70% ETOH solution for storage. These organisms were then identified to the lowest taxon possible. Only polychaetes with intact anterior appendages were identified and counted for density estimates to prevent overestimation and because these are requisite features for accurate identification.

The core (30-cm diameter, PVC) was gently placed by hand at each site and pushed down to a constant depth of 10 cm into the sediment. The core was gently rotated to break seagrass rhizomes, then dug out by hand, lifted, and placed into a resealable 1.5-gallon plastic bag. The sample was transported back to the laboratory on ice.

Data Processing Description

BCO-DMO Data Manager Processing Notes:

- * added a conventional header with dataset name, PI name, version date
- * modified parameter names to conform with BCO-DMO naming conventions
- * date value "41429" changed to "6/4/2013"
- * date format converted to ISO 8601 standard format yyyy-mm-dd
- * data values that were a period, indicating no value, changed to the default missing data identifier in BCO-DMO, "nd" meaning "no data."

Data version 2 (2019-06-18)

* species column names updated to correct spelling and unaccepted synonyms. Species name columns and associated species list include accepted correct spellings and associated aphialDs as of 2019-06-18. Source of species names and accepted synonyms is the World Register of Marine Species. Species names reviewed and any ambiguous names cleared up with feedback from the data submitter.

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Data Files

File
infauna_abundance.csv (Comma Separated Values (.csv), 21.71 KB) MD5:3f0edf2a1831ec7a1e7b45e790ae641b
Primary data file for dataset ID 748860

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Supplemental Files

File
Core sample infauna species list filename: infauna_abundance_species_list.csv (Comma Separated Values (.csv), 7.57 KB) MD5:1bbcef631def200766add38026ad8f8
Species list containing the column names used in the dataset with the associated descriptive name of the identification, the lowest identifiable taxa, and the taxonomic identifier (aphialD, World Register of Marine Species) associated with the lowest identifiable taxa.

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Related Publications

Yeager, L. A., Geyer, J. K., & Fodrie, F. J. (2019). Trait sensitivities to seagrass fragmentation across spatial scales shape benthic community structure. *Journal of Animal Ecology*, 88(11), 1743–1754. Portico. <https://doi.org/10.1111/1365-2656.13067>

Results

Yeager, L. A., Keller, D. A., Burns, T. R., Pool, A. S., & Fodrie, F. J. (2016). Threshold effects of habitat fragmentation on fish diversity at landscapes scales. *Ecology*, 97(8), 2157–2166. doi:[10.1002/ecy.1449](https://doi.org/10.1002/ecy.1449)

Methods

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Related Datasets

IsRelatedTo

Yeager, L. (2018) **Infauna biomass from seagrass bed core samples collected in Back Sound, North Carolina in June and July of 2013**. Biological and Chemical Oceanography Data Management Office (BCO-DMO). (Version 2) Version Date 2018-06-18 doi:10.1575/1912/bco-dmo.748852.2 [[view at BCO-DMO](#)]
Relationship Description: Data from the same core samples.

Yeager, L. (2019) **Seagrass (*Zostera marina* and *Halodule wrightii*) shoot count, biomass and shoot height from seagrass bed core samples collected in Back Sound, North Carolina in June and July of 2013**. Biological and Chemical Oceanography Data Management Office (BCO-DMO). (Version 2) Version Date 2019-06-18 doi:10.1575/1912/bco-dmo.748842.2 [[view at BCO-DMO](#)]
Relationship Description: Data from the same core samples.

Yeager, L. (2019) **Trait data for epibenthic and infaunal seagrass macrofauna in North Carolina, USA from peer-reviewed literature and web-based identification guides**. Biological and Chemical Oceanography Data Management Office (BCO-DMO). (Version 1) Version Date 2019-06-18 doi:10.1575/1912/bco-dmo.770626.1 [[view at BCO-DMO](#)]
Relationship Description: Data from the same core samples

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Parameters

Parameter	Description	Units
Site	Sampling location name	unitless
Date	Date (local) where core was taken. Local time zone is Eastern Daylight Time (EDT, UTC-4)	unitless
Replicate	Replicate core number at site	unitless
Latitude	Latitude of location of where core taken	decimal degrees (DD)
Longitude	Longitude of location where core taken	decimal degrees (DD)
Depth	Low tide depth where the core was taken	meters (m)
Solemya_velum	Solemya velum count within the core [Solemya velum; aphialD:156994]	count
Ensis_directus	Ensis directus count within the core [Ensis directus; aphialD:933783]	count
Ensis_minor	Ensis minor count within the core [Ensis minor; aphialD:140734]	count

