

Supreme Court of Louisiana

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FROM: CLERK OF SUPREME COURT OF LOUISIANA

The Opinions handed down on the **24th day of March, 2021** are as follows:

BY Crain, J.:

2020-C-00571

MARTY MELERINE AND OYSTER FISHERIES, INC. VS. TOM'S MARINE & SALVAGE, LLC, TOM'S WELDING, INC., TRIPLE T MARINE, LLC, CAPTAIN JAMES WILLIAMS, ALLIANZ GLOBAL RISKS US INSURANCE COMPANY, AND ALLIANZ GLOBAL CORPORATE AND SPECIALTY SE (Parish of St. Bernard)

REVERSED AND REMANDED. SEE OPINION.

Hughes, J., concurs and assigns reasons.

SUPREME COURT OF LOUISIANA

No. 2020-C-00571

MARTY MELERINE AND OYSTER FISHERIES, INC.

VERSUS

**TOM'S MARINE & SALVAGE, LLC, TOM'S WELDING, INC.,
TRIPLE T MARINE, LLC, CAPTAIN JAMES WILLIAMS,
ALLIANZ GLOBAL RISKS US INSURANCE COMPANY, AND
ALLIANZ GLOBAL CORPORATE AND SPECIALTY**

**ON WRIT OF CERTIORARI TO THE COURT OF APPEAL,
FOURTH CIRCUIT, PARISH OF ST. BERNARD**

CRAIN, J.

Significant evidentiary issues are presented for review in this litigation involving alleged damages to leased oyster grounds. Applying well-established rules of evidence, we find the trial court erred by (1) allowing evidence of a regulatory method for determining oyster-lease damages applicable only when a pre-project biological survey is performed, and (2) admitting opinion testimony from an expert witness that is beyond his expertise and not supported by reliable methodology. We reverse, vacate, and remand for new trial.

FACTS AND PROCEDURAL HISTORY

On the afternoon of April 9, 2016, a tugboat pushing a barge through the coastal waters of St. Bernard Parish entered an area known as Christmas Lake, located northerly from the mouth of the Mississippi River Gulf Outlet. Christmas Lake is productive oyster grounds and contains several oyster leases marked by poles extending above the waterline. Down to one engine due to mechanical problems, the captain tried to navigate the tugboat to Hopedale for repairs. An oyster fisherman stopped the tugboat and instructed the captain to turn around, emphasizing the presence of oyster beds and explaining the water was too shallow to travel any

further. The captain reversed course and turned southwest, entering oyster-lease grounds held by plaintiff, Marty Melerine.

Moving southwesterly, the tugboat crossed the middle of Melerine's 140-acre lease until grounding on an oyster reef in the southwest corner of the lease. The captain tried to extricate the tugboat for about 45 minutes by revving the engine in forward and reverse. According to the captain, he then turned the engine off and waited for high tide the next day before attempting to move the boat again. Plaintiffs presented witness testimony suggesting the captain revved the engine much longer than 45 minutes, possibly for hours, and the boat's satellite tracking information, known as "AIS," indicated the boat may have moved 17 feet during the night.¹ At high tide the next day, April 10, 2016, the captain freed the tugboat from the reef with the assistance of Melerine. Following directions from Melerine and another area oysterman, the captain piloted the tugboat along the southern boundary of the lease and exited the area.

Shortly after the grounding, Melerine retained Dr. Edwin Cake Jr., an oyster biologist, to inspect the oyster beds and determine the extent of any damages caused by the incident. Dr. Cake advised Melerine he preferred to wait "at least six weeks after the grounding event so that any oysters that were going to die would die during that time period." On June 9, 2016, about two months after the grounding, Dr. Cake first visited the site. The trip was limited to a "preliminary oyster dredging survey" consisting of dragging an oyster dredge in and around the grounding site. According to Dr. Cake, the results confirmed "damage had occurred and [oyster] deaths were occurring."

Dr. Cake returned on September 2, 2016, about five months after the grounding. Assisted by a scuba diver, he obtained samples of oysters in and around

¹ AIS stands for "automatic identification system," a coastal tracking system used on ships.

the grounding site. The diver sampled seven areas, each measuring one square meter total (1.19 square yards), and collected all of the oysters, dead and alive, in each of the seven locations. Dr. Cake counted the oysters in each sample and divided them into three categories based on their maturity: (1) sack oysters, which are fully developed and ready for market; (2) seed oysters, which are still developing and measure one to three inches in size; and (3) spat oysters, the youngest and smallest oysters measuring less than an inch. Based on these samples, after adjusting for natural mortality, Dr. Cake surmised that each square meter had an average of 45 dead oysters he attributed to the grounding.

Dr. Cake next visited the site on December 16, 2016, over eight months after the grounding, when he and an assistant “poled” the bottom of the leased areas. Poling an area involves a person tapping the water bottom with a long pole to determine whether the bottom is reef, shell, sand, or mud. Working in north-south transects, they made numerous trips across the lease intermittently poling at points about 60 feet apart. They also poled an area near the grounding site sub-leased by Oyster Fisheries, Inc. (OFI), another plaintiff in this proceeding. Based on the poling, Dr. Cake concluded the Melerine lease has 78.6 productive acres of oyster reef, but 34.2 acres were buried by a layer of sediment disbursed by the tugboat’s propeller. He also surmised the tugboat created a 0.5 acre “trench” at the grounding site. According to Dr. Cake, the relevant part of the OFI lease has 18.3 productive acres, but 12.5 acres was covered in sediment disbursed by the tugboat.

Dr. Cake again obtained oyster samples on January 18, 2017, more than nine months after the grounding. Those eight samples were taken from areas significantly further away from the grounding site than the September samples but revealed a higher mortality count. The January samples averaged 107 dead oysters per location, more than twice the average of the September samples.

