



Nature-based shoreline protection systems are increasing in popularity across coastal zones in the United States. However, there are many questions concerning their efficacy in establishing the living organisms that are required to perpetually stabilize the shoreline. This essay, written by Zach Kassuba, a School of Renewable Resources graduate student, outlines the new techniques that he is helping to develop to monitor oysters critical to the success of common types of living shorelines used here in Louisiana.

Leading-edge Technologies that are Changing Nature-based Solutions to Shoreline Protection

By Zach Kassuba

There have been numerous attempts by the State of Louisiana to combat marsh erosion and increase oyster populations. One of the potential solutions to combat erosion is creating a living shoreline. Living shorelines are structures varying in size and shape that act as coastline protection and provide habitat restoration using natural materials such as rocks, native marsh vegetation and oysters. These structures help reduce erosion by supporting the shoreline and coastal marsh land from continuous wave action and sediment loss. Commonly implemented living shorelines use artificially created cement structures of various shapes and sizes to slow down waves and act as habitat for fish.

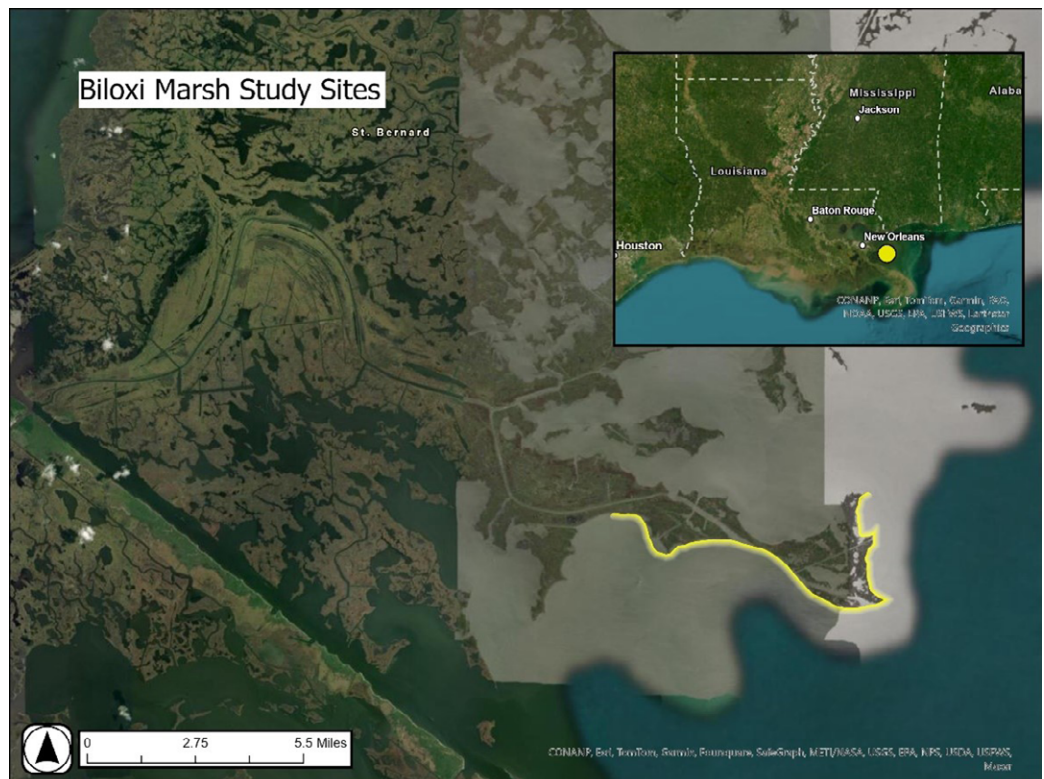


Figure 1. Map shows Biloxi Marsh study sites along peninsula marked with yellow line. The yellow dot on the Louisiana map shows where the site is located.

Our lab is working in Biloxi Marsh (**Figure 1**) to monitor living shorelines built from two different structure configurations. These structures Wave Attenuating Devices (WAD) (**Figure 2A**) and Shorejax (JAX) (**Figure 2B**) were put in place by Louisiana's Coastal Protection Restoration Authority (CPRA) to reduce erosion along a rapidly degrading shoreline in Eloi Bay.

