



Waterline



Inside this issue

Commodores Message	2
Board of Governors	3
Lightning Facts	4
Sail Trim Tips	8
2019 Racing	9
Moonlight Sails	11
Sailing Websites	12
LSC Website	13
Facebook Page	13
LSC logo apparel	14
LSC Mission and Location	15

Summers ending (but not the sailing)!!!!

Sure summers over, but all that means is the powerboats are leaving, the wind is steady and the temperatures aren't so hot.....Perfect sailing conditions!!!!!! Lots of events still on the calendar..... Details inside.....



Commodore's Message

Carl Hager

Ahoy All Sailors

Although summer is drawing to a close, there is still plenty of good sailing weather ahead. Cool breezes, colorful scenery, lake without powerboats. Don't miss out.

The Club's calendar has included many activities during the summer. Outdoor Explore, Mosey Down Main St., BOG picnic, races, etc., and we are happy that you enjoyed and participated in them.

Our next function is a moonlight sail and bonfire on October 11th followed by our big function; the annual Banquet on 1 November 2019. You will find details on another page of this newsletter. Hope to see you there.

Anyone interested in serving on the Board of Governors please let me know. We will be forming a nominations committee who will present a slate of nominees to fill vacancies.

We hope that your season was 'Nothin' but fun'.

Commodore Carl

Carl Hager

Commodore, Lafayette Sailing Club



Membership Highlights

Membership in the Lafayette Sailing club is open to anyone. Membership applications can be downloaded from the club website at www.lafayettesailingclub.com.

New applicants must obtain the signatures of two active members as sponsors before submitting an application. One way to obtain the required signatures is to visit the LSC Harbor at Lake Freeman on a weekend during a scheduled activity, e.g. races, etc..

All memberships are family memberships. There are three levels of membership with different costs and privileges. There is also a new member price at each level for a families first year of membership. All memberships include the use of club sailboats, as well as attendance at all LSC activities.

Membership with voting rights, harbor launch privileges and (1) boat storage—\$285/\$225 (first year)

Additional boat storage for any class of member is \$85/year/boat.

Board of Governors

Officers



Commodore—Carl Hager



Vice-Commodore—Jacob Bleier



Recording Secretary—Jay Beugly



Treasurer—David Klenosky

Directors

Membership —Rex Henthorn

Club Fleet —Jay Beugly

Race —Michael Nolan

Grounds—Brendan Morreale

Social—Dianne Atkinson

Cruising—Kirk Gilbert

Communications—Michael Nolan

Members at Large

Jim Keller

Bruce Borrer

Randy Carie

Steve Bruhn



Striking Lightning Facts

An analysis of 10 years of lightning claims reveals which boats are most at risk.

Reprinted from BoatUS, 2015

Lightning seems like the ultimate "act of God." Unpredictable, capricious — it can come as a literal bolt out of the blue (or out of a glowering, black, anvil-shaped cloud). As the "Lowering the Lightning Odds" article in the July 2014 issue discussed, somewhere around one in a million people gets struck by lightning in any given year. Which means that someone must have it in for boats — two separate analyses of 10 years of lightning claims data from the BoatUS Marine Insurance files have found that about one in a thousand boats has a lightning claim each year.

When people get struck, it seems to be random. Yes, men get struck more than women (82 percent of lightning fatalities from 1995 to 2008 were men according to Popular Science), but that's only because men spend more time outdoors and won't stop what they're doing for a little lightning. No one has yet suggested that tall people get struck more than short ones, or blondes are more at risk than brunettes. The same cannot be said for boats. The data shows that when it comes to lightning, not all boats are created equal. Certain boats are significantly more at risk than others. So which boats get hit, in which parts of the country, and how badly?

While any boat can be hit — BoatUS Marine Insurance has even had some lightning claims for personal watercraft — lightning is most likely to go for that tall, tree-like metal pole sticking straight up toward the sky. The taller the better. That's why sailboats have significantly more lightning claims than powerboats (Table 1), and almost certainly why larger boats have more lightning claims than smaller ones (Table 2) — overall size is closely correlated to mast height, which is probably what really matters here. And as far as lightning is concerned, two hulls are better than one. Multihull sailboats are almost twice as likely to have a lightning claim as monohulls. But that's only true if that big, pointy thing is in the middle of the boat. The frequency of pontoon boat lightning claims is well below the average.

