Peninsula Yacht Club

Established 1996 ∽ Lake Norman

Boating and Sailing Guide

Volume II

2015

35° 28.08' N - 80° 56.26' W

INTRODUCTION

Volume I of PYC's Recreational Boating Information Guide was launched at the 2013 Commodore's Ball. I missed the mark of Volume II being ready for distribution at the 2014 Fleet Commissioning due to an aorta dissection running interference with my regularly scheduled life. So we pick up where we left off. Volume II expands on some of the previous Volume topics, explains some with a different approach and introduces new beacons of information.

It is a distinguished honor to be a component of The Peninsula Yacht Club's Fleet Committee, to chair the Boating Safety and Education responsibilities and to be handed the reins of collecting, compiling, editing, sequencing and sharing boating information, personal experiences and heighten your awareness about types of boating that may not be germane to your life on the water. . . I've always been passionate about boating, boating safety and boating knowledge. I'm one of those whose personal compass points to the water.

The table of contents is your dashboard of information. Each section is an instrument. Some will move your needle, some won't. The Peninsula Yacht Club recognizes their role in the community and the sport and as a leader of boating, sailing and related experiences. This book is to broaden the club's footprint as that leader and support awareness and understanding being unparalleled in importance.

I share my boating interest and this guide with those who share a calling to spend more time on the water in any form of watercraft and who appreciate listening to the wisdom of the water.

Thank you to Barbara, who always made sure we had as vase of fresh flowers in the cockpit.

David M. Goodman

January, 2015

Everybody's got a boat upon the ocean
not everybody's sailing out to sea

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HISTORY

The Peninsula Yacht Club, founded in 1995, is situated on the site of the former Outrigger Marina that was founded in 1974. PYC began enrolling members in February of 1995, with area residents and boating enthusiasts being anxious to be a part of Lake Norman's newest tradition. Ground breaking for the new Clubhouse was in November of that year, followed by a grand opening celebration in June of 1996. At the grand opening we consisted of approximately 540 members and has since grown to over 1,000. PYC is the largest inland lake in the Carolinas. 2016 will mark PYC's 20th year anniversary.

East West Partners Club Management

The Peninsula Yacht club is managed by East West Partners Club Management Company. East West's primary aim has always been to distinguish themselves as the premier provider of quality club management and lodging services. www.eastwestclubs.com

Morningstar Marinas

The Peninsula Yacht Club is owned by Morningstar Properties, LLC. Morningstar Properties is a vertically integrated full-service private company that acquires, develops, operates and redevelops self-storage and marina properties in the United States. www.morningstarmarinas.com

THE PYC STAFF

The enormousness of operating of any multi-faceted, broad in scope resort style entity necessitates an unceasing seamless in appearance, smoothly coordinated and structured system of member, community, staff, purveyor, physical plant, entertainment safety and many more distinct operation related modules. PYC is unique in that it is privately owned, managed by a professional club management firm, memberships do not require a

spending minimum and is a world class, full service steward of yachting activities. It is valuable for members to be knowledgeable about the expanse of people power it takes to keep the Club running smoothly...office and marina staff, lifeguards, kitchen, wait staff, those who maintain the facilities plus all who are invisible on the front lines.

We have some outstanding people on our team of employees at The Peninsula Yacht Club. We think it is important for our members to be aware of the tremendous amount of people power it takes to keep the Club running smoothly...our office and marina staff, lifeguards, and kitchen and wait staff...all who are ready to make your Club experience extra special! Below are photos and some background about each of them.

Bruce Furman, General Manager

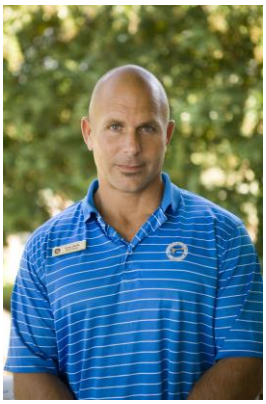
Bruce started with the club in April 2012. He brings to the Peninsula Yacht Club 22 years of experience in prestigious private country clubs. His career started at the Breakers Hotel and BallenIsles Country Club in south Florida. He has worked at the Point Lake and Golf Club as the Assistant General Manager for eight years. Bruce comes to the Peninsula Yacht Club from Lake Toxaway Country Club in the mountains of North Carolina. Before working in the hospitality industry he served in the United States Navy on board the USS Saratoga. He is a member of the Club Managers Association of America and is actively pursuing his Certified Club Manager designation. Outside of his professional career, he enjoys spending time with his wife Tracy and .three boys Seth, Tate and Wyatt, in Mooresville, N.C.

Jamie Bostian, Executive Chef

Jamie was previously the Club's Sous Chef from 2008-2013. He has shown his strength and capacities in the kitchen and has been a great example of leadership. Jamie recognized his passion for cooking at the early age of 12. In high school he realized that he wanted to become a chef. He pursued his education at Johnson & Wales University in both Charleston and Charlotte, where he obtained his BS in Food Service Management. He has worked at The Point Lake and Golf Club, now known as Trump National, and also at Solace Restaurant where he was the Lead Line Chef. Outside of work, he enjoys cooking for his family! He loves visiting Farmer's Markets and using fresh, local ingredients. He and his wife Kasey are proud parents of their daughter, Madelyn.

Clair Knox, Membership and Social Director

Clair joined our team in June 2012. She first started at the PYC in late 2004 and ever since she left in 2005, has wanted to find her way back. Originally from Louisiana, she attended LSU (Geaux Tigers!) and graduated with a Fine Arts Degree with her concentration in photography. She married in 2009 and currently lives in Troutman with her husband Cory and two sons, Beaux and Wyatt. When she isn't working she is spending time with her family and friends playing outdoors or cooking.



Harry Smith, Marina Manager

Harry started working at the Peninsula Yacht Club in March of 1999. His time at PYC has been extremely enjoyable with a lot exciting changes. He has spent many years absorbing vital information about boating, that he feels he has benefited from as well as the members. Harry is a Charlotte native, born and raised just outside of Mint Hill. He spent a short time in Wilmington, NC, but lucky for him moving back to Charlotte gave him the opportunity to meet his wife. At age 25 he and his wife were married and since have been blessed with three amazing children, two boys and a girl. He has often joked that his wife was his second true love, his first being the water.

Harry grew up with a passion for the water and an insatiable interest for boats. The actuality of being able to make a living at what he has such a great interest in, is such a blessing. His hobbies as a teenager were surfing, windsurfing, and really anything to do with water. Even still as an adult he finds that he is driven to the water. In December of 2003, he received a diploma for the completion of the U.S. Coast Guard Approved Curriculum for the Master Captains license covering up to a 50-ton vessel. Following the completion of the course he made the trip to the U.S. Coast Guard Station in Charleston, SC. There he was sworn in to complete the process. Since the completion of the Masters curriculum he has since completed and added a towing endorsement to his license. Captain Harry is PYC's Bright Beacon of Boating.

