

question**answer**

What does it mean that a species has been enhanced?

Enhancement is the density of individuals present in the structured habitat over and above what was found in the unstructured control. Therefore, the values the tool gives you is the number of new young-of-the-year fish that are "made" each year that we can attribute to that area of habitat. For saltmarsh habitat, we only consider the area of saltmarsh edge (i.e. the linear edge, with an approximate 3m (9') width)

Why do you only include seagrass and saltmarsh habitats?

[The methods we use to estimate enhancement can only be applied to structured habitats, and where enough sampling has occurred across an eco-region to develop estimates. We have also produced enhancement estimates for the eastern oyster, which can be found here.](#)

Why do you only consider saltmarsh edge?

The importance of marsh edge habitats as important nursery areas for juvenile fishes and decapod crustaceans well-documented. Ultimately, however, the values presented here are representative of the salt marsh edge because the data that is used to develop the estimates are from nekton sampling that sampled fish within the "edge" area.

Can I use this tool if I want to restore habitat not currently on the map?

Yes. Because we are estimating enhancement (i.e. density of individuals present in the structured habitat over and above what was found in the unstructured control) the values represent the number of new young-of-the-year fish that are "made" each year that we can attribute to an existing area of habitat; or – the expected number of new young-of-the-year fish "made" from habitat that gets added. For saltmarsh habitat, we only consider the area of saltmarsh edge (i.e. the linear edge, with an approximate 3m buffer inland and seaward). It is worth noting that when habitat is restored it may take several years for the fish and invertebrate community, and hence the estimated production enhancement, to recover to the same level as the natural habitats represented in this model.

Why are there only some species included in the tool?

This tool calculates the enhancement rate provided by structured coastal habitats and it is not meant to list every fish that may be found on a patch of habitat. The model only accounts for enhancement that results from nursery function provided by the habitat, and does not account for fish that may be "growth enhanced" by the structured habitat (e.g. an older, or adult fish that may use the habitat for food or protection). If a fish is not listed in the model outputs it could be because i) the fish is not nursery enhanced by the structured habitat in question; or ii) the fish may or may not be enhanced, but currently we do not have enough data to determine. When using the tool, click the Where's my fish? link to see if this fish you're interested in is enhanced, not enhanced, or if not enough data exists to determine.

Why can I only calculate values for certain parts of the country?

The methods used to estimate enhancement ([link](#)) require quantitative density data of juveniles utilizing the nursery habitat, alongside density data from an unstructured control habitat. Therefore, we can only estimate fish enhancement where there has been sufficient sampling that efficiently sampled young of year individuals, and that used paired sampling on both the structured habitat and an unstructured control.

How were the enhancement and productivity numbers calculated? What are the data inputs used?

The methods and the values are described in detail in zu Ergmassen et al. 2020. For a summary description, please see our fact sheet.

How should I interpret the results (total young of year fish and lifetime production)?

The results are first derived as density of new, juvenile fish "made" each year from the corresponding area of habitat. Those densities are then converted to production, as they grow (given predicted growth parameters) and die off (given certain mortality parameters). So the total young of the year fish is the number of fish made each year; and the lifetime production is the biomass that cohort of fish contributes to the system over the course of their lifetime .

What are the key assumptions of the fish enhancement estimates?

You can find them summarized in the fact sheet.

Are environmental variables, such as salinity or temperature, included when calculating fish enhancement values?

The approach for estimating regional juvenile fish enhancement estimates uses hundreds of independent sampling events across an ecoregion. The abiotic variables (e.g. temperature, salinity, etc.) varied with location and season. As such, the regional estimates are derived incorporating this normal variability into the estimates.

Do you account for any interactions between habitats?

While we provide quantitative estimates of enhancement of juvenile fish by both seagrass and salt marsh habitats, the current models do not account for the abundance or location of these habitats relative to one another, but rather provide independent habitat specific estimates. We therefore urge caution when interpreting the habitats in combination at individual sites. Further guidance is being developed as an active area of research.

Do you account for habitat quality or other habitat variables other than size?