Our monitoring work aims to explore different methods for measuring oyster growth and population numbers on these living shoreline structures, which often grow beneath the surface of the murky marsh waters where they are hard to see. Currently, the typical oyster density and population dynamics sampling methods in Louisiana involve wading in the water during low water events throughout early winter to count and measure exposed oysters. Researchers place a small PVC square at random locations along

the structure, at locations both above and just below the water surface. Within each square, they count oysters and other encrusting organisms. When the team sees live oysters, they make sure to record the shell height of live oysters (a measurement taken from the two longest points on the shell). While this sampling method is currently the most accurate, there are still areas of structures that remain uncounted due to visibility limitations. These assessments help the team get relatively accurate numbers of oyster growth and population numbers and this information can be used to help the state focus research efforts on where the best places are to grow oysters.

To better understand how oysters are growing in areas where visibility is low, our lab is looking at innovative methods for measuring oyster growth and populations along the living shoreline structures. As shown in **Figure 2A** and **2B**, the primary method we are pursuing involves underwater sonar technology. This technology works like a high-resolution fish finder, and we are using it to side-scan images of the structures. We use a sonar transducer that emits sound that then bounces off objects in the water back to the unit, creating a detailed vertical image of the bottom of the water that may show objects like in **Figure 3**. With similar, more advanced technology, our goal is to capture detailed images of the sides of the living shoreline structures. With these images, we can look and count oysters and other encrusting organisms on the structures.

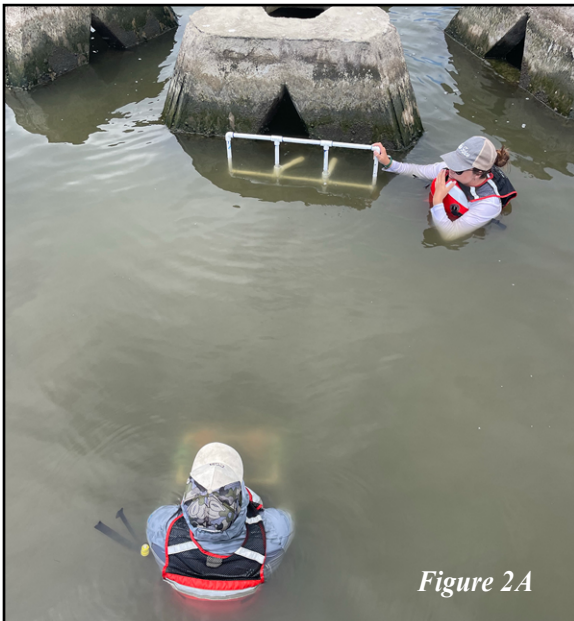


Figure 2A



Figure 2B

Living shorelines are defined by the fact that the structures can propagate the growth of marine life to continuously grow as the structure sinks. Using the underwater sonar equipment, we can assess the underwater part of the structure that was previously hidden. A sonar unit, called the ARIS Explorer 3000, is directed at the structure, providing incredible image clarity and detection. After collecting video data at each marked site, we analyze it using an image processing program. This program allows us to set the images to scale and attempt to count oysters and other encrusting organisms along the structure. We are also exploring whether image detection can determine if the oysters are dead or alive. If successful, underwater oyster detection could significantly improve growth and population measurements.

Figure 3. Shows an image of the ARIS Explorer 3000 being used to look at debris (a tire and sheet metal) along a riverbed

This project is experimental, and this technology is underutilized in oyster sampling. It represents one of the most recent attempts to find a new method for quantifying oyster growth and population dynamics. Moving forward, we hope that this new sampling method may increase the efficacy for researchers and resource managers needing to observe oysters in murky water.