Michael Male, Dining Room Manager

Michael was born in Michigan and after school, joined the United States Marine Corps. He attended Floyd College in his hometown of Rome, Georgia, and then transferred to Coastal Georgia College where

he studied x-ray technology. Switching careers to the restaurant industry, Michael joined the team at the Jekyll Inn; and then worked at King and Prince Beach & Golf Resort as manager. In 2003 he moved to Cornelius and worked seven years as Dining Room Manager at The Point Lake and Golf Resort. Michael enjoys golf, boating, reading, football, and is an avid skeet shooter.

Erin Walters, Catering Sales & Event Manager

Born in the mountain town of Boone, NC, Erin Walters is a native North Carolinian. Growing up, she lived all around the Northeast. After graduating from high school, Erin had hopes of becoming a culinary expert and enrolled in Pennsylvania Culinary Institute where she met her husband, Justin. Their dreams brought them to New York where they pursued careers working at Del Frisco's and The Plaza Hotel. They returned to the Carolinas in 2006 where they started their family and now have three children, Ella, Nolan, and Ruby. Erin has dreams of someday running her own catering business. She enjoys the members and their children while working at the club.

Jeff Barry, Clubhouse Manager

Jeff joined the PYC team in June 2014. He recently moved to Charlotte from Cape Cod, Massachusetts where he was born and raised. He went to Johnson & Wales University in Providence Rhode Island where he earned a degree in Hospitality Management.

Jeff worked for the last 8 years at the Oyster Harbors Club in Osterville, MA. For the first 3 years he was Dining Room Manager and spent the last 5 years as Food & Beverage Director. He previously worked at the Willowbend Country Club in Mashpee, MA as Assistant Dining Room Manager.

Outside of work, he enjoys doing anything outdoors. He often can be found sailing his boat or playing golf. He is very excited to fish, hike and camp in the Smokey Mountains. Jeff also is excited to discover Charlotte's local restaurants and loves trying new wines.

Marty Wyss, Activities Director

Marty comes to us from Columbia South Carolina by way of Ohio. He received his BBA at the University of St Francis in Ft Wayne, Indiana, and his master's degree in Hospitality and Tourism from the University of South Carolina. His hobbies include soccer, sailing, and skiing. He started here at the club in summer of 2011 as the Camp

Director. He enjoyed the atmosphere tremendously and sought to make his position at the club a permanent fixture.

Ellen Henderson, Club Accountant

Ellen has been with the club since it opened in 1996. Originally from Gary, Indiana, Ellen had an active childhood keeping up with her brothers and sisters. She is one of ten children, and falls in line at number 8. For a brief time, she lived in Tulsa, Oklahoma and then made her way to North Carolina in 1991. She started working at the Peninsula Country Club in 1992 when the Pro Shop was still in a trailer and the Clubhouse was being built. In addition to being our dedicated Accountant, Ellen is also a full time Mom to her two children Connor & Sydney. They live across the lake in the Denver. You will probably talk to Ellen before you get to meet her. She answers any questions you have on your account, and if she cannot, she will find the person who can. She has been here so long; there is usually nothing she can't handle.

THE DOCK ENSIGNS

Each of our 12 docks has a volunteer member "Ensign", whose vessel resides on that dock, and serve as the liaison between the club and the slip holders. Liaison as they pass along information on the goings on at the club and conduit slip holder comments, requests and related information to the club. We are fortunate to have so many dedicated ensigns who interact with both the fleet committee and club staff. Communicate with your ensign and don't forget to thank them for donating their time and energy to represent all of us. The names and contact information of the 2015 dock ensigns was not finalized at the time of the printing of this book but is available at the club office.

THE FLEET COMMITTEE

The Fleet Committee consists of a group of 11 club members who represent the members of PYC through creating a connection between club members, owners and staff in order to develop communication, foster education, continue traditions and enhance the social and yachting experience. Fleet Committee meetings are held monthly and members are urged to discuss participation with any of the committee.

2015 PYC Fleet Committee Roster

POSITION	NAME	EMAIL ADDRESS
Past Commodore	Chris Cawley	chriscawley@roadrunner.com
Commodore	Bob Curran	bobjcurran@yahoo.com
Vice Commodore	John Johnson	john@jetsquality.com
Rear Commodore	Mike Miller	mjmiller@mjmiller.info
Power Fleet Captain	Bill Sorvillo	commandrman@gmail.com
Power Fleet Commander	John Camp	john.camp@hp.com
Sail Fleet Captain	Paul Doucette	Padoucette@gmail.com
Sail Fleet Commander	John McCaskill	johnwmcc@charter.net
Treasurer	Vince Watkins	watkinsvincent78@gmail.com
Secretary	Carol Houle	CarolHoule@icloud.com
Purser	Vickie Payne	vickieteam411@gmail.com
Education/Publicity	David Goodman	lkn0608@yahoo.com
Social	Helene Sorvillo	fiftygrl@gmail.com
Chief Ensign	Ed Keible	ekeible@sbcglobal.net
General Manager	Bruce Furman	bfurman@peninsulayacht.com

WHAT IS NEW AND EXCITING FOR 2015 AT PYC?

Hosting the new Sea Scouts "Ship"

The Sea Scouts, a 100-plus-year-old arm of the Boy Scouts of America, is forming a new Ship (comparable to a Boy Scout troop) on Lake Norman. Membership in the Ship will initially be limited to 20 and comprised of boys and girls in the Lake Norman area ages 14-20.

The Ship is being chartered and overseen by the Lake Norman Sail and Power Squadron, represented by Keith Reinsmith and skippered by Howie Kaplan, owner of Sea Tow of Lake Norman.

"The kids will decide and plan the activities and events of the Ship which can include everything from white water rafting and other paddle sports to sailing, power boating and SCUBA," says Kaplan.

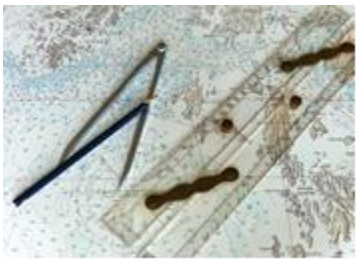
"This is an amazing opportunity for young people to have access to resources and training to explore their marine-based interests and see those interests through to real-world nautical adventure," says Reinsmith. "With our experienced skipper and support from The Peninsula Yacht Club, this will be a first-class experience."

+The Power Squadron's Reinsmith said: "This is an amazing opportunity for young people to have access to resources and training to explore their marine based interests and see those interests through to real world nautical adventure. With our experienced skipper and support from the Peninsula Yacht Club, this will be a first class experience.

Sailing Task Force

PYC has established a Sailing Task Force to support and grow a passion for sailing excellence within our club and the Lake Norman community. PYC is the Lake Norman epicenter of boating activities and accepts the broadening of their creed to now create a more robust sailing program, individual and team racing, a juniors program, the creation of a lake-wide club racing plan, additional summer camp sailing programs, club owned boats and support staff. The task force meets monthly and invites interested members to speak with Bruce Furman about being part of pioneering this exhilarating new component of our club.