Table 1. The probability of a lightning strike by type of boat, 2003–2013

Type of Boat	Chances per 1,000
Multihull Sailboat	6.9
Monohull Sailboat	3.8
Trawler/Motoryacht	1.5
All - Overall Average	0.9
Bass Boat, Runabout, Pontoon Boat	0.1

Table 2. The probability of a lightning strike by size of boat, 2003–2013

Type of Boat	Chances per 1,000
0-15 Feet	0
16-25 Feet	0.2
26-39 Feet	2.1
40-64 Feet	6

According to Martin Uman of the University of Florida's Lightning Research Group, the average lightning bolt is an inch wide and five miles long. On the face of it, it seems unlikely that 20 or 30 feet more height — roughly the difference between the mast on a 35-foot and 45-foot sailboat — would almost triple the odds of the boat being hit. But understanding how the electrical charge that passes through a lightning bolt moves between the clouds and the

ground makes lightning seem just a bit less capricious.

Lightning is a direct result of the electrical forces built up in the clouds during a thunderstorm, where the bottom of the storm cloud becomes highly negatively charged. Only 20 percent of lightning strikes actually reach the ground — the rest are cloud-to-cloud strikes. A typical cloud-to-ground lightning strike occurs in less than 1/100 of a second but actually proceeds through four distinct phases. The following is an abbreviated version of the National Weather Service's JetStreamMax Online School for Weather's lightning discussion.

1. Development of the stepped leader from the cloud base. A very faint, negatively charged channel emerges from the base of the cloud and propagates toward the ground in a series of small steps about 150 feet in length and 1 microsecond in duration. The stepped leader carries about 100 million volts of charge relative to the ground. It usually branches out as it approaches the ground, pausing between each step and "looking" for an object to strike.
2. Development of streamers from objects on the ground. The strong, negative charge of the stepped leader attracts vast amounts of positive charge. The attraction is so strong that the stepped leader induces electric channels up from the ground known as streamers, most readily from tall, pointy objects. When a cloud-to-ground strike occurs, one of these positively charged streamers connects with the negatively charged stepped leader, at 100 to 300 feet above the ground on average.
3. Negative charge flows downward. When that connection occurs, the negative charge from the cloud starts flowing down the established channel.
4. Return stroke shoots up the channel. Once the channel is open, the return stroke flows up and produces a ground current that peaks in about 1 microsecond at an average of around 30,000 amperes. The return stroke produces 99 percent of a lightning bolt's luminosity, and, though it travels from the ground up to the cloud, to the unaided eye the opposite appears true.

Sailboat masts, like tall trees, seem to be at just the right height and of just the right shape to develop streamers that the stepped leader can reach when it's "looking" for a place to touch down. That doesn't explain why one mast in a particular marina wins the lightning lottery, nor does it mean that the highest object will always be struck. But when looking at probabilities, the claims data suggests that sailboat masts must make better lightning rods than other appendages on other types of boats.

Understanding why multihulls get hit so much more frequently than monohulls is more problematic. Several theories have been put forward including the lack of a keel, the increased wetted surface area, the larger footprint, the location of catamarans at the edges of marinas, the overall size of catamarans, and the average height of their masts. Unfortunately, we do not yet have enough data to be certain of what is driving this finding.

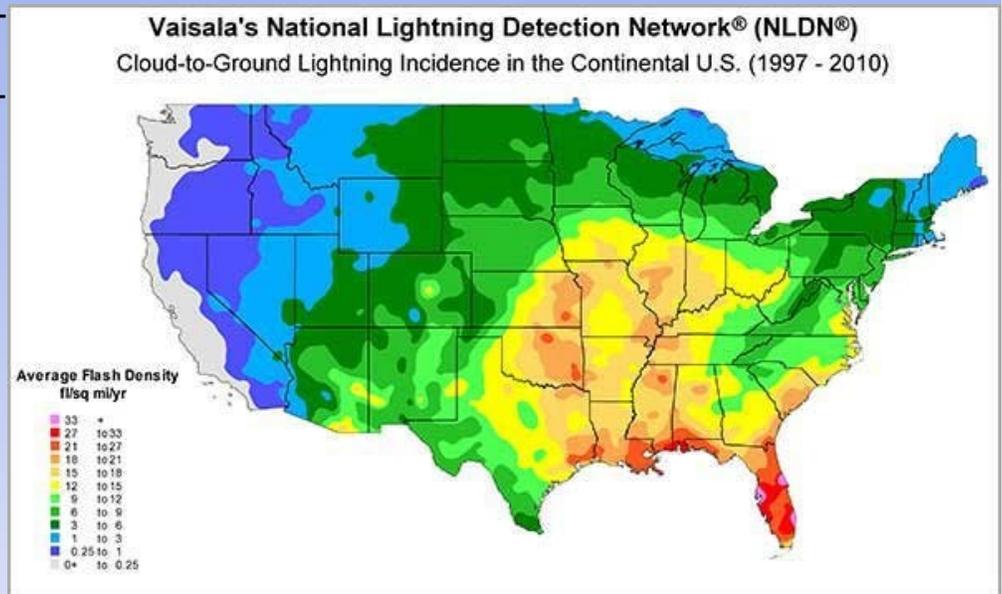
Where?