The approach for estimating regional juvenile fish enhancement estimates uses hundreds of independent sampling events across an ecoregion. The biotic habitat variables (e.g. density, height, etc.) varied with sampling location. As such, the regional estimates are derived incorporating this variability into the estimates.

How do I select an area?

To select an area on the map, first zoom to a location until the "Draw area" button is active. Click on the button and then draw a polygon on the map. This can be done by either clicking on each of the vertices and then double-clicking on the last one when done, or clicking once where you want to start drawing and holding the button while dragging the mouse across the screen. To finish the polygon, you can release the button.

Why is the "Draw area" button greyed out?

If the "Draw area" button is greyed out, it means you are not zoomed-in to the right scale to be able to use this tool. To be able to draw an area, you need to zoom in until the button appears (often at a bay/estuary scale).

Can I edit an area that I have already selected? What do I need to do if I made a mistake drawing the area?

No, this functionality is not available in this tool. You'll have to delete the area (click on "Delete Scenario" button) and start again.

Why can't I use the draw area tool for small areas?

The tool does not allow area calculations when a polygon has a size below 1 acre. Below this size, we are not confident that the tool can provide an accurate reading of a polygon's size. This is due in part to the way the tool calculates an area, but also to the uncertainty that comes from a combination of the original spatial data sources and the methods used to create these final layers.

If you want to calculate fish productivity for areas below 1 acre, you can input the area value directly. To do that, choose the option "Enter directly". The Ecoregion is pre-selected based on where you are on the map. If you want to change the ecoregion, use the drop-down list. You can enter area values separately for saltmarsh and seagrass habitats.

How do I select the species for both habitats?	Species are separated by habitat type. Some species are in both habitats, while others are only available in one of them. In the “Select fish” tab, to select species for both habitats and see the results at the same time, click on the tab right below the description and select the species.
How do I export the results?	Results can be exported as a CSV table. To do that, click on the button below the results graphs, where it says “Download Fish data”. A separate table is available for each of the habitat types.
What does “seagrass habitat” mean?	We consider “Seagrass habitat” the locations where seagrass have been reported in continuous seabeds since 2010. Seagrass surveys are often based on hand-digitization of aerial photography. The weather conditions when the survey took place combined with the survey method highly affect the results of the survey. For example, if a survey was performed at dawn, the high water-glnt present on the photographs may mask some important seagrass areas. So, to fully capture all the possible locations where seagrass beds may be currently located, experts recommended including several recent surveys into the same layer. In regions where there are no data layers after 2010, the most recent layer available was used. Refer to the metadata document for a list of these locations.
Where are the seagrass polygons coming from?	The spatial data layer you see on the tool is a compilation of the best available data from every state. Refer to the metadata document for a list of sources. From the original sources, we only included seagrass beds with continuous density of seagrasses (often over 40%). In cases where no density information was available, we included all seagrass areas. We also separated “true” seagrasses from other Sub-Aquatic vegetation when possible. However, in some cases (refer to the metadata), there was no information to separate data by species.
How were the saltmarsh buffer layers created?	Saltmarsh layers were derived from CCAP land cover data (NOAA). This information results from remote sensing data at 30m resolution. Since the focus of this project is on the saltmarsh edge, it was important to make sure the coastline was as accurate as possible. So we improved the landcover information with the most up-to-date high resolution coastline data from NOAA. See the metadata document for a description of the methods used.
How wide is the saltmarsh buffer?	The saltmarsh buffer is 3 meters wide, so 1.5 meters on each side of the coastline.
When were these layers last updated?	These layers were last updated in January 2020. We recommend you check the data sources (see metadata) for the most up-to-date information.
Can I download the layers?	The underlying data layers are available for download following this link: LINK For more up-to-date information, please contact the sources directly. Up-to-date regional Seagrass information is also available on the Northeast Data Portal and the Marine Cadaster.

Can I use these layers for my own project?

Yes. However, we ask that the individual sources of information are properly cited (see metadata). Also, we bear no responsibility how these data layers are used beyond this project. Please, review the assumptions in the metadata document before using these layers.