Predicted Log Cruise



In a continuing effort to promote friendship, education, safety and competition among the Power Fleet, Rear Commodore Mike Miller leads The Peninsula Yacht Club Fleet Committee in developing a club-wide **"**Predicted Log Cruise" series.

"No you don't have to cut down a tree to participate, but you will have to draw upon your high school geometry lessons ($A^2+B^2=C^2$) to have a chance to be the best skipper in the fleet (our version of TOP-GUN). Any power boat is eligible to compete", says Miller.

Predicted Log Cruising, is essentially a car rally on the water. You will need to "predict" the time it takes to cruise a pre-determined course on Lake Norman. You then cruise that predetermined course and the skipper with the least deviation on time (+/-) wins.
Here is challenge of the cruise. The skipper cannot have access to a conventional or stop watch, GPS or any electronic or digital navigation aids and the speedometer on the vessel must be covered. The skipper can have access to knowledge of their boat (best cruising speed), Magnetic Compass, Map of Lake Norman with pre-determined course with waypoints, your boat's tachometer.

Predicted Log Cruise History

Predicted log contests originated in The United States on the East Coast in the early 1900's, when improved engines and boats stimulated a desire among skippers to compare their performances. Committees of naval architects created handicaps by establishing ratings based on horsepower, hull dimensions, and other factors. Predicted logging flourished when groups of boaters planned joint cruises to the same destination and decided to put their navigation and seamanship skills to the test.

To make the cruises more competitive, wagers were made, with each skipper confident of his ability to come closest to his predicted time. Wives became observers, and guests aboard the boats cheered their skippers on.

As is the case with many competitive activities, rules had to be tightened over the years to ensure that every skipper stayed within the spirit of the rules.

Today, the primary umbrella organization concerned with predicted log contests is the North American Cruiser Association. Most of the contests sanctioned each year through the NACA and its regional sub-organizations are actually conducted by various local yacht clubs. The United States Power Squadron encourages Predicted Logging through it's more than 450 squadrons and 33 districts. Predicted Logging is but another way to emphasize the axiom that "Safe Boating is More Fun."

The Watch will be the information hub as this exciting on the water activity further develops.

PYC Boating Information Book – Just for Kids

Part of the contents of my undercrofts of on the water experiences includes reading anything that remotely related to boating, fishing and sailing. As a youngster, I cherished my gifted subscription to Boys Life and Field and Stream. By the time I was 18, I had subscriptions to most of the well-known, boating related periodicals and today am close to needing a mortgage to cover the subscription cost of over 15 monthly on-the-water as the main topic publications.

When my daughters were very, very young, they went boating and fishing with me. Both of Barbara's sons had little boating experience when we met but they both jumped on board and that spread to their mates too. Each of our 3 grandsons went on the boat within the first 3 months of their crossing the starting line of the great race of life. I reached a new level of respect for our 6 year old grandson who watched "Deadliest Catch" and is already "hooked". When kids enjoy their early boating experience, it can lead to a lifetime of nautical fun and adventure. I was researching material for this book, I had an epiphany and planned to include a chapter that was for the kids. Didn't feel right. Kids are the future of boating and the preservation of the sport. They need designed-for-them material, to be able to color, connect dots, and connect with cartoon characters and other means of creative learning.

With the outpouring of assistance from The US Coast Guard, The US Army's Water Safety Program, The National Safe Boating Council, Boat U.S. Federation, The US Sailing Association and Sailing Hall of Fame, we are developing what might be the first interactive, Lake Norman focused boating guide for children which will be available to members by May of 2015.

Photos of PYC Events

Clair Knox, our Membership Director Extraordinaire, chairs PYC's two person photography of events team. As her deputy photographer, I am often asked how members can view and get copies of photos from events such as The Polar Plunge, Commodores Ball, Fleet Commissioning, July 4th party, Poker Run, Peninsula Cup as examples. All of the 2013 and 2014 photos, including a movie made of this year's Peninsula Cup, are available to be viewed and freely downloaded. The 2015 events will be available through a Dropbox link as well as through the club website. Direct any questions to either Clair or myself.

Below is a sample of the joyous times throughout the 2014 PYC season followed by the tentative 2015 Event Agenda.




















2015 Events at PYC

Tenative Schedule. Subject to change.

www.peninsulayacht.com

JANUARY			
Quarterly Menu Change	Friday	2	
Music in the DR	Friday	9	
Polar Plunge and Breakfast	Saturday	3	
Fleet Meeting	Saturday	3	
Social Committee Meeting	Thursday	8	
Kids Movie Night	Friday	9	
CLUB CLOSED	Monday	12-16th	
Ladies Day Out	Wednesday	21	
Kids Craft Night	Thursday	22	
Wine Society - Tasting	Thursday	22	
Kids Movie Night	Friday	23	
Children's Etiquette Class	Sunday	25	
YOGA		tba	
CRAFT UP		10	

FEBRUARY			
Quarterly Menu Change	Thursday	Feb	5
Social Committee Meeting	Thursday	Feb	5
Music in the DR	Friday	Feb	6
Fleet Meeting	Saturday	Feb	7
Mid Atlantic Boat Show	Thurs-Sun.	Feb	5th-8th
Ladies Day Out	Wednesday	Feb	11
Kids Movie Night	Friday	Feb	13
Brewer Series	Thursday	Feb	12
Valentines Day Dinner	Saturday	Feb	14
Presidents Day Lunch	Monday	Feb	16
Mommy & Me - Gymberee	Wednesday	Feb	18
Kids Craft Night	Thursday	Feb	19
Family Style Night	Thursday	Feb	19
Commodore's Ball	Saturday	Feb	21
Game Night	Saturday	Feb	21
Kids Movie Night	Friday	Feb	27
Wine Society - Tapas	Thursday	Feb	28
Book Club	Thursday	Feb	

MARCH			
Start of Extended Brunch Buffet			
Social Committee Meeting	Thursday	Mar	5
Open House - Taste of PYC	Thursday	Mar	5
Music in the DR	Friday	Mar	6
Fleet Meeting	Saturday	Mar	7
Chili Cook Off	Saturday	Mar	7
Draft Up	Saturday	Mar	7
Ladies Day Out	Wednesday	March	11
Kid's in the Kitchen (age 7-12)	Wednesday	Mar	11
Member Orientation	Thurs	Mar	12
Kids Movie Night	Friday	Mar	13
Wine Society Tasting	Thursday	Mar	19
Kids Craft Night	Thursday	March	19
Sock Burning	Friday	Mar	20
Murder Mystery	Saturday	Mar	21
Spring Commisioning Wrksp	Saturday	Mar	21
Paint and Wine - Ladies Craft Night	Thursday	Mar	26
Kids Movie Night	Friday	Mar	27
Game Night (March Madness)	Thurs-Sat	Mar	19-22
Book Club	Thursday	Mar	
YOGA			