Modiolus_modiolus	Modiolus modiolus count within the core [Modiolus modiolus; aphiaID:140467]	count
Macoma_tenta_Macoma_sp	Macoma tenta/ Macoma sp. count within the core [Macoma; aphiaID:138531]	count
Nucula_proxima	Nucula proxima count within the core [Nucula proxima; aphiaID:156916]	count
Caryocorbula_contracta	Caryocorbula contracta count within the core [Caryocorbula contracta; aphiaID:420977]	count
Cumingia_tellinoides	Cumingia tellinoides count within the core [Cumingia tellinoides; aphiaID:156823]	count
Dallocardia_muricata	Dallocardia muricata count within the core [Dallocardia muricata; aphiaID:381280]	count
Lyonsia_hyalina	Lyonsia hyalina count within the core [Lyonsia hyalina; aphiaID:156793]	count
Brachidontes_exustus	Brachidontes exustus count within the core [Brachidontes exustus; aphiaID:397026]	count
Mytilus_edulis	Mytilus edulis count within the core [Mytilus edulis; aphiaID:140480]	count
Modiolus_squamosus	Modiolus squamosus count within the core [Modiolus squamosus; aphiaID:420706]	count
Anadara_transversa	Anadara transversa count within the core [Anadara transversa; aphiaID:156734]	count
Lucina_multilineata	Lucina multilineata count within the core [Lucina multilineata; aphiaID:758428]	count
Laevicardium_mortoni	Laevicardium mortoni count within the core [Laevicardium mortoni; aphiaID:156782]	count
Anadara_brasiliana	Anadara brasiliana count within the core [Anadara brasiliana; aphiaID:504322]	count
Abra_lioica	Abra lioica count within the core [Abra lioica; aphiaID:156730]	count
Argopecten_gibbus	Argopecten gibbus count within the core [Argopecten gibbus; aphiaID:394271]	count
Parvilucina_crenella	Parvilucina crenella count within the core [Parvilucina crenella; aphiaID:420799]	count
Strigilla_mirabilis	Strigilla mirabilis count within the core [Strigilla mirabilis; aphiaID:420895]	count
Spisula_solidissima	Spisula solidissima count within the core [Spisula solidissima; aphiaID:156996]	count
Serratina_aequistriata	Serratina aequistriata count within the core [Serratina aequistriata; aphiaID:877243]	count
Tagelus_divisus	Tagelus divisus count within the core [Tagelus divisus; aphiaID:156999]	count
Tagelus_plebeius	Tagelus plebeius count within the core [Tagelus plebeius; aphiaID:157001]	count
Limaria_pellucida	Limaria pellucida count within the core [Limaria pellucida; aphiaID:420751]	count
Semele_spp	Semele spp. count within the core [Semele; aphiaID:138476]	count
Chione_cancellata	Chione cancellata count within the core [Chione cancellata; aphiaID:397040]	count

Mercenaria_mercenaria	Mercenaria mercenaria count within the core [Mercenaria mercenaria; aphialD:141919]	count
Chioneryx_grus	Chioneryx grus count within the core [Chioneryx grus; aphialD:507508]	count
Drilonereis_spp	Drilonereis spp. count within the core [Drilonereis; aphialD:129200]	count
Arabella_iricolor	Arabella iricolor count within the core [Arabella iricolor; aphialD:129854]	count
Lumbrineris_spp	Lumbrineris spp. count within the core [Lumbrineris; aphialD:129337]	count
Nereis_spp	Nereis spp. count within the core [Nereis; aphialD:129379]	count
Ceratonereis_spp	Ceratonereis spp. count within the core [Ceratonereis; aphialD:129372]	count
Platynereis_dumerilii	Platynereis dumerilii count within the core [Platynereis dumerilii; aphialD:130417]	count
Nereiphylla_fragilis	Nereiphylla fragilis count within the core [Nereiphylla fragilis; aphialD:157502]	count
Marphysa_sanguinea_Marphysa_sp	Marphysa sanguinea/Marphysa sp. count within the core [Marphysa; aphialD:129281]	count
Glycera_spp	Glycera spp. count within the core [Glycera; aphialD:129296]	count
Artacama_proboscidea	Artacama proboscidea count within the core [Artacama proboscidea; aphialD:131482]	count
Maldane_sp	Maldane sp. count within the core [Maldane; aphialD:129352]	count
Amphitrite_sp	Amphitrite sp. count within the core [Amphitrite; aphialD:129686]	count
Neoamphitrite_figulus	Neoamphitrite figulus count within the core [Neoamphitrite figulus; aphialD:131504]	count
Piromis_eruca	Piromis eruca count within the core [Piromis eruca; aphialD:130114]	count
Melinna_spp	Melinna spp. count within the core [Melinna; aphialD:129168]	count
Amphicteis_gunneri	Amphicteis gunneri count within the core [Amphicteis gunneri; aphialD:129784]	count
Diopatra_cuprea	Diopatra cuprea count within the core [Diopatra cuprea; aphialD:157339]	count
Kinbergonuphis_sp	Kinbergonuphis sp. count within the core [Kinbergonuphis; aphialD:173767]	count
Pista_maculata	Pista maculata count within the core [Pista maculata; aphialD:868065]	count
Clymenella_torquata	Clymenella torquata count within the core [Clymenella torquata; aphialD:130279]	count
Sabaco_elongatus	Sabaco elongatus count within the core [Sabaco elongatus; aphialD:157550]	count
Hobsonia_florida	Hobsonia florida count within the core [Hobsonia florida; aphialD:333624]	count