Based on the oyster samples and poling data, Dr. Cake concluded Melerine's damages totaled \$7,235,993.27. That figure represents two components of damages: the cost to repair the damaged reefs, which Dr. Cake calculated to be \$997,314.77; and lost profits from oysters killed by the grounding incident, which he calculated to be \$6,238,678.50. For OFI's lease, Dr. Cake's figures totaled \$1,801,716.25, including repair costs of \$349,199.50 and lost income of \$1,452,516.75.

Melerine and OFI sued the tugboat captain's employer, Tom's Marine & Salvage, LLC, and its insurer, AGCS Marine Insurance Company, seeking damages caused by the grounding. Melerine and OFI alleged the grounding caused extensive damage to "[p]etitioners' oysters, oyster habitat, and water bottoms" of their leases. According to the petition, the captain's efforts to free the tugboat "resulted in excessive siltation damage . . . [rendering] the leases, or portions thereof, unsuitable for oyster cultivation." Plaintiffs sought recovery for the diminution in the market value of their leases, damage to the oyster-supporting water bottom improved by them, and damage to living oyster resources.

After extensive pre-trial discovery, defendants filed a motion in limine seeking to exclude any evidence based on formulas generated by the Oyster Lease Damage Evaluation Board (OLDEB). OLDEB is a legislatively-created entity charged with establishing a uniform system of compensation for damage to oyster beds caused by oil and gas activity. *See* La. R.S. 56:700.10-14. The statutory scheme is designed to address proposed oil or gas operations that will intrude on an oyster leasehold. *See* La. R.S. 56:700.12. To that end, the OLDEB statutes and related regulatory provisions, methodologies, and formulas are all premised on one central feature: the performance of extensive biological surveys of the leased area before and after the scheduled oil or gas activity. *See* La. R.S. 56:700.12(4); La. Admin. Code 43, §§3703, 3903. Using comparative data obtained from pre- and post-project surveys, damage to the water bottom and oyster stock can be calculated

with OLDEB-developed formulas. See Oyster Lease Damage Evaluation Board, *Uniform Evaluation Methods*.

In a second motion, defendants sought to exclude Dr. Cake's opinions, arguing he is not qualified to opine on the movement of sediment through plaintiffs' leases. See La. Code Civ. Pro. art. 1425F. Defendants cited deposition testimony where Dr. Cake admitted he is not an expert in sedimentology or hydrology. Defendants also asserted Dr. Cake's damage calculations were not based on reliable methodology.

The trial court denied both motions. According to the trial court, the grounding incident is analogous to mineral activity, and the subject damages "are precisely what the OLDEB formula was enacted to compensate." Dr. Cake's opinions based on the OLDEB formulas were also held admissible, and the court found him qualified to render the opinions. The matter proceeded to a jury trial.

Over a two-week trial, the parties presented testimony from several fact and expert witnesses. Melerine testified he has farmed oysters for over 30 years and holds eight leases totaling over 500 acres. When he acquired the Christmas Lake lease, it had one productive spot, a clamshell reef located along the common boundary with the OFI lease. He cleared mud off the reef, planted it with seed oysters, and began producing oysters. In 2009 he started adding crushed concrete and limestone, referred to as "cultch," to the water bottom to create additional oyster bedding grounds. The lease now has seven productive areas that are fished on three-year intervals, the typical growth cycle for an oyster. Melerine no longer uses seed oysters and depends on the existing stock to reproduce. From 2011 to 2016, Melerine spent \$300,000 on cultch for this lease, which became his most productive.

Melerine does not personally fish the lease. He contracts with Louis Molero to harvest and sell the oysters in return for 50% of the sale proceeds. In 2016, before the grounding, Molero was harvesting from the reef where the grounding eventually

occurred. Melerine considered it the best spot on the lease. According to Melerine, the reef was “chock full of oysters,” but after the grounding the lease production went into a “tailspin.” However, records maintained by Molero indicate production before and after the grounding was relatively the same. When asked about this apparent conflict, Melerine and Molero explained that to maintain pre-accident production levels, Molero overfished the lease, “skull dragging it” to meet orders. By 2018, the lease was depleted, and Molero stopped fishing it.

Van Robin, the owner of OFI, has been an oyster fisherman for 47 years. He and his companies collectively have over 3,500 acres of oyster leases, with OFI holding the most productive acreage, including the lease adjacent to Melerine’s lease. Like Melerine, Robin applies cultch to his leases. The OFI lease is fished by Melerine and another oysterman, who each receive 50% of the sale proceeds. The OFI lease still produces, but not from the damaged area near the grounding site.

Two other area oystermen testified about encountering the tugboat in Christmas Lake. Lonnie Assavedo was the first to see the boat. It entered the area during a wind-driven low tide that dropped the water level about two feet. After telling the captain to turn around and watching the tugboat start to leave, Assavedo went to his lease about a mile away. From that distance he noticed puffs of diesel coming from the area of the tugboat and turbulence behind the vessel, indicating to him the captain was straining the engine trying to free it from the reef. That continued for at least two hours. The next morning, Greg Perez encountered the tugboat at the grounding site. After speaking to the captain, Perez left but returned that afternoon to guide the boat out of the leases.

The tugboat captain, James Williams, confirmed the boat is about 60 feet long, 26 feet wide, drafts about six feet, and has two engines, each powering a 60-inch diameter propeller. After one engine failed, he changed course and entered Christmas Lake to reach a canal leading to Hopedale. After talking to Assavedo, he

was exiting the area when the tugboat grounded and stopped. He tried to free it for about 45 minutes, turned the engine off, and waited for high tide the next day. Although the bow was stuck, he did not think the propeller hit bottom. A navigation expert hired by plaintiffs, Captain Ronald Campana, inspected the tugboat in dry dock and determined it has a draft of seven to eight feet and requires nine feet of water to navigate safely. The poling data from the Melerine lease indicates water depths in the areas crossed by the tugboat ranging from six to eight feet, with the grounding site 6-feet deep.