APRIL			
Wed/Sunday Night Dining Opens	Wednesday	Apr	1
Music in the DR	Friday	April	3
Fleet Meeting	Saturday	April	4
Bunny Brunch	Saturday	April	4
Easter Brunch	Sunday	April	5
Ladies Day Out	Wednesday	April	8

APRIL CONTINUED…			
Social Committee Meeting	Thursday	April	9
Brewer Series	Thursday	April	9
Kids Movie Night	Friday	April	10
Game Night	Saturday	Apr	11
Boating on LKN	Saturday	Apr	11
Wine Society Dinner	Saturday	Apr	11
Health Fair			
Wine Society - Tasting	Thurs	Apr	16
Kids Craft Night	Thursday	Apr	16
Car Show - 3rd Annual	Saturday	Apr	18
Admin Appreciation Day	Wednesday	Apr	22
Manicures and Martinis	Thursday	Apr	23
Kids Movie Night	Friday	Apr	24
Amazing Race	Saturday	Apr	25
Book Club			
YOGA			
DRAFT UP			

MAY			
Social Committee Meeting	Thursday	May	1
Swim Club	Thursday	May	1
Music in the DR	Friday	May	1
Spring Boat Show	Sat-Sun	May	2-3rd
Pool Opening Party	Saturday	May	2
Fleet Meeting	Saturday	May	2
Sailing - Fellowship Series	Sunday	May	3
Piano Dinner	Sunday	June	3
Ladies Day Out	Wednesday	May	5
Chef's Table	Thursday	May	7
Kids Movie Night	Friday	May	8
New Member Orientation	*Friday*	*May*	*8*
Cinco De Mayo Raft-Up Keep!!!	Saturday	May	9
Wine Society - Tapas Tasting	Saturday	May	9
Boating for ladies	Saturday	May	9
Sailing Demo Day	Sat-Sun	May	9
Trivia Night	Saturday	May	9
Mother's Day Brunch	Sunday	May	10
Paddleboard Demo Day	Saturday	May	16
Flick-n-float	Saturday	May	16
Art on the Walk	Sunday	May	17
Kids Craft Night	Thursday	May	21
Kid's Movie Night	Friday	May	22
Pancake Breakfast	Saturday	May	23
Vessel Safety Check Day	Saturday	May	23
Shrimp Fest/Fleet Commissioning	Sunday	May	24
Memorial Day Picnic	Monday	May	25
Video Game Night	Friday	May	29
Wine Society - Stock your Cellar E	Saturday	May	30
ESD Electric Shock Drowning	Saturday	May	30
Book Club	Thursday	May	
YOGA			
DRAFT UP			

JUNE			
Chill-n-Grill	EVERY SATURDAY		
LKN Business Expo	Thursday	June	4
Social Committee Meeting	Thursday	June	4
New Member Social	Thursday	June	4
Music in the DR	Friday	June	5
Fleet Meeting	Saturday	June	6
Docking Challenge	Saturday	June	6
Sailing - Fellowship Series	Sunday	June	7
Quarterly Menu Change	Wednesday	June	10
Ladies Day Out	Wednesday	June	10
Putt and Pizza	Thursday	June	11

Poker Run	Saturday	June	13
Movie on the Lawn	Wednesday	June	17
Wine Society - Tasting	Thurs	June	18
Family Style Night	THURS	June	25
Kids Movie Night	Friday	June	26
Father's Day Brunch	Sunday	June	21
Trivia Night	Saturday	June	27
Kids Movie Night	Friday	June	26
Reggae Night	Sunday	June	28
FITNESS			

JULY			
Chill n Grill	EVERY SATURDAY		
Social Committee Meeting	Thursday	July	2
4th July Parade/5K/Pool Buffet/Celeb	Friday	July	3
Ladies Day Out	Wed	July	8
Member Orientation	*Friday*	*July*	*10*
Kids Movie Night	Friday	July	10
Fleet Meeting	Saturday	July	11
Kids Craft Night - CB Boat Building	Saturday	July	11
Book Club	Thursday	July	16
Wine Society - Tasting	Thurs	July	16
Flick-n-float	Saturday	July	18
Kids Movie Night	Friday	July	24
Game Night	Saturday	July	25
Night Time Navigation	Friday	July	25
Reggae Night	Sunday	July	26
FITNESS			

AUGUST			
Social Committee Meeting	Thursday	Aug	6
Manicures and Martinis	Thursday	Aug	6
Music in the DR	Friday	Aug	7
Video Game Night	Friday	Aug	7
New member orientation	*Friday*	*Aug*	*7*
Fleet Meeting	Saturday	Aug	8
Wine Society Tapas Dinner	Thursday	Aug	8
Ladies Day Out	Wednesday	Aug	12
Movie on the Lawn	Wednesday	Aug	12
Brewer Series	Thursday	Aug	13
Kids Craft Night	Thursday	Aug	13
Cardboard Boat Race	Saturday	Aug	15
Game Night	Saturday	Aug	15
Flick-n-Float	Saturday	Aug	15
Book Club	Thursday	Aug	20
Kids Movie Night	Friday	Aug	21
Adult Flick and Float	Saturday	Aug	29
Reggae Event	Sunday	Aug	30
FITNESS			

SEPTEMBER			
Social Committee Meeting	Thursday	Sept	3
Music in the DR	Friday	Sept	4
Fleet Meeting	Saturday	Sept	5
Labor Day Luau	Saturday	Sept	5
Sailing - Fellowship Race Series	Sunday	Sept	6
Labor Day Picnic	Monday	Sept	7
Ladies Day Out	Wed	Sept	9
Father/Daughter Dance	Friday	Sept	11
Kids Movie Night	Friday	Sept	11
Wine Society - Tasting	Thursday	Sept	17
Kids Craft Night	Thursday	Sept	17
Oyster Roast	Saturday	Sept	19
Pen Cup Regatta	Fri-Sun	Sept	18-20

Reggae Night	Sunday	Sept	27
End of Sunday Night Dining	Sunday	Sept	27
End of Wednesday Night	Wed	Sept	30
FITNESS			

OCTOBER			
Social Committee Meeting	Thursday	Oct	1
Octoberfest	Thursday	Oct	1
Music in the DR	Friday	Oct	2
Winterization Workshop	Saturday	Oct	3
Fleet Meeting	Saturday	Oct	3
Winter Prep Class	Saturday	Oct	3
Sailing - Fellowhip Racing Series	Sunday	Oct	4
Ladies Day Out	Wednesday	Oct	7
Chef's Table	Thursday	Oct	8
Brewer Series	Thursday	Oct	8
Quarterly Menu Change	Wednesday	Oct	8
Kids Movie Night	Friday	Oct	9
Pumpkin Regatta	Saturday	Oct	10
Wine Society - Dinner	Saturday	Oct	10
Women's Club	Wednesday	Oct	14
Kids Craft Night	Thursday	Oct	15
Scotch and Cigar Dinner	Thursday	Oct	15
Wine Society - Tasting	Saturday	Oct	15
Leukemia Cup Regatta @ PYC	Saturday	Oct	17
BBQ Cook off 4-5pm	Saturday	Oct	17
Family Style Night	THURS	Oct	22
Kids Movie Night	Friday	Oct	23
Haunted Harbor	Saturday	Oct	24
Raft Up - Fall	Saturday	Oct	24
Book Club	Thursday	Oct	
FITNESS			