Not surprisingly, boats get struck where there is a high density of lightning and a high density of boats. The frequency of the BoatUS lightning claims by state fairly closely resembles the in-

idence of cloud-to-ground lightning strikes. If an area has a high incidence of strikes, that includes a lot of masts, it's not too unlikely that one of those strikes will find its way to ground through a boat.

Six of our top 10 states in terms of the frequency of lightning claims — Florida, Mississippi, Louisiana, Alabama, South Carolina, and North Carolina — are part of the big "hot spot" in the Southeast and midsection of the country. Maryland ties for second with Mississippi, which might surprise you. But there are a lot of sailboats there, and anyone who has boated on the Chesapeake Bay in the summer has experienced the fast-moving and violent thunderstorms that sweep through the area several times each month from June through September.

At the other end of the spectrum, the frequency of lightning claims is about 1 in 10,000, or one-tenth the average, along the Pacific coast. That doesn't mean that BoatUS Marine Insurance doesn't ever have lightning claims there, only that if you are the one with the claim, you've been very unlucky indeed.



What Type Of Damage?

Yes, the old wives' tales are true. Lightning can blow a thru-hull right out of the boat, but more commonly its passage through a metal fitting damages the surrounding fiberglass. This can be severe enough that the boat sinks. Boats on the hard often fare even worse than those in the water — the lightning will find its way to the jackstands or chains, often leaving a visible track across the hull. But extreme damage from lightning is the exception, not the rule.

More than 75 percent of lightning claims in the BoatUS Marine Insurance files over the past decade were for less than 30 percent of the insured value of the boat. And nearly all of those claims were for damaged electronics. Here's how it normally goes. Joe and Jane Boater arrive at the marina looking forward to a lovely weekend on the water. They begin loading all their stuff onto their sailboat. Jane goes down below to put things away and says, "Joe, did you leave the breaker for the fridge off?" A bit later, Joe tries the chartplotter but it won't fire up. Then the microwave won't work. It takes awhile before the penny drops. One of them looks at the other and says, "Remember that big thunderstorm last week? Maybe our boat got hit."

If this ever happens to you, don't assume the damage is limited to the electronics. To make sure your boat is safe, you should do the following:

1. Unplug the shorepower cord and turn off all battery switches. You don't want a short circuit to start a fire.
2. Check the bilge and make sure it is dry. If it is not, arrange a haulout immediately. This will probably be covered by the insurance company, but even if it isn't, you need to make sure everything is OK below the waterline.
3. Call your insurance company. Tell them what is happening, and don't forget to discuss a haulout if you are taking on water.
4. Once you're sure the boat isn't sinking or you have hauled it out so it can't, your insurance company will assign a marine surveyor to do a damage assessment, inspecting the electronics and all electrical panels to figure out what does and does not work. Electronics may need to be bench tested to establish that lightning was the cause of the damage. If you haven't been hauled out and the damage appears extensive, the insurance company may require a haulout now to ensure there is no below-waterline damage.
5. Don't throw away any damaged equipment unless your insurance company says it's OK to do so.

So, if you have a sailboat in a lightning hot spot, especially if it has two hulls, you are more at risk than average. What can you do about that? The general consensus is, you can't do much to keep your boat from being struck. The ultimate act of God, remember, though God seems to have it in for sailboats and doubly so for multihull sailboats. But lightning protection systems can help to minimize the damage if your boat does get struck, so we will be looking at those later this year.



Annual Banquet

The Lafayette Sailing Club will host our Fall Banquet on Friday, November 1, 2019 at the Purdue Room on 2nd Street next to Sargent Preston's restaurant in Lafayette.

Social hour begins at 6 with buffet dinner served at 7 p.m. Following dinner our annual awards will be announced including season winners for racing as well as other historical LSC awards. Don't miss out!

We do need a firm commitment for this event so watch for an evite to make your dinner reservation (\$25 per person including service) by October 23.