Dr. Cake confirmed his trips to the site, the collection of oyster samples, and his poling information. After explaining the purpose of OLDEB, Dr. Cake repeatedly reminded the jury that his poling, sampling, and calculations were in accordance with OLDEB guidelines and procedures. The following excerpt is illustrative:

Q. And describe briefly what the purpose of the Louisiana Oyster Lease Damage Evaluation Board--sometimes we'll call that by the acronym OLDEB; is that fair?

A. That's fair. OLDEB is a State organization under the Department of Natural Resources that brings together representatives of the oil industry and the oyster industry under an administrative law judge, and the purpose is to determine whether or not there are damages in the oil and gas field to oyster leases.

Q. And as part of that process [has] OLDEB promulgated any guidelines or methodologies for how to resolve these disputes?

A. Yes, they did. There are protocols for performing oyster lease assessments that are established in law under the Department of Natural Resources under OLDEB.

Q. And are those the methodologies that you applied in this case?

A. Absolutely.

Plaintiffs also introduced a copy of the OLDEB guidelines and uniform evaluation methods.

Dr. Cake acknowledged he did not have the pre-project biological survey required by OLDEB, but said he could “piece together what the lease looked like beforehand” and “estimate the damage that is the loss of oysters, mortality, from the distance (*sic*) of the shells themselves.” Dr. Cake opined the tugboat disbursed sediment covering 34.2 acres of the Melerine lease and 12.5 acres of the OFI lease. That conclusion was primarily based on poling, which indicated to him the sediment in those areas was “fluffy . . . a very soft ooze material [that] you can feel with a cane pole.” Using an OLDEB table, Dr. Cake concluded this acreage needed three inches of new cultch costing \$955,410.83 for the Melerine lease and \$349,199.50 for the OFI lease. Additionally, the grounding site needed twelve inches of cultch costing \$41,903.94.

Dr. Cake based his opinions on the loss of oysters on the samples taken several months after the grounding. He used the average number of dead oysters from the square-meter samples to calculate an average number of dead oysters per acre, which totaled 1,671 sacks.² Although the OLDEB guidelines require the per-acre mortality figure to be multiplied by the number of damaged acres, Dr. Cake multiplied it by all productive acreage, both damaged and undamaged. This produced a projected total of 131,340 sacks of dead oysters for the Melerine lease and 30,579 for the OFI lease. Those oysters, in Dr. Cake’s opinion, were killed by sediment disbursed by the tugboat. Using a \$60 sack price less \$12.50 harvesting cost, he concluded the oyster stock loss is \$6,238,678.50 for the Melerine lease and \$1,452,516.75 for the OFI lease.

Scott Porter, the scuba diver who assisted Dr. Cake, is also a biologist and testified primarily about his findings in the area of the grounding. Diving approximately five months after the incident, with visibility limited to six inches, he

² A sack contains 190 oysters.

relied mainly on feel and testified the grounding site was heavily damaged, referring to it as a “chopped water bottom.” In January, he swam more of the lease, looking and feeling for signs of the path traveled by the tugboat before it grounded. He felt some “soft . . . chopped up” spots along the path that he believed were caused by the tugboat’s propeller.

The plaintiffs’ final witness in their case-in-chief was Ralph Litolff, a forensic accountant who used Dr. Cake’s figures to arrive at the same conclusions for the damage to the oyster crop. Litolff referred to his approach as the “crop model” where oysters are analogous to agricultural crops destroyed in an incident. “The reason this is a little more difficult to grasp [here],” Litolff candidly expressed, “is all of this is underwater.”

Defendants presented testimony from several experts, including Dr. Mark Kulp, a coastal geologist who interpreted side-scan sonar images of the lease bottoms. The images, vertically accurate within a centimeter, identified the reefs and did not, according to Dr. Kulp, reveal any sign of bottom scarring from the tugboat. Dr. Kulp acknowledged that a vessel-grounding can impact a reef, and the side-scan sonar identified an area of soft water bottom in the reef at the grounding site.

Dr. Nan Walker, an oceanography and coastal sciences professor at LSU, specializes in the use of satellite imaging data to study coastal sediment transport. She reviewed several available images of Christmas Lake during 2016, including one image taken about two hours after the tugboat left the reef. Dr. Walker found no evidence of a large sedimentation event due to the grounding. The leased areas had about 60 to 70 milligrams of suspended sediment in the water after the tugboat left the reef. By comparison, on February 9, 2016, three months before the grounding, the leased areas had as much as 300 milligrams of suspended sediment. Several other days during early and late 2016 the levels exceeded 100 to 200

milligrams of suspended sediment, usually corresponding with cold fronts and high winds.

Dr. Ioannis Georgiou, a professor at UNO who teaches sediment transport and specializes in hydrodynamics, modeled the potential sediment disbursed by the tugboat at the grounding site. He stated the falling tide removed some of the sediment; however, to be conservative, he assumed all the sediment remained on the leases. If spread over the leases, the sediment layer produced by the propeller would be a “fraction of inch,” more specifically stated in his report as one to two millimeters. According to Dr. Georgiou, outside the direct impact area at the grounding site, the grounding event produced sediment levels comparable to natural weather events. The tugboat engine would have to have run for sixteen hours to suspend enough sediment to reach levels typically generated during a really strong cold front.