NOVEMBER			
Social Committee Meeting	Thursday	Nov	5
Music in the DR	Friday	Nov	6
New Member Orientation	*Friday*	*Nov*	*6*
ROCK THE CLUB - Casino Night	Saturday	Nov	7
Chef's Table	Thursday	Nov	12
Kids Movie Night	Friday	Nov	13
Wine Society -Tapas Night	Saturday	Nov	14
Kids Craft Night	Thursday	Nov	19
Kids Movie Night	Friday	Nov	20
Sip n Shop	Saturday	Nov	21
Thanksgiving	Thursday	Nov	26
Book Club			
FITNESS			

DECEMBER			
Social Committee Meeting	Thursday	Dec	3
Music in the DR	Friday	Dec	4
Tree Lighting Ceremony	Friday	Dec	4
CO Poisoning	Saturday	Dec	5
Kids Movie Night	Saturday	Dec	5
Ladies Day Out	Wednesday	Dec	9
Brewer Series	Thursday	Oct	10
Wine Society - Tasting	Thursday	Dec	17
Lighted Boat Parade	Saturday	Dec	12
Santa Brunch	Sunday	Dec	13
Family Holiday Party	Thursday	Dec	17
New Years Eve Celebration	Wednesday	Dec	30
Kid's NYE Celebration	Wednesday	Dec	30
Book Club			
FITNESS			

National Sailing Hall of Fame

The National Sailing Hall of Fame officially began in 2011 following the earnest commitment from a group of America's most prestigious yacht clubs and well known accomplished people who helped to shape sailboat racing and racing sailboats. The chosen location was Annapolis, Maryland, located within an hour of both Baltimore and Washington, DC, and is both The Capitol of Maryland as well as the hub of Chesapeake Bay's racing and other sailing activity. Located very near to the famous "Ego Alley" and the heart of Annapolis' waterfront, the city and State of Maryland has provided the National Sailing Hall of Fame with 6,000 square-foot waterfront property and 300 feet of newly renovated dock space, including the riparian rights for 230 feet of newly renovated dock space, 5,000 square-feet of outdoor exhibition space, and $250,000. Annapolis was chosen based on their ability to both create and support the presence of the organization.

Sailors inducted into the Hall of Fame represent the most well decorated pioneers, contributors, successful yachtsmen and yachtswomen, world class racers from dinghies to offshore grand prix circuits. The inductees, staff, board of directors and advisors could be a who's who of sailboats and racing.

One of the components of preserving the rich history of American sailing, which has grown and developed from yacht clubs and sailing organizations, came by way of a program funded by The Gowrie Group, the largest independent marine insurance group in the US, who recognized that every club and organization has a unique story to tell. The creation of a forum to share these stories uncovers the feats of individual sailors, experiences that shaped America's history, adventures of determined personalities, achievements by juniors and remarkable concepts from those that grew our sport from wooden boats, small boathouses, and rocky shores across the nation. The National Sailing Hall of Fame is committed to gathering those stories, presenting them to the public and archiving them for future generations.

The most recent yacht club census was conducted in 2008. At that time, there were 1,286 yacht clubs in the United States. Of that, the profiles and stories of only 52 have successfully been recognized as organizations that "Define American Sailing" and included on the National Sailing Hall of Fame's "Yacht Club Profiles & Stories".

Of those 52, only 1 is not located on the ocean or a bay leading directly to the ocean. Point of clarification. The Chicago Yacht Club, located on Lake Michigan, offers ocean

access (*Lake Michigan, down Lake Huron, across Lake Erie and Ontario, then through the St Lawrence River to the Gulf of St Lawrence to the Atlantic Ocean).*

The only yacht club to be profiled, as of January, 2014, that is located on an inland, no ocean access body of water, is THE PENINSULA YACHT CLUB! We also hold another esteemed honor of being the youngest club of the 52 profiled. Being profiled in the Hall of Fame of any sport is a permanent tribute and represents one of the most prestigious recognitions of a praiseworthy and robust sailing program.

PYC received this news in November of 2014, following submitting an application and completing the review and interview processes.

Back to The Hall of Fame and a bit more about yacht clubs. The oldest yacht club in the world, formed in 1718, is The Flotilla of The Neva, St. Petersburg, Russia. The oldest club in the US, chartered in 1839, is The Detroit Yacht Club.

Gary Jobson, a world class sailor, television commentator and author based in Annapolis, Maryland is the President of the National Sailing Hall of Fame. He is a Vice President of the International Sailing Federation, has authored 19 sailing books and is Editor at Large of Sailing World and Cruising World magazines.

He has won many championships in one design classes, the America's Cup with Ted Turner, the infamous Fastnet Race and many of the world's ocean races. In college at SUNY Maritime he was an All American sailor three times and was twice named College Sailor of the Year. Gary is also an active cruising sailor. He has led ambitious expeditions to the Arctic, Antarctica and Cape Horn.

Jobson covered the 34th America's Cup for NBC. He won an A.C.E. (Award for Cable Excellence) for the 1987 America's Cup on ESPN. In 1988 Jobson won an Emmy for his production of sailing at the Olympic Games in South Korea, and won an Emmy for the 2006 Volvo Ocean Race on PBS. His newest book is Chasing Roosters a Century of Sailing on Barnegat Bay. In 2013 Jobson was presented a Telly Award (Recognizes distinction in creative work in broadcast/non-broadcast video productions) for Unfurling the World The Voyages of Irving and Electa Johnson.

Jobson was inducted into the National Sailing Hall of Fame (2011) and the America's Cup Hall of Fame (2003) by the Herreshoff Marine Museum. In 1999 Jobson won the Nathanael G. Herreshoff Trophy, US SAILING's most prestigious award.

Gary has been the National Chairman of The Leukemia Cup Regatta program since 1994 and has visited Lake Norman some years back as part of the fundraising efforts of the annual Leukemia Cup. PYC was scheduled to host Gary's return to the lake in the fall of 2014, to meet Leukemia Cup supporters, which was unfortunately cancelled. We hope to host him again in 2015.