Sail trim is all balancing act

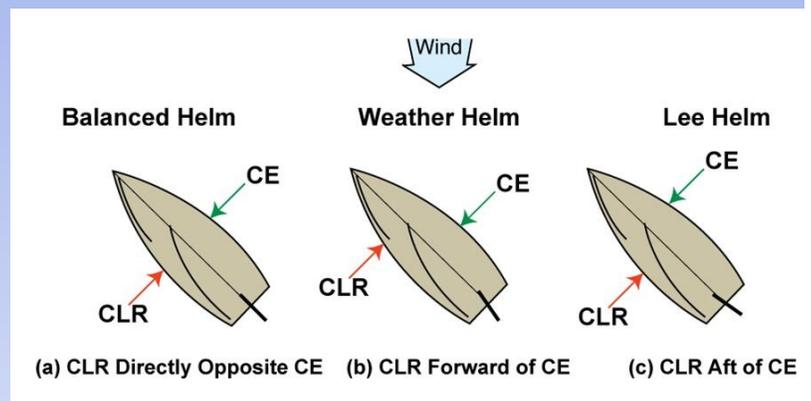
In an ideal world when the wind is hitting each sail with the same force, the sails should steer the boat and the rudder merely guide it along its path. Going upwind and when the sails are balanced the rudder should feel light and have just a small tendency to head up into the wind. If the rudder is pulling hard one way or the other to stay on course the sail balance is probably incorrect and the excess rudder is slowing the boat.

How sailboats pivot. Achieving the balance

Sailboats pivot under sail. How they pivot depends on the relationship between the sail area above the waterline and that of the underwater profile of the boat. The central point of the underwater area is known as the center of lateral resistance (CLR) and this is the pivot point. It is often just aft of the mast.

The forces produced by the wind on the sails are focused to a mid-point in the sail plan, the center of effort (CE).

Depending on the sail set, pressure on the sails will either balance or rotate the boat around this pivot point (CLR). When the sails are balanced, the CE is in line with the pivot point allowing the sailboat to sail straight with little requirement of the rudder.



The balance is changed by too much pressure in one of the sails either when the wind increases, when reefed or when the boat is sailing with just main or genoa.

Main sail pressure

When sailing with too much mainsail or just the main the CE moves behind the pivot point causing the boat to head up into the wind. This explains why it is hard to bear away with the main pinned in hard; the only solution is to ease the main before bearing away.

If sailing with just a mainsail or too much mainsail, to counteract the pivoting effect of the sail and sail a straight course, the tiller or wheel is steered to weather giving weather helm, slowing the boat.

Jib or Genoa pressure

When sailing with just a jib or a genoa, the CE moves in front of the pivot point, pulling the bow downwind. To counteract this tendency the tiller is pushed to leeward giving lee helm, slowing the boat.

However, a large overlapping genoa, with sail area coming behind the pivot point will start to act like a mainsail as the overlap is helping turn the bow into the wind.

Boat heel and pivot point

When a boat heels to leeward, the sail plan and CE moves to leeward of the pivot point. Because the sail plan is driving forward it is also rotating around the pivot point and makes the boat turn into the wind. Conversely, if windward heel is induced, the boat turns to leeward as the CE moves around the pivot point.

So as the boat heels to leeward, weather helm increases from both sail pressure and the CE moving to leeward of the pivot point below.

Listen to the boat...

If the boat is trying to turn into the wind try;

- De-powering the mainsail using the traveler, sheet or reefing.
- Reducing leeward heel
- Reefing the genoa if is a large overlapping type
- Increasing the genoa – so long as this does not make you heel more.

If the boat is turning away from the wind;

- Reduce the ib or genoa, ease the sheet
- Increase the mainsail
- Ensure you are not heeling to windward

As soon as the sail plan changes, so does the handling - so listen to what your boat is telling you... Sail the boat without excessive heel and keep the sail plan balanced as you reef.



2019 Remaining Race Schedule

Saturday, September 21, 12 noon

Saturday, September 28, 12 noon

Saturday, October 5, 12 noon

Saturday, October 12, 12 noon

Want to get Involved??

The Board of governors (BOG) is always looking for member input and/or new members. The BOG meets (usually over dinner and drinks) about 10 times per year to run the club. Not really a lot of work, but a great way to learn a lot about the club, learn about sailing, and it gives you a great reason to hang out with the rest of us once a month!!!