Michael Rayle Jr., an oyster biologist, visited the leases twice in April 2018, nearly two years after the grounding, to pole and sample. The sampling revealed significant numbers of oysters on both the Melerine and OFI leases, with one location indicating as many as 930 sacks on an acre. He found no evidence of a large mortality event and nothing to support Dr. Cake’s damage assessment.

Defendant’s last witness, Dr. Walter Keithly, is a resource economist who reviewed the plaintiffs’ production records and income tax returns. For the Melerine lease, the most production ever in one year was 7,500 sacks. By comparison, Dr. Cake opined the grounding killed 131,340 sacks on the Melerine lease. As to earnings, Melerine’s tax returns showed yearly gross income for 2014 through 2016 of \$157,000, \$195,000, and \$410,000. Dr. Keithly acknowledged the tax returns do not reflect which of Melerine’s leases generated the income and that tax returns do not reflect the value of unharvested oysters.

Dr. Keithly explained the fair market value of any product is the price a willing seller will sell to a willing buyer in an arms-length transaction. For income-producing property, that value may be determined by discounting the property's annual income or by comparing sales of comparable properties. Dr. Keithly did not have sufficient information to use the income approach for this case, but has reviewed many oyster lease assignments and appraisals. The highest price he has seen for an oyster lease is \$3,000 per acre. He agreed non-productive leases are more likely to be sold than productive leases.

Plaintiffs called one rebuttal witness, Dr. George Flowers, a geologist and associate professor at Tulane. His testimony was limited to critiquing the defense experts' opinions and methodology. He did not offer any independent opinions or conclusions on causation or damages. Dr. Flowers believed the satellite imagery relied upon by Dr. Walker was insufficient to accurately determine suspended sediment in a relative small body of water like Christmas Lake. He also criticized Dr. Georgiou for using a sediment disbursement model applicable to ships moving through water rather than a grounded vessel.

The jury returned a 10-2 verdict for the plaintiffs, awarding \$4,937,532.77 to Melerine and \$1,150,169.70 to OFI. The Melerine award is consistent with Dr. Cake's calculations with one modification: in determining lost profits, the jury used harvesting cost of 50% of the sales price for a sack, consistent with the plaintiffs' arrangements in this case. The same adjustment was apparently made for the OFI award, but that modification (about \$535,000) does not fully account for the difference between the OFI award and Dr. Cake's opinion of their damages, \$1,801,716.25. The trial court signed a judgment in accordance with the jury's verdict. Defendants' motion for new trial was denied, and the judgment was affirmed on appeal. *See Melerine v. Tom's Marine & Salvage, LLC*, 19-0672 (La. App. 4 Cir. 3/4/20), ___ So. 3d ___ (2020WL1056806). This court granted a writ

of certiorari. See *Melerine v. Tom's Marine & Salvage, LLC*, 20-00571 (La. 10/20/20), 303 So. 3d 313.

DISCUSSION

Defendants contend the trial court erred by admitting evidence of OLDEB formulas and allowing Dr. Cake to testify to opinions beyond his expertise and not supported by reliable methodology.

I. OLDEB

Defendants' objection to the OLDEB evidence goes to its relevancy. Relevant evidence is evidence having any tendency to make the existence of any fact that is of consequence to the determination of the action more probable or less probable than it would be without the evidence. La. Code Evid. art. 401. Evidence that is not relevant is not admissible. La. Code Evid. art. 402. Relevant evidence may be excluded if its probative value is substantially outweighed by the danger of unfair prejudice, confusion of the issues, or misleading the jury. See La. Code Evid. art. 403. The trial court is accorded great discretion in determining whether evidence is relevant; and, absent a clear abuse of discretion, rulings on relevancy will not be disturbed on appeal. *State v. Magee*, 11-0574 (La. 9/28/12), 103 So. 3d 285, 321.

OLDEB is the product of a statutory scheme enacted to resolve "turf wars" between oyster lessees and mineral lessees. *Jurisich v. Jenkins*, 99-0076 (La. 10/19/99), 749 So. 2d 597, 605. To arbitrate these conflicts, OLDEB is charged with promulgating "rules and regulations to determine the method of establishing a uniform system of compensation for actual damages caused to the beds of leaseholders *based on biological test data*." La. R.S. 56:700.10 (emphasis added).

"Biological test data" is defined as "surveys of oyster beds and grounds by a certified biologist to determine the quality, condition, and value of oyster beds and grounds." La. R.S. 56:700.11(2). When a claim is filed with OLDEB, a "biological survey shall be performed before the operations begin and upon completion of the

activity.” La. R.S. 56:700.12(4). The initial biological survey is filed with OLDEB before operations begin. La. R.S. 56:700.12(5). Upon completion of the activity, the responsible party “shall have another biological survey performed and filed with the board so that actual damages to the leasehold may be determined by the board.” *Id.* By comparing the before-and-after studies, OLDEB determines the damage to the oyster beds:

All claims shall be evaluated expeditiously based on biological test data *done before and after the activity* over or on the beds occurs, and upon determining actual damages the claim shall be immediately paid to the board by the owner for the benefit of the leaseholder.

La. R.S. 56:700.12(6) (emphasis added).

This comparative-analysis approach is carried forward in the applicable regulations adopted by the Secretary of the Department of Natural Resources. *See* La. R.S. 56:700.14E; 43 LAC I, §§3701-03, 3901-23. Pursuant to these regulations, the “initial biological survey shall be based on onsite inspection and evaluation and shall be made to determine the quality and value of the beds and grounds expected to be affected by the proposed oil and gas activity.” 43 LAC I, §3903A. Upon completion of the proposed activity, the party conducting the activity “shall have a final biological survey made at [its] expense . . . to furnish a basis for determination of the actual damage to the leasehold sustained as a result of the oil and gas activity.” 43 LAC Pt I, § 3903C.

