Tator Identification Guide: How to Look With a Biologist's Eye

The ability to effectively view and describe organisms is useful when attempting to accurately identify them, and it is a skill that you will frequently use while localizing annotations in Tator. This guide is intended to provide you with tips for success and examples of the descriptive process that you will have to engage in. It is organized into four sections: Describing Organisms, Distinguishing Between Similar Organisms, Identifying Unannotated Organisms, and Resources.

Describing Organisms

Example: Synallactidae

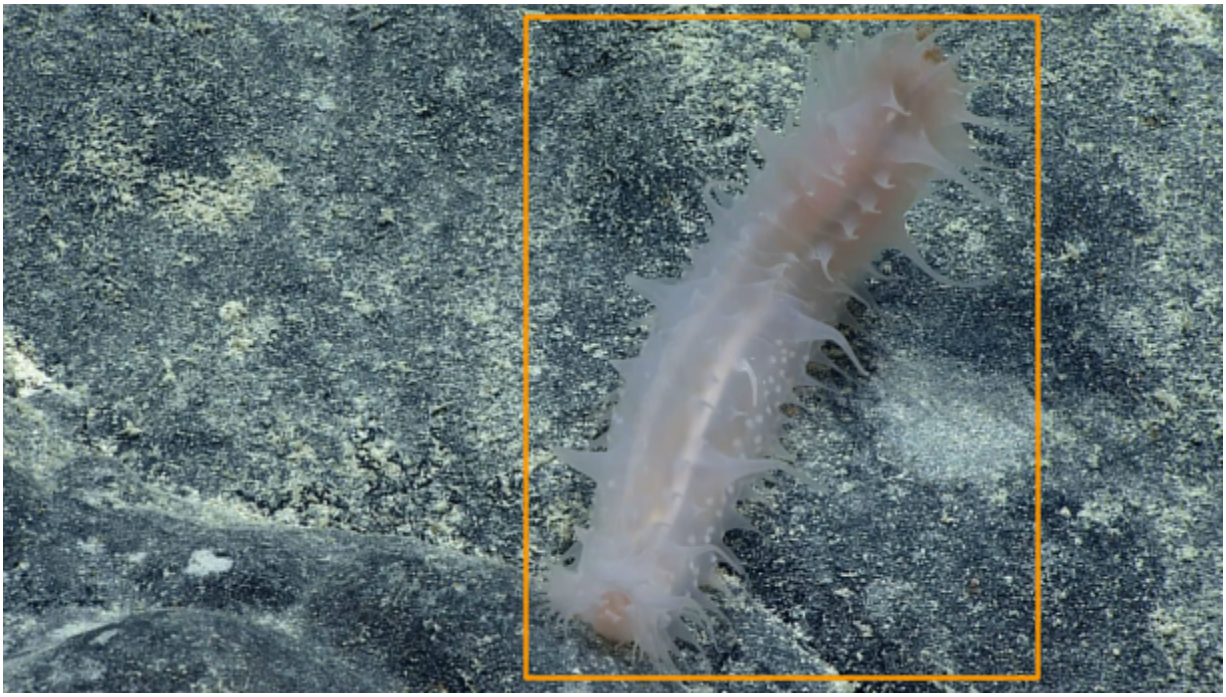


Figure 1. Synallactidae (boxed in orange).

Sample description: the annotation for this frame labels this organism as a sea cucumber belonging to the order Synallactidae. It has a soft, cylindrical body with a rounded opening at each end, which exhibits elements of radial and bilateral symmetry; fleshy appendages of varying sizes are arranged in rows that run along the length of the body, which appear to extend around the entirety of the organism, while those that are clustered around the visible opening form into two fans that extend out from it. The flesh is translucent and the internal organs are partially visible. A row of small white bumps runs between two rows of appendages on either side of the organism, ending about halfway up the length of the body.