Potamilla_neglecta	Potamilla neglecta count within the core [Potamilla neglecta; aphialD:130954]	count
Capitellidae	Capitellidae count within the core [Capitellidae; aphialD:921]	count
Lepidametria_commensalis	Lepidametria commensalis count within the core [Lepidametria commensalis; aphialD:236706]	count
Sthenelais_limicola	Sthenelais limicola count within the core [Sthenelais limicola; aphialD:131077]	count
Sthenelais_boa_Sthenelais_sp	Sthenelais boa/ Sthenelais sp. count within the core [Sthenelais; aphialD:129595]	count
Lepidonotus_sp	Lepidonotus sp. count within the core [Lepidonotus; aphialD:129496]	count
Phyllodocida_order	Phyllodocida (order) count within the core [Phyllodocida; aphialD:892]	count
Melanella_polita	Melanella polita count within the core [Melanella polita; aphialD:139859]	count
Astyris_lunata	Astyris lunata count within the core [Astyris lunata; aphialD:160102]	count
Bittium_varium	Bittium varium count within the core [Bittium varium; aphialD:160174]	count
Crepidula_convexa	Crepidula convexa count within the core [Crepidula convexa; aphialD:160228]	count
Terebra_sp	Terebra sp. count within the core [Terebra; aphialD:160427]	count
Acteocina_canaliculata	Acteocina canaliculata count within the core [Acteocina canaliculata; aphialD:160065]	count
Crepidula_maculosa	Crepidula maculosa count within the core [Crepidula maculosa; aphialD:419704]	count
Tritia_trivittata	Tritia trivittata count within the core [Tritia trivittata; aphialD:737284]	count
Costoanachis_avara	Costoanachis avara count within the core [Costoanachis avara; aphialD:160222]	count
Pyrgocythara_plicosa	Pyrgocythara plicosa count within the core [Pyrgocythara plicosa; aphialD:160476]	count
Phrontis_vibex	Phrontis vibex count within the core [Phrontis vibex; aphialD:877061]	count
Boonea_sp	Boonea sp. count within the core [Boonea; aphialD:397023]	count
Hippolyte_sp	Hippolyte sp. count within the core [Hippolyte; aphialD:106987]	count
Palaemon_sp	Palaemon sp. count within the core [Palaemon; aphialD:107032]	count
Panopeus_herbistii_Dyspanopeus_sayi	Panopeus herbistii/Dyspanopeus sayi count within the core [Panopeidae; aphialD:106765]	count
Callinectes_sapidus	Callinectes sapidus count within the core [Callinectes sapidus; aphialD:107379]	count
Callinectes_similis	Callinectes similis count within the core [Callinectes similis; aphialD:158055]	count