The regulations direct OLDEB to engage experts to assist in establishing a uniform method for determining “the value of the oyster beds and grounds *before* the oil and gas activity takes place and in determining the estimated damage or loss to the leasehold *after* the activity is completed.” 43 LAC Pt I, §3903E (emphasis added). A two-day workshop for that purpose was attended by environmental scientists, oyster biologists, and representatives from the oyster industry, oil and gas industry, and state and federal agencies. Based on that workshop, OLDEB adopted

“General Guidelines for Conducting Oyster Lease Biological Surveys” and “Uniform Evaluation Methods.” Like the OLDEB statute and regulations, these publications emphasize the necessity of “initial and final biological surveys” to determine damages to the water bottom and oyster stock. The guidelines provide detailed recommendations for identifying and determining the quality and value of the pre-project water bottom and oyster stock, including specific criteria for spacing poling transects and probes, as well as minimum requirements for oyster samples. Using these techniques, initial and final biological surveys must be completed.

A “final damage assessment” for the water bottom and oyster stock is determined by comparing the surveys:

The pre- and post-construction bottom substrate maps will be compared to identify and quantify the area and bottom substrate type actually damaged by the development activity.

* * *

The compensation for actual damages to living oyster resources will be based upon actual losses of the standing crop, or the difference between pre- and post-project standing crops beyond that which may have been harvested in the interim or damaged by acts of God.

A “cultch currency matrix” is used to determine the amount of cultch needed to repair damage to the water bottom. For the oyster stock, the formula requires multiplying the number of lost sacks of oysters per acre by the number of acres of damaged substrate. After adjustments for natural mortality, the lost sacks are valued based on the current market price less production cost.

These statutes, regulations, guidelines, and formulas make clear that the underpinnings of the OLDEB valuation methodology depend on pre- and post-project biological surveys. Without those studies to determine the quality and value of the water bottom and oyster stock, the OLDEB formulas are not useable.

In this case, no pre-project biological survey was performed because the presence of the tugboat and grounding were unanticipated. The leased areas were

not poled before the grounding to identify the existing water bottom as required by OLDEB's detailed standards. No oyster samples were taken before the grounding to determine the number of oysters on the lease, again, as required by OLDEB's sampling criteria. Nothing, whether OLDEB compliant or not, was done before the grounding to record the quality and value of the water bottom or the oyster stock. Instead, *months after the grounding*, Dr. Cake tried to "piece together what the lease looked like beforehand" by talking to oyster fisherman, conducting poling and oyster sampling, and drawing inferences therefrom. Those efforts, as diligent as they may have been, are not a substitute for a pre-project biological survey required to apply the OLDEB formulas.

While we separately address the reliability of Dr. Cake's methodology, we hold as a matter of law that OLDEB guidelines and uniform evaluation methods are not applicable without a pre-project biological survey. The reliability of OLDEB methodology is anchored to comparative biological surveys. Without those surveys, there is no comparison, and the methodology is unworkable. While plaintiffs contend Dr. Cake merely used some OLDEB "techniques," the reliability of any technique must be independently established. A witness cannot, as Dr. Cake did at trial, attempt to validate his techniques by claiming they comply with "OLDEB standards," when the OLDEB standards were expressly adopted for use only when biological surveys are completed before and after an event. A fair reading of the OLDEB statutory scheme reflects that those comparative surveys were critical to the legislative compromise between mineral lessees and oyster lessees, which ultimately results in OLDEB making a damage award.

The need for comparative surveys was succinctly stated by Michael Rayle, the oyster biologist who testified for the defendants. When asked about Dr. Cake's assertion that poling the lease bottoms several months after the grounding allowed

him to determine what productive areas were covered by sediment disbursed by the tugboat, Rayle said:

This is where -- this is why OLDEB requires a pre-project survey. You can't tell from the other end of a pole whether something was recently buried or has been buried for a while -- days, months, years. From the other end of a pole, you can't tell that.³

Because comparative biological studies were not completed in this case, the OLDEB guidelines and uniform evaluation methods are not applicable. As such, the evidence lacks probative value and is irrelevant and inadmissible in this proceeding. See La. Code Evid. art. 401-02. The trial court erred in denying the motion *in limine* seeking to exclude evidence related to OLDEB.

II. DR. CAKE'S OPINIONS

Defendants next argue the trial court erred in denying their motion to exclude certain opinions by Dr. Cake. Defendants contend Dr. Cake is not qualified to render opinions in sedimentology and hydrology, and his methodology for determining the number of oysters killed by the grounding is not reliable.

A witness who is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion or otherwise if (1) the expert's scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue; (2) the testimony is based on sufficient facts or data; (3) the testimony is the product of reliable principles and methods; and (4) the expert has reliably applied the principles and methods to the facts of the case. La. Code Evid. art. 702A.

Article 702A creates a five-element test for the admissibility of expert testimony, first requiring the witness be "qualified as an expert by knowledge, skill, experience, training, or education," and then enumerating four requirements for the

³ Notably, the poling provided for under OLDEB is to determine the nature of the water bottom, *i.e.* reef, shell, sand, or mud, not how long that water bottom has been there.

testimony's reliability and relevance. *See Blair v. Coney*, 19-00795 (La. 4/3/20), ____ So. 3d ____ (2020WL1675992, *4). Failure of the witness to qualify as an expert or failure of the testimony to meet any one of the enumerated indicia of reliability or relevancy renders the testimony inadmissible. *Id.*

The trial court performs the important gatekeeping role of ensuring that any and all scientific testimony or evidence admitted is not only relevant, but reliable. *See Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579, 597; 113 S.Ct. 2786, 2798; 125 L.Ed.2d 469 (1993); *Blair*, ____ So. 3d at ____ (2020WL1675992, *5); *Cheairs v. State*, 03-0680 (La. 12/3/03), 861 So. 2d 536, 541. The objective of the gatekeeping requirement is to ensure the reliability and relevancy of expert testimony by making certain that an expert, whether basing testimony upon professional studies or personal experience, employs in the courtroom the same level of intellectual rigor that characterizes an expert's practice in the relevant field. *Kumho Tire Co., Ltd. v. Carmichael*, 526 U.S. 137, 152; 119 S.Ct. 1167, 1176; 143 L.Ed.2d 238 (1999). The expert's opinions must be grounded in scientific methods and procedures, not subjective belief or unsupported speculation. *See Daubert*, 509 U.S. at 589-90; 113 S.Ct. at 2795.