Distinguishing Between Similar Organisms

Example: Corbitellinae and *Hertwigia sp.*

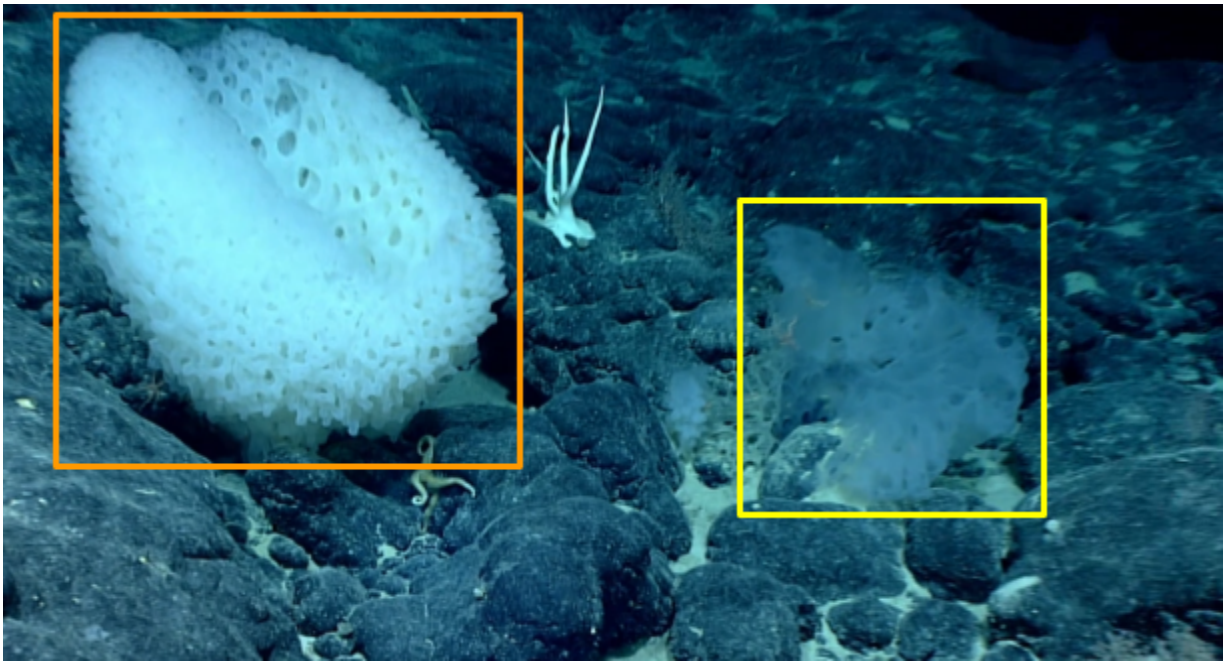
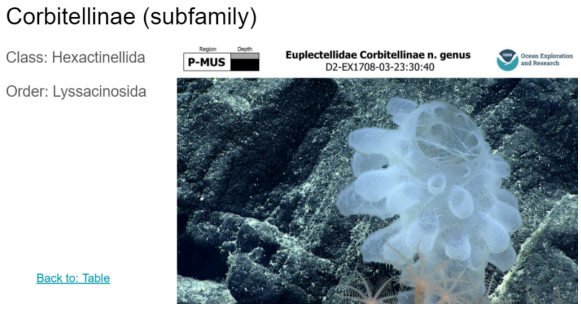
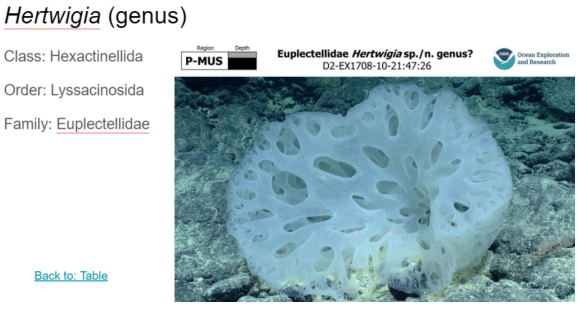


Figure 2. Glass sponges Corbitellinae (boxed in orange) and *Herwigia sp.* (boxed in yellow).

The expert annotations indicated that there were two types of glass sponges in this frame: Corbitellinae and *Hertwigia sp.* The process of distinguishing between them begins with describing each sponge. The sponge in the orange box is shaped like a broad, curved funnel; its flesh is an opaque white, large pores are visible on the relatively flat surface on the inside of the sponge, and the exterior surface appears to be composed of many large, cylindrical lobes that leave slightly smaller pores between the points at which they join with one another. The sponge in the yellow box is shaped like a flattened semicircle, has translucent flesh, and has uniformly large pores distributed throughout.