Stories from the Peninsula Yacht Club

Peninsula Yacht Club
18501 Harbor Light Blvd
Cornelius, NC 2803128031

Phone: (704) 892-9858

Website: www.peninsulayacht.com

The Peninsula Yacht Club, founded in 1995, is situated just north of Charlotte, North Carolina on the shores of Lake Norman, which is 34 miles long and 8 miles wide at its widest point with over 520 miles of shoreline. PYC is the epicenter of boating activities for Lake Norman and its surrounding communities. The club has a robust sailing program and summer camp, and is host to several major annual regattas on the lake, including rotating the hosting for the Leukemia Cup every October.

History

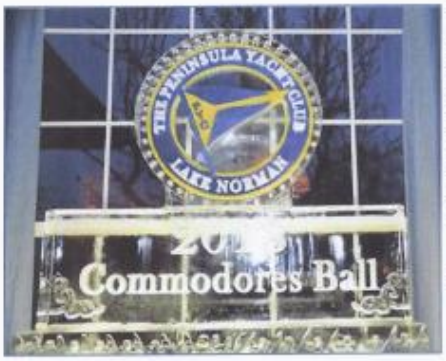
Located at the site of the former Outrigger Marina that was founded in 1974, PYC began enrolling members in February of 1995, including area residents and boating enthusiasts anxious to be a part of Lake Norman's newest tradition. Ground breaking for the new Clubhouse was in November of that year, followed by a grand opening celebration in June of 1996. Since the grand opening membership has almost doubled from 540 members to over 1,000. The marina is in a well-protected deep-water cove and the clubhouse sits on a

beautifully landscaped lot with breathtaking views and gardens. PYC offers its members an exciting package of opportunities for boating, leisure, and recreation.

In 2014, a Sailing Task Force was formed charged with further expansion of the PYC youth sailing program and racing calendar. October, 2015 will mark the inauguration of an annual youth "Pumpkin Regatta" in support of the Leukemia Cup. Members enjoy a world class dining and event facility, pool, festivals and the club's newly renovated clubhouse.

PYC's regatta series includes one designs and keelboat races and rotating hosting of The Icicle Series, Wilmer Cup Regatta, Leukemia Cup and Chairmanship of The Lake Norman Keelboat Council. A federation of three yacht clubs located on Lake Norman, North Carolina is also the governing body for PHRF rating certificates.

PYC is also the home port for a newly developed Sea Scouts "ship", overseen by The Lake Norman Sail & Power Squadron and Sea Tow of Lake Norman. The vessel is crewed by youth ages 14-20 who are dedicated to nautical activities and challenges. Additionally, PYC compiled and published the first Lake Norman Recreational Boating Guide; Volume II will be distributed in early 2015.



Continuous expansion and improvements in PYC sailing programs is driven by member enthusiasm and demand. Additional boats, staff, educational programs, regattas, for youth, adults and families is under the direction of the PYC Staff, Fleet Committee and newly formed Sailing Task Force. PYC 's creed is to promote the sport of sailboat racing, recreational boating and safety on the waters of Lake Norman, NC.

BACK TO YACHT CLUB STORIES PAGE

CHAPTER 2 ----- BE A POLITE, CONSIDERATE AND COURTEOUS BOATER

- **Manners**
- **Docking The Vessel**

Let's establish some basics. To go boating, you need water. Wikipedia's definition afforded me to offer comments which are inserted in italics. Brings a little flair to the starchy tone of most definitions. "A body of water or waterbody (*who ever heard of this term*) is any significant accumulation of water, generally on a planet's surface (*well, that leaves room for further research)*. The term body of water most often refers to large accumulations of water, such as oceans, seas, and lakes, but it includes smaller pools of water such as ponds, wetlands, or more rarely, puddles*. (I'm familiar with the popular kids' song "Jumpin in a Puddle, Getting' all wet….. but other than a toy boat, never knew anyone who packed up for the day to 'puddle boat')* A body of water does not have to be still or contained; Rivers, streams, canals, and other geographical features (*I guess this means tidal and/or current moved waters)* where water moves from one place to another are also considered bodies of water.

The reason for introducing this section with a definition, (*and my comments*), is to recognize that almost everyone on the 'surface of this planet' has been on the water in some type of watercraft. Narrowing this down further, I purport that few boaters have been on bodies of water that are not identified above. Hence, we all know the landscape. And we also know that discourteous boating has become more prevalent and needs to be addressed, courtesy re-identified and awareness heightened.

Boating is a great common denominator to meet new friends. PYC is activity ripe and the easily navigable and social gathering attractiveness of Lake Norman combine for an almost unavoidable expansion of relationship horizons. Treasuring being titled as an uneducated boater and remaining oblivious to those around you will quickly add enemies to your existence.

Ramp Manners

Prepare your boat in the parking area away from the ramp. Then when it's your turn, back down and let your boat off the trailer and drive off. Don't take too much time and block other boaters.

Underway

If your boat is getting under way from a dock or coming out of a cove, wait until the main channel traffic clears, then proceed safely.

Bumpers

Bumpers are designed to prevent damage to a hull when docking, rafting up or otherwise providing a protective barrier between a vessel and anything adjacent. They are not decorative ornaments and it is considered a cardinal act of rudeness and inappropriate boating to leave bumpers to bounce along the outside of the hull for the ride. In one of New Hampshire's largest lakes, there was once a fine for vessels that were identified as "Bumper Draggers" as they often came untied and resulted in a hazard. Heed this message, take in your bumpers.

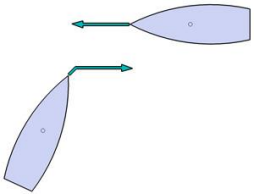
Docking lines

Docking Lines should be removed from cleats, never be left attached and simply allowed to lay on the deck or inside the cockpit. They are dangerous impairments to anyone walking inside or around the vessel, they can be blown outside the boat and unknowingly trail in the water, get tangled in running gear (propellers). Docking lines should be coiled and stowed in their place to be ready as needed.

Boat horns

Horns on a vessel should not be used for anything other than to heighten the awareness of an oncoming vessel to prevent danger, or if you're running in fog as a safety measure. If you need to get another boat's attention, one short blast is acceptable. Nobody needs to hear your attempt to create a sonnet, prove you know Morse code, let alone witness your anxiety for someone who offended your time on the water.

Right of Way



Remember when crossing the path of another boat that the boat on the right has the right of way. Slow down and allow plenty of room, or change course, cut right and go behind the other boat. It is fine to slow down – gradually – and put the boat in neutral for a minute while you gather yourself.

Leave plenty of room between your boat and any watercraft or people in the water. This includes other powerboats, personal watercraft, and people within close proximity on the shore, especially kayaks, paddleboards, canoes, dinghies and rowboats, sailboats, fishermen, swimmers. . Be aware that your wake can cause a boat to capsize and will certainly be annoying to an affected boat, and never forget that you are legally responsible and accountable for your wake. I can share many stories about damages I have witnessed due to arrogant boaters who passed flotillas without sufficiently slowing down, and, about a woman who was sitting on a swim platform when a 'big waker' came by, tossed her around and caused her bracelet to break and fall into the water. True story – the violating boat owner was fined and ordered to replace the bracelet. Swimmers are especially hard to see so keep a good eye on them as well as on people you have that are swimming from your boat.