You can join us if you want; either as an official BOG officer or just as a member. No experience necessary. Just let Commodore Hager or Mike Nolan know and we can get you the meeting schedule time and place.



We schedule moonlight sails every month on the Friday closest to the full moon! Come join us around 7 pm for dinner (bring your own, and a dessert to share) then go sailing!

Moonlight sail dates for 2019 are:

October 11

We are going to have a bonfire!



LSC has teamed Up with BoatU.S!

BoatU.S. provides a vast range of services, information and savings to recreational boaters, including:

- Members-only discounts and Member Rewards with West Marine equipment purchases
- Discounts on fuel, overnight slips, and repairs at more than 900 marinas nationwide
- BoatU.S. will pay up to \$50 per incident On-The-Water Towing with your basic membership
- Access to high-value, low-cost group-rate boat insurance
- Full year subscription to the award-winning BoatU.S. Magazine

Now you can get 50% off of annual Membership dues when you join the nation's largest association of recreational boat owners. You pay one-half of the regular BoatU.S. dues of \$30 – that's just \$15.00 a year! For more information, go to <http://www.boatus.com/> and be sure to mention our Cooperating Group ID number GA84516S to get the specially reduced rate.

Race Standings as of September 13th

Place	Name	Total
1	Klenosky, Dave	132
2	Nolan, Barb	121
3	Nolan, Mike	105
4	Eismin, Tom	97
5	Keller, Dave	88
6	Titolo, Steve	49
7	Keller, Jim	38
8	Bleier, Jacob	37
9	Brush, Tom	30
10	Henthorn, Rex	28
11	Wallace, Lewie	20
12	Hager, Carl	13
13	Keller, Donna	12
14	Reehling, Ron	11
15	Ferner, Bill	7
16	Carie, Randy	5
17	Beugly, Jay	4
18	Worter, Joe	4
19	Borrer, Bruce	3
20	Caldwell, Chuck	1



Useful sailing related websites

Check out the following websites. You might find them of value to you.

www.windy.com—Weather radar, wind and waves forecast for sailors.

www.sailingworld.com—Sailing World Magazine's "How To" section which includes tips on boat speed, tactical use of the Racing Rules, and miscellaneous tips to improve your sailboat racing.

www.centerofeffort01.blogspot.com—Boathandling, Tactics & Strategy of Sailboat Racing on Boston Harbor has a set of visual explanations of rules and tactics.



What's on the website!

Check out the LSC website at <https://lafayettesailing.com/>

You can find all sorts of useful information and pictures there including membership registration forms as well as event dates, contact information, newsletter archives and more!

Find us on Facebook

The Lafayette Sailing club has a Facebook presence. We will try to post pictures, news events, and invitations to activities. It's a good way to get ourselves out in front of the community. Check us out, join the group, and contribute your pictures!!!



Look good this sailing season!!!!

Club logo apparel available!

LSC has partnered with Coral Reef Sailing to produce LSC logoed apparel and other items. The apparel is high quality and includes the LSC logo and name on each item. Two more lines of custom text can be added to most items if you wish. LSC receives a small percentage of each sale, so your purchases help out the club! LSC has been added to the SHIPS STORES link on Coral Reefs ships stores page, but you can directly access our page at <https://www.coralreefsailing.com/index.php/club/lafayette-sailing-club.html>.



Cotton Hat (Lafayette Sailing Club)

★★★★★

\$22.00



Unisex Mesh Polo (Lafayette Sailing Club)

★★★★★

\$32.00



Men's Short Sleeve Tech Shirt (Lafayette Sailing Club)

★★★★★

\$32.00



Men's Long Sleeve Tech Shirt (Lafayette Sailing Club)

★★★★★

\$35.00



S/S Adult Cotton Tee (Lafayette Sailing Club)

★★★★★

\$22.00



Columbia Women's Benton Springs (Lafayette Sailing Club)

★★★★★

\$62.00



Columbia Men's Steens Mountain Fleece (Lafayette Sailing Club)

★★★★★

\$60.00



Unisex Hooded Rugby Pullover (Lafayette Sailing Club)

★★★★★

\$58.00





The Lafayette Sailing Club is an organization composed of individuals and families interested in sail boating and sail boarding. The club was originally formed in 1969 by a small group of Purdue University and Lafayette area individuals interested in sail-boat racing.

Membership is open to anyone interested in sailing. The club maintains it's own harbor on Lake Freeman. Members may park their boats at the harbor. The club also owns three sail-boats available to any member.

Membership information can be obtained at <http://www.lafayettesailing.com>

