

Deep-Water Marine Benthic Habitat Classification Scheme

Explanation for Habitat Classification Code

(modified after Greene et al., 1999)

Habitat Classification Code

A habitat classification code, based on the deep-water habitat characterization scheme developed by Greene et al. (1999), was created to easily distinguish marine benthic habitats and to facilitate ease of use and queries within GIS (e.g., ArcView®, TNT Mips®, and ArcGIS®) and database (e.g., Microsoft Access® or Excel®) programs. The code is derived from several categories and can be subdivided based on the spatial scale of the data. The following categories apply directly to habitat interpretations determined from remote sensing imagery collected at the scale of 10s of kilometers to 1 meter: Megahabitat, Seafloor Induration, Meso/Macrohabitat, Modifier, Seafloor Slope, Seafloor Complexity, and Geologic Unit. Additional categories of Macro/Microhabitat, Seafloor Slope, and Seafloor Complexity apply to areas at the scale of 10 meters to centimeters and are determined from video, still photos, or direct observations. These two components can be used in conjunction to define a habitat across spatial scales or separately for comparisons between large and small-scale habitat types. Categories are explained in detail below. Not all categories may be required or possible given the study objectives, data availability, or data quality and in these cases categories may be omitted.

Explanation of Attribute Categories and their Use

Determined from Remote Sensing Imagery (for creation of large-scale habitat maps)

1) Megahabitat – This category is based on depth and general physiographic boundaries and is used to distinguish regions and features on a scale of 10s of kilometers to kilometers. Depth ranges listed for category attributes in the key are given as generalized examples. This category is listed first in the code and denoted with a capital letter.

2) Seafloor Induration – Seafloor induration refers to substrate hardness and is depicted by the second letter (a lower-case letter) in the code. Designations of hard, mixed, and soft substrate can be further subdivided into distinct sediment types, and are then listed immediately afterwards in parentheses either in alphabetical order or in order of relative abundance.

3) Meso/Macrohabitat – This distinction is related to the scale of the habitat and consists of seafloor features ranging from 1 kilometer to 1 meter. Meso/Macrohabitats are noted as the third letter (a

lower-case letter) in the code. If necessary, several Meso/Macrohabitats can be included either alphabetically or in order of relative abundance and separated by a backslash.

4) Modifier – The fourth letter in the code, a modifier, is noted with a lower-case subscript letter or separated by an underline in some GIS programs (e.g., ArcView®). Modifiers describe the texture or lithology of the seafloor. If necessary, several modifiers can be included alphabetically or in order of relative abundance and separated by a backslash.

5) Seafloor Slope – The fifth category, listed by a number following the modifier subscript, denotes slope. Slope is calculated for a survey area from x-y-z multibeam data and category values can be modified based on characteristics of the study region.

6) Seafloor Complexity – Complexity is denoted by the sixth letter and listed in caps. Complexity is calculated from slope data using neighborhood statistics and reported in standard deviation units. As with slope, category values can be modified based on characteristics of the study region.

7) Geologic Unit – When possible, the geologic unit is determined and listed subsequent to the habitat classification code, in parentheses.

Determined from video, still photos, or direct observation (for designation of small-scale habitat types)

8) Macro/Microhabitat – Macro/Microhabitats are noted by the eighth letter in the code (or first letter, if used separately) and preceded by an asterisk. This category is subdivided between geologic (surrounded by parentheses) and biologic (surrounded by brackets) attributes. Dynamic segmentation can be used to plot macroscale habitat patches on Mega/Mesoscale habitat interpretations (Nasby 2000).

9) Seafloor Slope – The ninth category (or second category, if used separately), listed by a number denotes slope. Unlike the previous slope designation (#5), the clarity of this estimate can be made at smaller scales and groundtruthed or compared with category #5. Category values can be modified based on characteristics of the study region.

10) Seafloor Complexity – The designations in this category, unlike those in category #6, are based on seafloor rugosity values calculated as the ratio of surface area to linear area along a measured transect or patch. Category letters are listed in caps and category values can be modified based on characteristics of the study region.

Literature Cited:

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Nasby, N.M. 2000. Integration of submersible transect data and high-resolution sonar imagery for a habitat-based groundfish assessment of Heceta Bank, Oregon. M.S. Thesis, College of Oceanic and Atmospheric Science, Oregon State University. pp. 49.