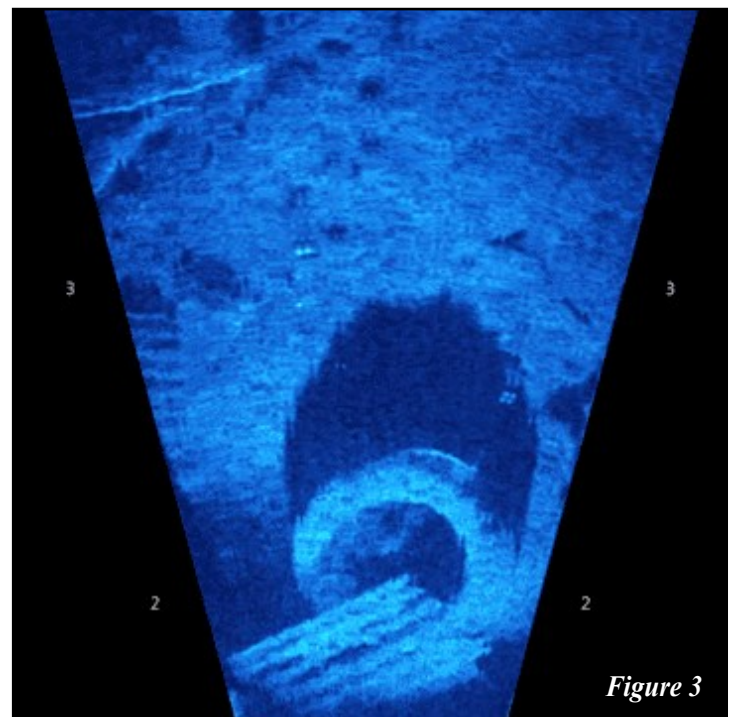


Figure 3

LDWF Commercial License and Trip Ticket Staff at Field Office Locations this December

The Louisiana Department of Wildlife and Fisheries will offer new or renewal commercial fishing licenses and boat registration transactions at field offices in December. Additionally, trip ticket staff will be present to train new or existing seafood dealers on the process of filling out trip tickets, answering questions regarding trip tickets and taking trip ticket orders (trip tickets will not be distributed on-site). LDWF offers this service as a convenience to our commercial fishermen who need a commercial license and in-person assistance without driving to Baton Rouge.

Staff will be available at the following dates and locations:

Bourg Office

468 Texas Gulf Rd.

Bourg, LA

Dec. 9 - 11

9 am – 12:00 pm and 1:00 pm - 3:30 pm

New Orleans Office

2045 Lakeshore Drive, Suite 438

New Orleans, LA

Dec. 16 - 18

9 am – 12:00 pm and 1:00 pm - 3:30 pm



Commercial License Sales:

Acceptable forms of payment will include personal checks, cashier's checks, money orders, cash and credit/debit cards. There is a 3 percent charge when using a credit/debit card. Customers purchasing licenses are asked to bring their license renewal notices to avoid processing delays.

First-time applicants can apply by mail or in person. When applying in person, you must provide the following:

Resident applicants must provide proof of residency such as a Louisiana driver's license (held continuously for 12 months), voter's registration, vehicle registration and state income tax.

Non-resident applicants must provide proof of residency from their domiciliary state, such as a driver's license, voter's registration, vehicle registration, and state income tax.

Applicants applying for a license in a business name must provide documentation showing proof of valid federal tax ID# assigned to the business name and proof of authorized signature, or an occupational license will be required.

For commercial license inquiries, contact (225) 765-2898.

Trip Tickets:

The trip ticket program requires wholesale/retail seafood dealers and wholesale/retail reptile and amphibian dealers who purchase or accept transfers of catch from commercial fishermen or reptile/amphibian collectors to submit trip tickets to LDWF. Trip tickets capture information about the catch – what it is, where it was caught, how it was caught, and how much was caught. Fresh product license holders (commercial fishermen licensed to sell their catch directly to consumers) must also submit trip tickets.

The trip ticket information is confidential and protected under state and federal law. LDWF uses this information to improve assessments of fish populations and inform management.

More information about the trip ticket program, including how-to videos, is available on the LDWF website at www.wlf.louisiana.gov/page/trip-tickets.

Call (225) 765-2449 for trip ticket inquiries or email triptickets@wlf.la.gov.