Pinnixa_spp	Pinnixa spp. count within the core [Pinnixa; aphialD:158444]	count
Alpheus_heterochaelis	Alpheus heterochaelis count within the core [Alpheus heterochaelis; aphialD:158348]	count
Pagurus_pollicaris_Pagurus_sp	Pagurus pollicaris/Pagurus sp. count within the core [Pagurus; aphialD:106854]	count
Upogebia_affinis	Upogebia affinis count within the core [Upogebia affinis; aphialD:158389]	count
Caprella_penantis	Caprella penantis count within the core [Caprella penantis; aphialD:101846]	count
Amphipod	Amphipod count within the core [Amphipoda; aphialD:1135]	count
Erichsonella_spp	Erichsonella spp. count within the core [Erichsonella; aphialD:157886]	count
Cyathura_polita	Cyathura polita count within the core [Cyathura polita; aphialD:157847]	count
Sphaeroma_sp	Sphaeroma sp. count within the core [Sphaeroma; aphialD:955716]	count
Sclerodactyla_briareus	Sclerodactyla briareus count within the core [Sclerodactyla briareus; aphialD:158532]	count
Thyonella_gemmata	Thyonella gemmata count within the core [Thyonella gemmata; aphialD:158534]	count
Ophioderma_brevispina	Ophioderma brevispina count within the core [Ophioderma brevispina; aphialD:158073]	count
Amphioplus_abditus	Amphioplus abditus count within the core [Amphioplus (Amphioplus) abditus; aphialD:244985]	count
Chaetopleura_sp	Chaetopleura sp. count within the core [Chaetopleura; aphialD:138086]	count
Lagodon_rhomboides	Lagodon rhomboides count within the core [Lagodon rhomboides; aphialD:159249]	count
Gobionellus_sp	Gobionellus sp. count within the core [Gobionellus; aphialD:159751]	count
Gobiosoma_bosc	Gobiosoma bosc count within the core [Gobiosoma bosc; aphialD:159767]	count
UNID_Fish_species	Unidentified Fish species count within the core [Actinopterygii; aphialD:10194]	count
UNID_polychaetes	Unidentified polychaete(s) count within the core [Polychaeta; aphialD:883]	count
UNID_Bivalve	Unidentified bivalve count within the core [Bivalvia; aphialD:105]	count
UNID_Shrimp	Unidentified shrimp count within the core [Decapoda; aphialD:1130]	count
UNID_BARNACLE	Unidentified barnacle count within the core [Cirripedia; aphialD:1082]	count
UNID_Gastropod	Unidentified Gastropod count within the core [Gastropoda; aphialD:101]	count

Instruments

Dataset-specific Instrument Name	Garmin 72H handheld unit (Garmin International, Olathe, Kansas, USA)
Generic Instrument Name	GPS receiver
Generic Instrument Description	Acquires satellite signals and tracks your location. This term has been deprecated. Use instead: https://www.bco-dmo.org/instrument/560

Project Information

Collaborative Research: Habitat fragmentation effects on fish diversity at landscape scales: experimental tests of multiple mechanisms (Habitat Fragmentation)

Coverage: North Carolina

Amount and quality of habitat is thought to be of fundamental importance to maintaining coastal marine ecosystems. This research will use large-scale field experiments to help understand how and why fish populations respond to fragmentation of seagrass habitats. The question is complex because increased fragmentation in seagrass beds decreases the amount and also the configuration of the habitat (one patch splits into many, patches become further apart, the amount of edge increases, etc). Previous work by the investigators in natural seagrass meadows provided evidence that fragmentation interacts with amount of habitat to influence the community dynamics of fishes in coastal marine landscapes. Specifically, fragmentation had no effect when the habitat was large, but had a negative effect when habitat was smaller. In this study, the investigators will build artificial seagrass habitat to use in a series of manipulative field experiments at an ambitious scale. The results will provide new, more specific information about how coastal fish community dynamics are affected by changes in overall amount and fragmentation of seagrass habitat, in concert with factors such as disturbance, larval dispersal, and wave energy. The project will support two early-career investigators, inform habitat conservation strategies for coastal management, and provide training opportunities for graduate and undergraduate students. The investigators plan to target students from underrepresented groups for the research opportunities.

Building on previous research in seagrass environments, this research will conduct a series of field experiments approach at novel, yet relevant scales, to test how habitat area and fragmentation affect fish diversity and productivity. Specifically, 15 by 15-m seagrass beds will be created using artificial seagrass units (ASUs) that control for within-patch-level (~1-10 m²) factors such as shoot density and length. The investigators will employ ASUs to manipulate total habitat area and the degree of fragmentation within seagrass beds in a temperate estuary in North Carolina. In year one, response of the fishes that colonize these landscapes will be measured as abundance, biomass, community structure, as well as taxonomic and functional diversity. Targeted ASU removals will then follow to determine species-specific responses to habitat disturbance. In year two, the landscape array and sampling regime will be doubled, and half of the landscapes will be seeded with post-larval fish of low dispersal ability to test whether pre- or post-recruitment processes drive landscape-scale patterns. In year three, the role of wave exposure (a natural driver of seagrass fragmentation) in mediating fish community response to landscape configuration will be tested by deploying ASU meadows across low and high energy environments.

Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-1661683

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