The trial court must make a preliminary assessment that the reasoning or methodology underlying the testimony is scientifically valid and can be applied to the facts at issue. *Daubert*, 509 U.S. 579, 592-93; 113 S.Ct. at 2796. In making that determination, the trial court may consider (1) whether the expert's theory or technique can be and has been tested; (2) whether the theory or technique has been subjected to peer review and publication, (3) whether there is a known or potential rate of error, and (4) whether the methodology is generally accepted in the scientific community. *Daubert*, 509 U.S. 579, 593-94; 113 S.Ct. at 2796-97. The trial court is afforded broad discretion in determining whether expert testimony is admissible,

and its decision will not be overturned absent an abuse of that discretion. *Blair*, ____ So. 3d at ____ (2020WL1675992, *5); *Cheairs*, 861 So. 2d at 541.

A. *Sediment Dispersion Opinions*

Under his “inventory” approach, Dr. Cake endeavored to determine the number of damaged acres of water bottom and the number of dead oysters caused by the tugboat crossing and grounding on the lease. Initially, this required Dr. Cake to determine how much productive acreage was rendered useless by sediment disbursed by the vessel. Stated differently, Dr. Cake claimed sediment disbursed by the tugboat killed the oysters. This required proof that sediment moved from the grounding site to the various locations on the oyster lease and killed the oysters in those locations. Dr. Cake purported to make that determination with (1) no expertise in sedimentology or hydrology, (2) no pre-accident biological survey of the lease water bottom, and (3) no modeling data or other information from a sedimentology or hydrology expert identifying the quantity or path of dispersed sediment.

In his deposition, submitted for the *Daubert* motion, Dr. Cake was asked about his expertise in sedimentology and hydrology:

Q. And you don’t have any field of expertise involving sedimentology, correct?

A. That’s correct.

* * *

Q. Have you ever done any type of fate or transport models for sediment?

A. No.

Q. Do you have any background in hydrology?

A. No.

Despite acknowledging these limitations, Dr. Cake rendered several opinions, particularly critical causation opinions, deeply rooted in the sciences of sedimentology and hydrology. To identify the damaged acreage, Dr. Cake relied

on poling done eight months after the grounding. According to Dr. Cake, that poling identified 34.2 acres on the Melerine lease and 12.5 acres on the OFI lease of previously productive oyster grounds now covered in sediment disbursed by the tugboat. He reached his conclusion based on the texture of the sediment discerned from the end of a pole, as explained in the following exchanges:

A. If the sediment in the recent burial is fluffy, it has not solidified yet, has not compacted. So it's a very soft ooze material above it, and you can feel that with a pole. If it's one that's buried a long time, it's essentially hard mud that you have to penetrate firmly to get any oysters that are under the mud.

* * *

Q. And what about the condition -- we were talking about the poling and the difference between fresh burial and old burial. Did that poling allow you to draw conclusions about what caused this, the damage that you found on the lease?

A. The soft slushy nature of the new sediment over all the areas that were impacted allowed us to say, yes, it's the newly disturbed sediments that settled out on the oysters themselves and killed them.⁴

Dr. Cake again ventured into sedimentology to reconcile anomalies in his oyster-sample findings. The oyster samples taken five and nine months after the grounding included a significant number of oysters that Dr. Cake believed died within a few weeks of the sampling. Although he earlier testified an oyster will die within six weeks of being covered by sediment, he nevertheless attributed these recent deaths to the grounding that occurred months earlier. In an effort to explain how more oysters could be dying months after the grounding, Dr. Cake said:

[A]s the sediment spread out and settled on new areas adjacent to the grounding event site, you'll have new oysters dying. So you'll have fresh mortalities for a considerable period of time following a grounding event.

⁴ For corroboration, Dr. Cake cited Scott Porter's findings during his scuba diving, but the vast majority of Porter's testimony addressed his observations of the bottom condition at the grounding site and, to a lesser extent, the vessel path. Porter offered little testimony about the much broader acreage purportedly covered in sediment disbursed by the tugboat.

In his deposition, Dr. Cake offered similar insight into the basis of his causation conclusion:

Q. So as you move away from the event, is there some point in time where sediment will stop killing oysters?

A. Yes, and it may take a year or more in this particular case because the sediments have been liquefied.

* * *

Q. So this is from September 2nd, 2016 for the collection date. These [fresh-dead] oysters would have died sometime in the month of August?

A. Right. So this field mortality is still ongoing from the sediment problems on the lease from the crossing and the grounding.

Q. How did you make that determination?

A. That's just professional opinion, observing the deaths of oysters over 40 years.

Q. So it's just your own personal opinion?

A. It is.

Q. [So] you don't have any literature that would support a theory that oysters were still dying from a sedimentation event in April of 2016 and the oysters are still dying in September of 2016 from that same event?

A. Correct.

Dr. Cake did not explain how sediment is suspended for a period of time, then settles months later and kills oysters. He did not explain how "liquefied" sediment appears as a "fluffy... very soft ooze material you can feel with a pole."