NOAA Announces Reopening of the 2024 Federal Gulf of Mexico Red Snapper Recreational For-Hire Season

This Reopening Does Not Include the Recreational Private Angler Or State Charter Season

What/When:

- The Gulf of Mexico federal red snapper federal for-hire season reopened at 12:01 a.m., local time, on Nov. 18, 2024, and will close at 12:01 a.m., local time, on Jan. 1, 2025.
- The 2024 Gulf of Mexico red snapper fishing season in federal waters for vessels with federal for-hire (charter/headboat) reef fish permits was 88 days (opened June 1, 2024, and closed at 12:01 a.m. local time on Aug. 28, 2024).
- Based on updated landings data, NOAA Fisheries determined that the red snapper recreational federal for-hire annual catch target was not reached during the open season. Therefore, NOAA Fisheries is reopening the season to provide Gulf of Mexico federally permitted for-hire fishermen opportunity to catch the remaining allocation.
- Private and State Charter Anglers Note: This reopening does not include the recreational private angler or state charter season, which is determined by LDWF. The Louisiana state season for private recreational and state charter anglers is closed and is not expected to reopen until the spring or summer of 2025.

Why is the Gulf of Mexico recreational red snapper federal for-hire season reopening?

- The annual catch target for the federal recreational red snapper for-hire component is 3,076,322 pounds whole weight. NOAA Fisheries estimates that Gulf of Mexico recreational federally permitted for-hire fishermen only caught 2,193,710 pounds whole weight of the catch limit. This means 882,612 pounds whole weight of red snapper remains.
- If the annual catch target for the red snapper federal for-hire component is not reached or exceeded during the normal open season, NOAA Fisheries may reopen this component to allow fishermen opportunity to catch the remaining allocation without greatly increasing the risk of exceeding the annual catch target or the overfishing limit.

Recreational and Commercial Seasons for Lane Snapper in Louisiana Waters Closed Dec. 2, 2024, until Jan. 1, 2025

The recreational and commercial seasons for lane snapper in Louisiana waters closed at 12:01 a.m. on Dec. 2, 2024, and will reopen on Jan. 1, 2025.

The decision was made by Louisiana Department of Wildlife and Fisheries Secretary Madison Sheahan, following notification by NOAA Fisheries that the Federal waters of the Gulf of Mexico closed for the recreational and commercial harvest of lane snapper on Nov. 26, 2024, and will reopen on Jan. 1, 2025.

Data indicate that the 2024 annual catch limit of 1,088,873 pounds is projected to be met by Nov. 26, 2024. Compatible season regulations in state waters are preferable to provide effective rules and efficient enforcement for the fisheries, and to prevent overfishing of the species in the long term.

Effective with this closure, no person shall recreationally harvest or possess lane snapper in Louisiana or federal waters. Additionally, no person shall commercially harvest, possess, purchase, barter, trade, sell or attempt to barter, trade or sell lane snapper in Louisiana or federal waters. The prohibition on sale/purchase of lane snapper during the closure does not apply to those that were harvested, landed ashore and sold prior to the effective date of the closure and were held in cold storage by a dealer or processor, provided appropriate records in accordance with R.S. 56:306.5 and 56:306.6 are properly maintained.

Commercial Large Coastal Sharks Possession Limit Increases to 55 Sharks When Season Opens Jan. 1

The Louisiana Department of Wildlife and Fisheries (LDWF) announced the daily possession limit for commercially harvested large coastal sharks (great hammerhead, scalloped hammerhead, smooth hammerhead, nurse shark, blacktip shark, bull shark, lemon shark, sandbar shark, silky shark, spinner shark and tiger shark) is increasing from 45 to 55 per day when the 2025 season opens on Jan 1. The adjustment was made by secretary Sheahan, as authorized by Wildlife and Fisheries Commission action in LAC 76.VII.357.H.2, after she was informed by NOAA Fisheries of a similar adjustment in the federal waters of the Gulf of Mexico.

LDWF would also like to remind commercial harvesters that there is no longer a prohibited season for the commercial harvest of sharks from April through June. There is no possession of sandbar sharks allowed unless a commercial fisherman has in their name and in possession a valid federal shark research permit as described in federal regulations (50 CFR 635.32(1)).

For more information, visit us at www.wlf.louisiana.gov on Facebook at www.facebook.com/ldwffb or follow us on Twitter @LDWF.

Gulf Council to Hold a Shrimp Advisory Panel Meeting

The Gulf of Mexico Fishery Management Council will convene a meeting of its Shrimp Advisory Panel on Dec. 16, 2024, from 8:30 AM – 1:30 PM EST. The meeting will be held in-person at the council offices located at 4107 West Spruce Street, Suite 200, Tampa, FL 33607.