A

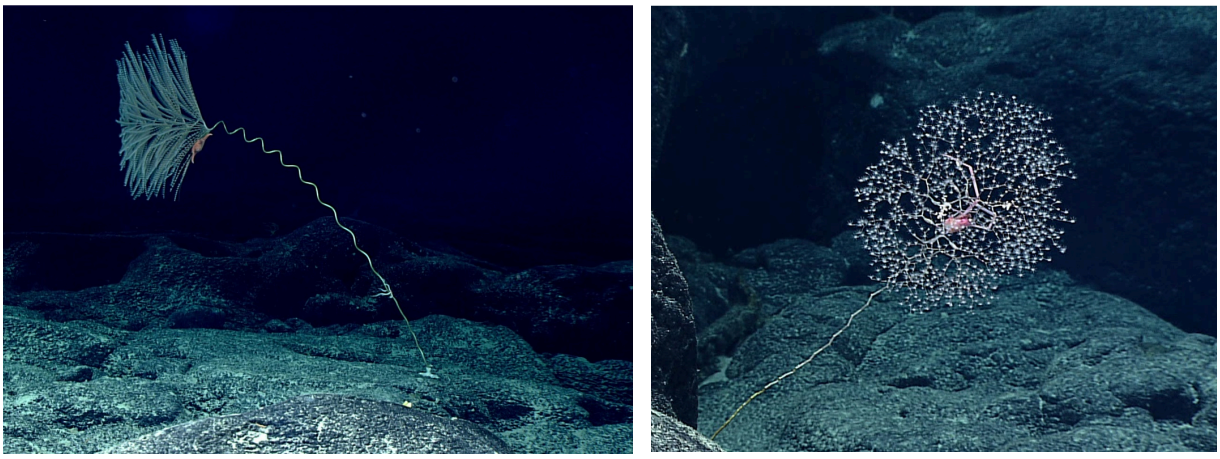


B

Figure 3. Reference images of Corbitellinae (A) and *Hertwigia sp.* (B).

Having described each sponge, we now turn to reference images, taken from the MINUET Animal ID Guide, for each of the names that we have been given. By engaging in the same descriptive process that was used for the sponges in our frame, we can find similarities between the sponges and the reference images: Corbitellinae possesses large, cylindrical lobes like those found on the sponge in the orange box, while *Hertwigia sp.* has the flattened shape, translucent flesh, and uniform pores of the sponge in the yellow box.

Example: *Iridogorgia bella* and *Chrysogorgia flavescens*



A B

Figure 4. Corals *Iridogorgia bella* (A) and *Chrysogorgia flavescens* (B).

The first of these corals (Figure 4A) has a long, thin, and spiraling stem; numerous undivided branches follow the spiral arrangement of it in the last fifth of its length, and polyps line the entirety of each branch while being absent on the stem. The second (Figure 4B) has a long, thin, zig-zag stem; branches that divide at numerous points cover the last third of its length, and polyps are found only at the ends of branches.



A B

Figure 5. Reference images of *Iridogorgia bella* (A) and *Chrysogorgia flavescens* (B).

We now compare our descriptions of the images from Tator to those of reference images from the MINUET Animal ID Guide. *Iridogorgia bella* has the same spiral stem and undivided branches of the coral in Figure 4A, while *Chrysogorgia flavescens* has a zig-zag stem and branches that are divided at numerous points, like the coral in 4B.