The following exchange further demonstrates that Dr. Cake, to reach his ultimate opinion on causation, had to make a number of inferences and conclusions requiring expertise in sedimentology and hydrology:

Q. What does the [poling and sampling] data tell you about your conclusions that the damage that you found on these leases was caused by this grounding event?

A. The data showed essentially the sediment that was moved into the water column during the grounding event and during the

passage of the vessel across the lease, displaced sediment horizontally onto adjacent oyster reef areas and onto the reefs below, the track of the vessel, and the appearance of the oysters, that is, the blackened muddy appearance, and the death of the oysters led me to conclude that the sediment insult was the cause of the loss of the oysters in the standing stock.

As these excerpts confirm, Dr. Cake, having no expertise in sedimentology and hydrology, purported to (1) determine how long sediment had been at a particular location by feeling its texture with a pole, (2) connect the sediment to an event occurring eight months earlier, and (3) conclude the sediment, because it was “liquefied,” continued to spread to new locations around the lease for a year after the event. These conclusions, by Dr. Cake’s own admission, are beyond his area of expertise. The movement of sediment between points in water over a period of time was a necessary element of proving causation in this case. It is an area that Dr. Cake acknowledged he lacked expertise. The trial court abused its discretion in allowing Dr. Cake to express those opinions.

B. Oyster Mortality and Damages

Defendants challenged other opinions by Dr. Cake, including his oyster sampling and damage calculations, arguing his methodology is not reliable. As previously discussed, the trial court erred in allowing Dr. Cake to refer to OLDEB guidelines to support the reliability of his methodology. That finding, however, does not necessarily mean Dr. Cake’s methodology is unreliable. Rather, his approach and technique must be independently scrutinized to determine if it satisfies the requirements of Article 702.

In addition to sediment disbursement, an essential element of Dr. Cake’s causation opinion is information gleaned from oyster samples taken five and nine months after the grounding. Those samples and the extrapolations from them form the basis of his economic loss calculations. Dr. Cake classified some sample oysters as “fresh” mortalities, meaning they died within about two weeks of the sampling;

and some as “recent” mortalities, identified as such because their shells were still connected by the hinge material. In his deposition, Dr. Cake stated hinge material can remain on shells for three years after an oyster dies. These “fresh” and “recent” mortalities had blackened shells, which indicate they were covered in mud. By extrapolating from these samples, Dr. Cake calculated the total number of dead oysters on the lease. Using this methodology, he opined the Melerine and OFI leases had 161,919 sacks of oysters killed by disbursed sediment.

Dr. Cake offered no testimony about the reliability of his samples. He used fifteen samples, each cumulatively measuring one square meter, to extrapolate the number of dead oysters on 96.9 acres of productive area on the Melerine and OFI leases. The samples represent a tiny fraction of that acreage: 0.0038%. With a sample size that small, some indicia of reliability is necessary to establish the sample data can accurately predict the total number of dead oysters on a lease. As recognized by the U.S. Supreme Court:

Trained experts commonly extrapolate from existing data. But nothing in either *Daubert* or the Federal Rules of Evidence requires a district court to admit opinion evidence that is connected to existing data only by the *ipse dixit* of the expert.

General Elec. Co. v. Joiner, 522 U.S. 136, 146; 118 S.Ct. 512, 519; 139 L.Ed.2d 508 (1997).

The plaintiffs presented no evidence Dr. Cake’s sampling technique can be or has been tested, has a known or potential rate of error, or has been subjected to peer review and publication. *See Daubert*, 509 U.S. 579, 593-94; 113 S.Ct. at 2796-97. While sampling may be generally accepted in the industry, nothing in the record establishes Dr. Cake’s particular method is reliable. Dr. Cake cited only the OLDEB guidelines, while acknowledging his approach differed from those guidelines. As previously pointed out, the OLDEB methodology is based on a comparative-data

analysis using before-and-after biological studies. That model cannot be used in this case.

Further undermining the reliability of his sampling method, Dr. Cake failed to explain significant variances in his samples. For example, the January samples, which were more removed in time and distance from the grounding, showed significantly greater oyster mortality than samples taken four months earlier at the grounding site. That information suggests that given more time and distance from the event the rate of oyster deaths increased. That critical anomaly was never scientifically explained by Dr. Cake.

Plaintiffs' evidence of post-accident oyster production also undermines, rather than supports, the reliability of Dr. Cake's sampling method. Dr. Cake counted live and dead oysters in the sampled areas. Using his figures and methodology, the Melerine lease should have had a total of 207,843 sacks of *live* oysters available for harvesting in the three years *after the grounding*. That is over 69,000 sacks of available oysters per year. The actual post-accident production shows that number is stunningly inaccurate. After the grounding, and despite Dr. Cake's opinion that 50 acres of reef were unaffected by the grounding, production from the Melerine lease never exceeded 7,500 sacks per year. To get to that level, according to Melerine and Molero, they had to "over-fish" and "skull-drag" the lease to the point of depletion by 2018. But, based on Dr. Cake's methodology, the Melerine lease should have had an unprecedented number of oysters available for harvesting from 2016 to 2019, with expected production being nine times greater than any previous year. That never happened.

Dr. Cake also failed to explain why, to arrive at the number of oysters killed by the grounding, he extrapolated the average number of dead oysters per acre over the entire productive acreage rather than just the damaged acreage. This approach is contrary even to the OLDEB methodology cited by Dr. Cake, which states the

average number of dead oysters should be multiplied by the damaged acreage. When asked at trial, Dr. Cake said he multiplied the mortality rate times all the productive acreage to “find out the loss for the entire . . . productive acres.” In their brief, plaintiffs argue Dr. Cake’s sampling “applied to all productive areas, so he appropriately applied the average mortality found across those productive acres to the same area; this measured all oysters destroyed by the incident throughout the lease.” We initially note Dr. Cake testified his samples were taken only from sites he believed were damaged. Nevertheless, the proposed explanations do not address why Dr. Cake’s calculation of the oysters killed in the incident includes oysters on acreage *unaffected by the incident*.