The panel will discuss the draft Shrimp Framework Action that considers modifying the vessel position data collection program for the Gulf of Mexico shrimp fishery. As part of the discussion, the panel will consider survey design and estimated costs for position-recording devices. The panel will also hear an update on the Shrimp Futures Program.

Public comment will be held before the meeting adjourns.



NOAA Requests Public Input on Draft Programmatic Environmental Impact Statement Supporting the Identification of Aquaculture Opportunity Areas in Gulf of Mexico Federal Waters

What is happening:

On Nov. 22, 2024, a notice was published in the Federal Register (89 FR 92681) announcing the availability of the Draft Programmatic Environmental Impact Statement (DPEIS) for the Identification of Aquaculture Opportunity Areas (AOA) in U.S. Federal Waters of the Gulf of Mexico for public review and comment. The DPEIS builds upon a multi-year planning effort to identify areas that may be environmentally, socially, and economically suitable for offshore aquaculture development in the Gulf. It assesses the impacts of identifying one or more AOAs in federal waters of the Gulf, as well as the potential impacts associated with siting aquaculture operations in those locations in the future.

A total of four Preferred AOA Alternatives are identified in the DPEIS, each ranging in size from 500 to 2,000 acres. Three of the Preferred AOA Alternatives are located off the coast of Texas, and one is located off the coast of Louisiana.

How you can get involved:

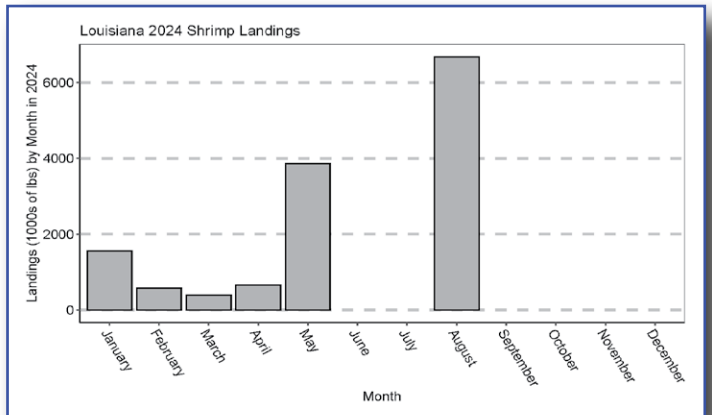
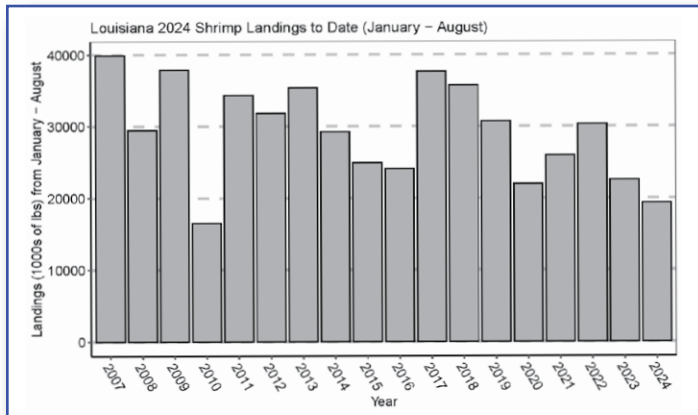
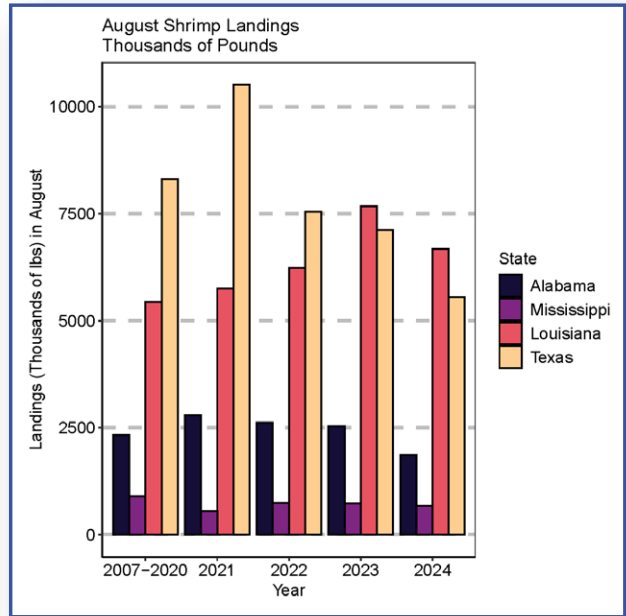
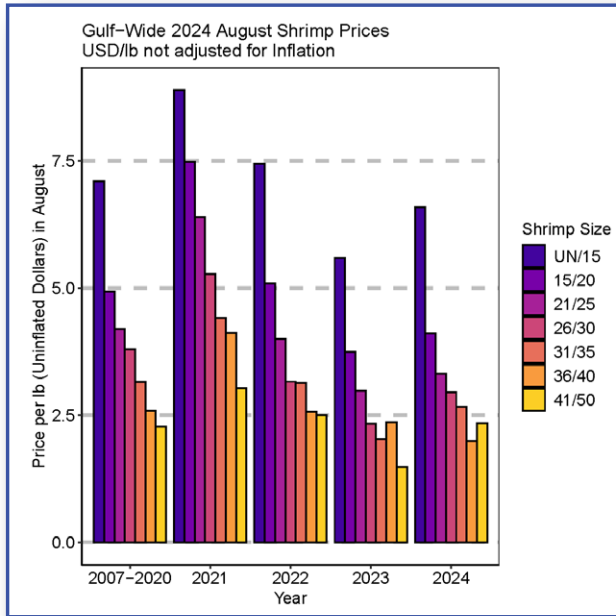
Public input is a critical component of the process of identifying AOAs in Gulf federal waters. The publishing of the Notice of Availability initiates a 90-day public comment period that will conclude on Feb. 20, 2025. The public may review the DPEIS and provide NOAA Fisheries with comments which may be submitted electronically, by mail, or verbally at one of three upcoming virtual public meetings:

- Tuesday, Dec. 17, 2024, 6:30 p.m.-8:30 p.m. CST/7:30 p.m.-9:30 p.m. EST
- Wednesday Jan. 15, 2025, 3:30 p.m.-5:30 p.m. CST/4:30 p.m.-6:30 p.m. EST
- Thursday, Feb. 13, 2025, 6:30 p.m.-8:30 p.m. CST/7:30 p.m.-9:30 p.m. EST

For details on how you can register to attend these virtual meetings and participate in the public comment process, please visit the Get Involved: Public Comment section of the Gulf of Mexico Aquaculture Opportunity Area PEIS webpage.

Louisiana Shrimp Watch

The shrimp watch data for the December issue includes data through August 2024. All landing data is based on trip ticket data provided by Gulf States Fisheries Commission and no estimations have been made.



The Gumbo Pot

Crushed Chip Red Drum*

Recipe courtesy of Ms. Sarah's Country Kitchen

From Ms. Sarah:

Grab your favorite chip and use it to bread some fish!

I personally used sour cream and onion chips for this recipe.

Please reach out to the editor on suggestions for recipes or ingredients to use in future editions.

We are always looking for feedback and improvement!



Ingredients:

- 1 ½ lb. red drum filets
- 1 ½ cups potato chips, crushed
- ½ cup plus ¼ cup breadcrumbs
- 1 tsp pepper
- ½ cup milk

Directions:

1. Preheat oven to 450 degrees F. Grease a baking sheet with cooking spray, and sprinkle ¼ cup breadcrumbs over baking sheet.
2. Put milk in a shallow bowl. Combine crushed chips, breadcrumbs, and pepper in another shallow bowl.
3. Dip fish filet into milk, allow excess milk to drip off before adding filet to the chip mixture. Cover filet with chip mix.
4. Place filet onto breadcrumb lined baking sheet and bake for 12 minutes, checking the internal temperature of the fish reaches 145 degrees F.
5. Enjoy!

*Total time: 20 minutes, Feeds 2-4 people.



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We would like to hear from you! Please contact us regarding fishery questions, comments or concerns you would like to see covered in the Lagniappe. Anyone interested in submitting information, such as articles, editorials or photographs pertaining to fishing or fisheries management is encouraged to do so.

Please contact Lagniappe editor Jeffrey Plumlee at jplumlee@agcenter.lsu.edu

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Be sure to visit the *Lagniappe* blog for additional news and timely events between issues.
<https://louisianalagniappe.wordpress.com/>

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