Waterskiing, Wakeboarding and Wake surfing

Don't follow a boat that is pulling a skier, wakeboarder or wake surfer or any other towable device, too closely. If the person on skis or in the towable should fall or fall out, two things; (1) you need time to react and (2) you need to know that your wake may impair their safety.

If you are the skier or in a towable device, don't be a showoff at the expense of your own or the safety of others. Don't use your close proximity to another boat to do a dance on slalom skis and throw a rooster tail of spray across the bow of your friend's boat or people on a dock watching you. Be on guard for boats around you before moving out of your own wake, crisscrossing back and forth or practicing one of your world-renowned jumps or 360 degree spins, all while eating lunch, texting on your phone (which is in a waterproof bag), reading a magazine and touching up your hairdo! Cutting it too close is dangerous to you, to other boaters and could cause you to drop your magazine!!

Driving a boat that is towing a Tube requires traversing from side to side to provide the rocking to allow the tube to swing. Watch carefully for boats either in your immediate path or around you to not endanger your 'tuber'. I'll agree that with the popularity of towables, most boaters will understand that the person that is in a tube 75' behind your boat is connected to you, and not just gliding along at 18 knots by means of some independent underwater force, but keep aware of those that simply don't see you.

Night Boating

As those of you who were on Captain Harry's Nighttime Navigation cruise, it remains unfortunate but boats do travel at night with no lights or with their red and green lights reversed. I recommend making it a rule to travel slower at night, keep a pair of binoculars handy, and use them. Traveling at a reduced speed offers additional time to react to the unexpected. Don't travel with either a floodlight, docking lights or underwater lights on. The first two can blind oncoming boats and is disturbing to other boats.

Make the "Don't drink and drive" a rule you honor, every day, all day and night! Many people wish they could reverse a decision to not honor this rule, many wish they were here to plead for a reversal! If you do not have a designated driver, leave your boat somewhere safe, call a friend, relative or a taxi and you'll thank yourself for not putting the situation at risk. If you need assistance, always know that Captain Harry (as can be available) is ready to drive your boat for you.

Check all of your lights before you leave for a night ride, carry extra bulbs for your light fixtures and remember to have your lights ready to be turned on at dusk. All boating regulations command responsibility for being certain all navigation lights are in good, working order.

Loud Music

Is loud music to a wakeboarder similar to being a contestant on Dancing with The Stars? Or is wakeboarding a precursor rehearsal for doing the Pasodoble on the dance floor? If loud music is your form of enjoying the experience, whether while you've got someone in tow or as part of a group raft up, don't forget that someone within ear shot may be out for some peace and quiet. Try to be mindful that sound travels in much greater distances over the water than land, so be considerate.

VHF Radio Communication

If you use a VHF Marine Radio, the new digital select channels, now reserved for monitoring, are Channels 16 and 70. The PYC communication channel is 11. If you want to chat, it is requested that you not do so on either of the monitoring channels.

Fundamental Anchoring Etiquette

Position yourself far enough from another boat(s) so your anchor line will not cross over theirs anchor far enough from other boats that your line won't get crossed with theirs.

Position your boat to be facing directly into the wind, then lower your anchor remembering that once 'hooked' your boat will swing around while anchored.

Keep your distance, make sure your boat has ample room to swing and you have room to react should another nearby boat lose their anchor hold and begin drifting down on you.

Respect the privacy of other boats. Unless you're rafting with good friends, the boats near you may want some privacy. Keep your sound producing equipment, which includes your voice(s), low and save duets with Lady Gaga or to a Broadway Musical for better suited conditions.

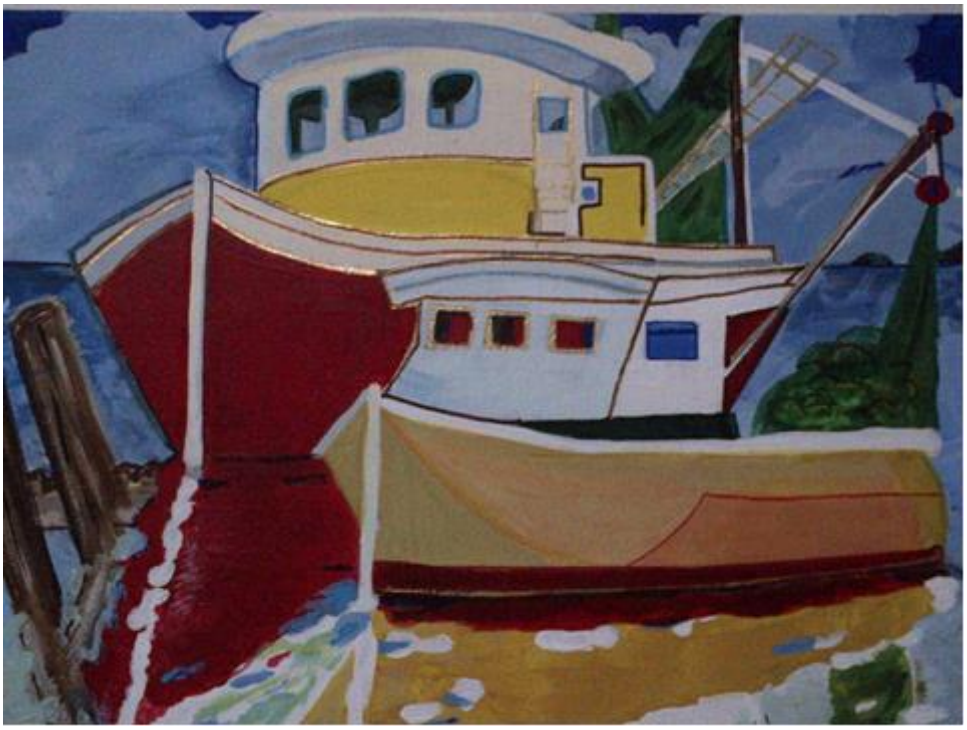
Even during the day, I recommend turning on your anchor light. Make sure you turn it off when you weigh anchor.

Docking the Vessel

Approach the dock or mooring as slowly as you can travel and have control and maneuverability of your vessel. A simple transliteration of this would be "if you go slowly, you won't hit the dock as hard". The first indication of not feeling in total control is when you immediately initiate "the back out or go around and do it all over again". There is no boater who can claim that he/she can always and magnificently dock a boat on the first try. And your personal reputation will be far less

damaged than risky docking approach. I recommend etching “they make neutral for a reason” in your thought process. Never, never accelerate to attempt overcoming a questionable position!

If you are in a position, assist a boat coming in and accept a line thrown to you. Wrap it around a cleat being mindful that other lines are being attached to the dock. Don’t pull a boat to the dock without asking the captain first. He directs the process until advised otherwise.