Dr. Cake’s qualification as an oyster biologist is well-established and undisputed. In this case, however, he was allowed to render opinions beyond his area of expertise. The record also fails to establish that his opinions quantifying plaintiffs’ damages are supported by reliable methodology. For these reasons, the trial court abused its discretion in denying defendants’ motion to exclude or limit Dr. Cake’s opinions.

III. Disposition of Appeal

Given the trial court’s errors, we must determine the proper disposition of this appeal. Generally when the trial court makes evidentiary errors that are prejudicial, such that they materially affect the outcome of the trial and deprive a party of substantial rights, and if the record is otherwise complete, the appellate court will conduct its own *de novo* review of the record. See *Buckbee v. United Gas Pipe Line Co. Inc.*, 561 So. 2d 76, 86-87 (La. 1990); *McLean v. Hunter*, 495 So. 2d 1298, 1304 (La. 1986); *Gorman v. Miller*, 12-0412 (La. App. 1 Cir. 11/13/13) (*en banc*), 136 So. 3d 834, 841, writ denied, 13-2909 (La. 3/21/14), 135 So. 3d 620; see also La. Code Evid. art. 103A. However, this court has recognized that in limited circumstances, when necessary to reach a just decision and to prevent a miscarriage

of justice, an appellate court should remand the case to the trial court under the authority of Louisiana Code of Civil Procedure article 2164, rather than undertaking *de novo* review. See *Wegener v. Lafayette Ins. Co.*, 10-0810 (La. 3/15/11), 60 So. 3d 1220, 1233; *Alex v. Rayne Concrete Service*, 05-1457 (La. 1/26/07), 951 So. 2d 138, 155; see also *Gorman*, 136 So. 3d at 841. Whether a particular case should be remanded is largely within the court's discretion and depends upon the circumstances of the case. *Wegener*, 60 So. 3d at 1234.

Given the particular circumstances of this case, a remand for a new trial is just, legal, and proper. See La. Code Civ. Pro. art. 2164. The evidence at issue was central to the plaintiffs' case. Dr. Cake was their primary expert witness, and his methodology relied heavily on the OLDEB guidelines and formula, the admissibility of which was a *res nova* issue. Defendants objected to the evidence in pre-trial motions, and the trial court rendered its rulings about two weeks before trial. The parties proceeded to a jury trial in reliance on these critical rulings, which we now find to be erroneous. The rulings undoubtedly affected trial strategy and witness selection by both sides. We also recognize the jurisprudence for oyster-lease litigation has not always been consistent. In a similar suit, this court granted litigants a new trial because "the parties may have been misled by previous intermediate court decisions." See *Inabnet v. Exxon Corp.*, 93-0681 (La. 9/6/94), 642 So. 2d 1243, 1256. For all of these reasons, remanding for a new trial, rather than conducting a *de novo* review, is warranted in this case.

CONCLUSION

The trial court erred in denying the motions seeking to exclude the OLDEB evidence and Dr. Cake's opinions on the damages caused by sediment disbursed by the tugboat. In reaching these conclusions, we express no opinion on the merits of plaintiffs' claims for damages, nor should our holdings be construed to condone improper intrusions into oyster grounds. An oyster lessee has a valuable property

right entitled to protection under the law. *See Avenal v. State*, 03-3521 (La. 10/19/04), 886 So. 2d 1085, 1100, n.20. More broadly, as recognized by now Chief Justice Weimer, “The oyster industry has been and continues to be vital to Louisiana’s economy.” *Avenal*, 886 So. 2d at 1110 (Weimer, J., concurring). Our ruling only confirms that an oyster fisherman’s claim for damage to his leasehold interest is subject to the same evidentiary standards and burden of proof applicable to any property damage claim, nothing more but nothing less.

The judgment of the court of appeal is reversed. The trial court’s judgments denying defendants’ motion *in limine* and motion to exclude opinions of Dr. Cake are reversed. The judgment entered on the jury verdict is vacated, and the matter is remanded to the trial court for a new trial.

JUDGMENTS REVERSED AND VACATED; REMANDED FOR NEW TRIAL.

SUPREME COURT OF LOUISIANA

No. 2020-C-0571

MARTY MELERINE AND OYSTER FISHERIES, INC.

VERSUS

**TOM'S MARINE & SALVAGE, LLC, TOM'S WELDING, INC., TRIPLE T
MARINE, LLC, CAPTAIN JAMES WILLIAMS, ALLIANZ GLOBAL
RISKS US INSURANCE COMPANY, AND ALLIANZ GLOBAL
CORPORATE AND SPECIALTY**

*On Writ of Certiorari to the Court of Appeal, Fourth Circuit,
Parish of St. Bernard*

Hughes, J., concurring.

While I concur in the remand for a new trial for the reasons expressed in the majority opinion, I do not think that the testimony of Dr. Cake should be excluded in its entirety. The OLDEB analysis may not apply, but the measurements and observations made by Dr. Cake of the damaged area are certainly relevant.

It appears that the experts for both parties took data from the damaged area and tried to apply it over the entire lease. The measure of damages obviously needs to be more precise. But the jury should decide whether it finds more persuasive the data from poling and sampling or satellite photos.

Dr. Cake has been studying oysters for over 40 years, and while he may not have a college degree in sedimentology or hydrology, we are dealing with an oyster bed, not an engineering project. There are aspects of Dr. Cake's testimony that would be helpful to the jury.