**Photo Analysis Database – ReadMe File**

Please refer to the following information found in our 2018 technical report concerning the analysis of epibenthic megafauna from the Davis Strait. For further information, please consult the report (see citation below):

The images examined in this report came from seven image transects conducted within the former Narwhal Over-wintering Deep-Sea Conservation Area in Baffin Bay. The depths at which images were collected ranged from 400-1000 metres, with individual transect lines running along depth contours of 400 metres, 600 metres, or 1000 metres. Transects were 1-2 kilometres in length.

The image data were obtained using the 4K-Camera, or 4KCam, an underwater drop camera system consisting of a high-resolution digital camera (Canon Rebel Eos Ti 12 megapixel) and two flashes enclosed in a cage that permits it to collect images at depths of up to 4 kilometres below the sea surface (Beazley and Kenchington, 2015). The 4KCam was deployed on a winch line over the side of the vessel and towed above the seafloor. The 4KCam’s distance from the seafloor was controlled by raising and lowering the winch line, and the camera and flashes were triggered to collect images each time the lead weight attached to the system made contact with the bottom. Images were collected at 30-60 second intervals for each transect line. As there was no feed to the vessel, all photo locations were blind drops. Each image was assigned a photo file name that consisted of the Consecutive Operation Number (CON) that was associated with the transect and an image number. For further details regarding the gear and the sampling protocols surrounding image collection, please see Beazley and Kenchington, 2015.

Images were analysed in Adobe Photoshop CS2 at a magnification of 100%. Grid cells were examined from left to right and top to bottom, beginning with Cell A and ending with Cell L. All organisms greater than or equal to 1 cm in size were identified to the lowest possible taxonomic level (typically class, order, or family). This information was recorded in an Access database designed to store the taxa names, phylum names, and counts associated with each grid cell of each image. The database contains an Analysis table, a Photo table, and a Taxa List table. The Analysis table contains the taxa names and counts alongside their transect names, photo file names, and grid cells. The Photo table holds the transect names and photo file names along with their associated metadata, and the Taxa List table contains the list of taxa found in the images and their taxonomic hierarchies. Data was entered into the Analysis table via a specialised Photo Process form that contained station information, photo file names, phyla, and taxa names in drop-down menus to minimise human error during the data entry process. Taxa were added to the Taxa List and the drop-down menus of the Photo Process form by clicking the ‘Add New Taxa’ button. This opened a Taxonomy form where the taxa names and associated taxonomic information could be entered.

Correct citation for this publication:

Baker, E., Beazley, L., McMillan, A., Rowsell, J. and Kenchington, E. 2018. Epibenthic Megafauna of the Disko Fan Conservation Area in the Davis Strait (Eastern Arctic) Identified from *In Situ* Benthic Image Transects. Can. Tech. Rep. Fish. Aquat. Sci. 3272: vi + 388 p.

**Database Structure**

The database (Microsoft Access 2010) consists of three tables: Analysis, Photo, and Taxa\_List. (Note that all queries, forms, and macros have been removed.) See below for a description of each table and its associated fields.

**Analysis**

The Analysis table contains taxa names (‘Taxa’ and ‘Phylum’ fields) and associated counts, along with the station number, photo file name, grid cell, and name of analyst. The ID field is an auto-number field that has a unique ID for each record.

**Definition of Fields in Analysis Table**

**ID:** An auto-number field containing a unique ID for each record in the table.

**Station\_Num**: The name of the station where a given image was collected that contains the organism recorded in the Taxa field. The name consists of a prefix, ‘CON’, a **C**onsecutive **O**peration **N**umber generated during a cruise, followed by the operation number.

**PHOTO\_FILE\_NAME**: The name of the image in which the recorded organism was found. The name includes the Station Number and a sequential photo number.

**Grid**: The grid cell of the image in which the recorded organism was found. Each grid cell is labelled sequentially using letters A to L, left to right, top to bottom.

**PHYLUM**: The phylum to which the recorded organism belongs.

**Taxa**: The name of the organism identified, to the lowest possible taxonomic level.

**Count**: The number of individuals associated with the taxon identified within a given grid cell of a given image.

**Analyst**: The name of the person responsible for analysing a given image.

**Representative Image**: A yes/no field. If ‘yes’, then the record corresponds to the clipped image file used in the technical report.

**Photo**

The Photo table contains fields for metadata associated with the photos.

**Definition of Fields in Photo Table**

**ID:** An auto-number field containing a unique ID for each record in the table.

**Mission:** Ten character alpha-numeric code providing vessel name code, year of the mission and trip number: VVVYYYTTT

V = Vessel Code, Y = Year, T = trip number

**Station\_Num**: The name of the transect where an image was collected. The name consists of a prefix, ‘CON’, a **C**onsecutive **O**peration **N**umber generated during a cruise, followed by the operation number.

**PHOTO\_FILE\_NAME**: The name of the image consisting of the Station\_Num prefix, a space and three character sequential photo number. Note CON-097 photos are missing the Station\_Num prefix.

**Year**: The year in which the photo was taken.

**Date**: The date the photo was taken.

**Time**: The time the photo was taken.

**JDayGMT**: A time format which includes the Day of Year: DDDHHMMSS

D = Day of Year, H = Hours, M = Minutes, S = Seconds

**Latitude**\*: The latitude in decimal degrees.

**Longitude**\*: The longitude in decimal degrees.

**Gear**: Instrument used to take underwater images.

**Depth**\*\*: Water depth at the time the photo was taken in metres.

**Temperature**\*\*: Water temperature at the time the photo was taken in Celsius degrees.

 \*Positions calculated from USBL

\*\*Depth and Temperature taken from SBE39 pressure and temperature sensor attached to the 4K Camera.

**Taxa\_List**

The Taxa\_List table contains the taxa names and associated taxonomic hierarchy for all taxa recorded in the Analysis table. The ID numbers for the taxa names that correspond to the ITIS and WoRMS databases are also included.

**Definition of Fields in Taxa\_List Table**

**TSN:** The TSN (Taxonomic Serial Number) associated with the recorded taxon name for the ITIS database.

**AphiaID:** The serial number (AphiaID) associated with the recorded taxon name for the WoRMS database.

**TAXA**: The name of the organism identified, to the lowest possible taxonomic level.

**\*\*\*The following fields represent levels of taxonomic classification for each of the identifiable taxa found in the images. Note that not all taxa possess all of these levels.**

**PHYLUM**

**SUBPHYLUM**

**SUPERCLASS**

**CLASS**

**SUBCLASS**

**INFRACLASS**

**SUBTERCLASS**

**SUPERORDER**

**ORDER**

**SUBORDER**

**INFRAORDER**

**SUPERFAMILY**

**FAMILY**

**SUBFAMILY**

**GENUS**

**SUBGENUS**

**SPECIES**