Identifying Unannotated Organisms

Example: *Hymenodiscus sp.*

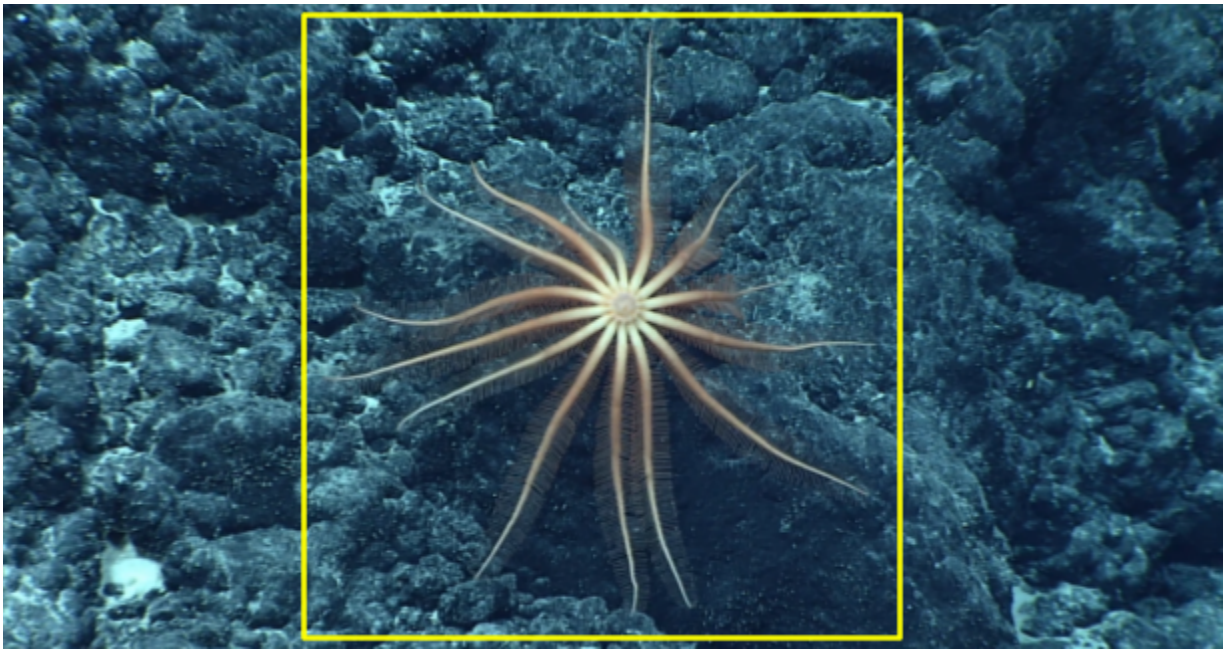


Figure 6. *Hymenodiscus sp.* (boxed in yellow).

The process of identifying an unannotated organism begins, of course, with describing it. This organism has fourteen arms that radiate out from a central disc, around the outside of which runs a raised ring. The arms are all approximately the same length, taper to a point, and are lined with numerous small, straight, translucent appendages. Excluding these, the organism is colored orange, yellow, and white.

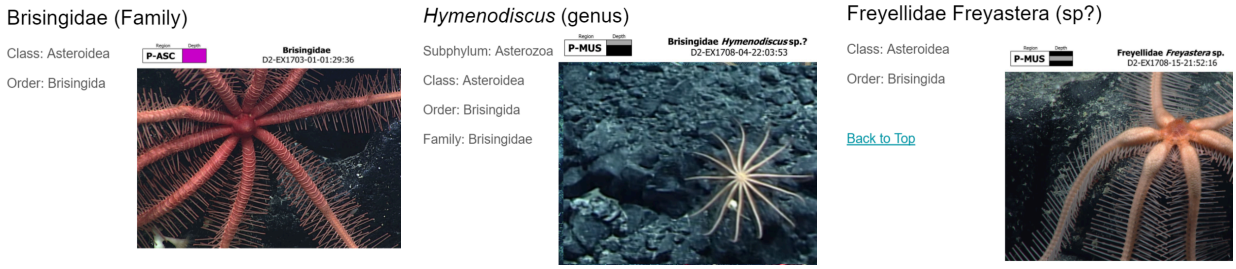


Figure 7. Reference images of similar organisms.

Having described the organism, we now want to compare it to reference images. Pull up the MINUET Animal ID Guide or NOAA's Benthic Deepwater Animal Identification Guide (V4) alongside the image of your organism and, if you can guess the phylum to which it belongs, navigate to that section of it. Scroll through the reference images, note the names of the 3-5 that are most similar, and identify the organism to the lowest level of classification that they share. Alternatively, if there is enough of a resemblance to a reference for you to feel confident doing so, you can identify the organism outright; here, it is recognizable as *Hymenodiscus sp.*.

Resources

Though all the guides listed in the lab manual provide taxonomic information for organisms, only the MINUET Animal ID Guide and NOAA's Benthic Deepwater Animal Identification Guide contain images. The MINUET guide is less comprehensive than NOAA's, but can be searched at all taxonomic levels. NOAA's guide, which is not searchable, requires that you know what phylum and group (eg. Hermit Crabs, True Crabs, King Crabs) your organism falls into.

There are also tools in Tator that you can use to aid in distinguishing between or identifying organisms. Listen to the audio, which may contain a description of the organism. Look at the substrate field of the annotation to gain more information about its location.