Your Fleet Committee urges members to make use of the member on-the-water training program where all facets of boat operating, handling, anchoring, navigating and more are included. Contact Captain Harry to make arrangements.

CHAPTER 3 ----- RECREATIONAL BOATING

- **What is Recreational Boating?**
- **US Coast Guard 2013 Boating Statistics Report**
- **Federal Law Requirements for Boating Accidents**
- **The End of Traditional Paper Charts**

Since the starting gun of our universe, which occurred some 13.8 billion years ago, marked by The Big Bang Theory History, one of the creations of mankind included the iconic term "development". Narrowed down to boating, the earliest boats were claimed to be log boats which have been claimed to date back some 900,000 years ago. Today, that evolution continues with changes in style but the physics of boating has, without exaggeration, stood the test of time.

There are many different types of power boats, from small boats that can get you into shallow waters, through pontoon boats, medium-sized fast boats, houseboats, and full scale motor yachts. There is a great assortment of sailboats, from small sailboats that are fun and exciting, to sailboards and kiteboards, to medium-sized sailboats for those who enjoy the larger open bodies of water, to multi-masted cruising yachts. There are countless types of paddle craft, from traditional canoes to modern-age whitewater canoes, traditional and sit-on-top kayaks, and now the rapid emergence of new varieties of paddleboards. And within these categories exist varying hill designs which are included in a later chapter.

Across the recreational boating community, you will find people of all ages, cultures and backgrounds. You will find boaters who enjoy relaxing trips to help ease daily stresses; and you will also find boaters who enjoy the thrill of boating, whether it's sailing in stiff winds, catching a great fish, participating in towed water sports, or enjoying some great whitewater. You will find those who love boating but don't own a boat, members of yachting organizations and an unending plethora of boating magazines, books, periodicals, studies and even some television shows.

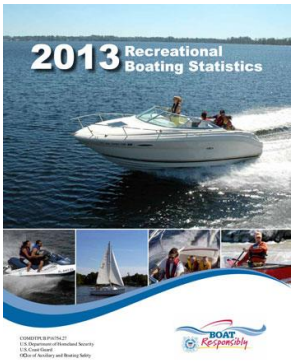
Boating enhances our quality of life, environmental awareness, health, and economy. To many it is a passion, a passage of life. The recreational boating system was developed and is maintained by a combination of different public and private organizations. This system includes access to boating waters (e.g., launch sites, navigation rules and signs, dredging); boating facilities (e.g., harbors, marinas, clubs); safety, rescue, and law enforcement; boat and boating equipment manufacturing and sales; and repair and storage. To improve the recreational boating opportunities in America, effective and productive partnerships have been formed among boating agencies, organizations, stakeholders, and local communities. These partnerships include the boaters themselves; volunteer service organizations such as the U.S. Power Squadrons and U.S. Coast Guard Auxiliary; federal, state and local government entities that provide and maintain facilities and services; the many different components of the boating industries such as the manufacturers, retailers, marinas, service providers, and more; and centers of research and education.

Within the federal government, many agencies are involved in recreational boating. These include the U.S. Fish & Wildlife Service, the U.S. Army Corps of Engineers, the National Park Service, the Bureau of Land Management, the U.S. Forest Service, the Bureau of Reclamation, the National Oceanic and Atmospheric Administration, as well as the U.S. Coast Guard. One key U.S. Coast Guard (USCG) responsibility relating to recreational boating is working in partnership with the states and numerous other organizations to administer the National Recreational Boating Safety Program. The mission of this program is: “To ensure the public has a safe, secure, and enjoyable recreational boating experience by implementing programs designed to minimize the loss of life, personal injury, and property damage while cooperating with environmental and national security efforts.”

This partnership program has produced important results since its inception in 1971. The number of boating deaths dropped for decades since the early 1970s. This was a notable success in itself, especially given that the number of boats bought and used grew significantly during that period. Since the late 1990s, the decline in boating casualties appears to have leveled off, remaining relatively constant at about 700 deaths per year. There have also been changes in the types, sizes, and characteristics of recreational boats that have significant safety and facility supply implications. The number of registered recreational vessels plateaued during the past decade. Conversely, the number of paddle boats (kayaks and paddleboards) has been growing during this period. There has also been a change in the ratio of registered to non-registered vessels.

To further reduce the number of boating casualties (deaths and injuries combined), the National RBS Program continues to work to develop a "safety culture" among boaters through outreach and education, regulation, and enforcement. The primary goal of the Program's Strategic Plan for 2012-2016 is to reduce deaths and injuries to specified levels and to decrease property damage that could be associated with recreational boating. The Program thus supports developing and communicating branded messages that encourage positive behaviors, which will ultimately enhance public safety and achieve the program's goals.

Decades ago, Congress directed the USCG to conduct research in order to obtain valid data about boating activity and about which initiatives are effective in enhancing safety. The Coast Guard has conducted five national boating surveys in the past 40 years.



In May, 2014, The Inspections & Compliance Directorate of The United States Coast Guard, which is under The Department of Homeland Security, issued their 2013 Recreational Boating Statistics Report. This, the 55th annual report, contains data on recreational boating accidents and state vessel registrations. The 80 page publication is a result of synchronized information assembly by the Coast Guard and those states and territories that have Federally-approved boat numbering and casualty reporting systems. These include all States, the District of Columbia, Puerto Rico, Guam, the Virgin Islands and American Samoa's.

One of PYC's strongest commitments to its members is to provide the maximum level of boating safety guidance, examples and information. One such example of that commitment is the exchange of boating information. Jonathan C. Burton, Captain, U.S. Coast Guard, Director of Inspections & Compliance has approved our members to copy and freely distribute the report in the interest of boating safety. Coast Guard Headquarters in Washington, DC has offered to address suggestions and questions on the report's content by submitting them to the Commandants assigned point of contact: Susan M.Tomczuk, 2703 Martin Luther King Jr. Avenue SE, Washington, DC 20593-7501. If submitting by regular mail, kindly include her Staff Symbol CG-BSX-21 on the bottom left of the front side of the envelope. Susan may also be contacted by e-mail at Susan M. Tomczuk@uscg.mil, Fax 202-372-1908, Phone 202-372-1103. She is required to keep a communications log. If you contact her, include the report identifier Publication No. P16754-27.

Given the voluminous quantity of analytical and comparative information, charts and tables, it would be too cumbersome to attempt to prepare a complete synopsis. As such, only some of the information is summarized below in hopes that it raises your boating information tide enough to review the entire report.

In 2013, the Coast Guard counted 4,062 accidents that involved 560 deaths, 2,620 injuries, and approximately $39 million dollars of damage to property as a result of recreational boating accidents.

The fatality rate was 4.7 deaths per 100,000 registered recreational vessels. This rate represents a 13% decrease from last year's fatality rate of 5.4 deaths per 100,000 registered recreational vessels.

Compared to 2012, the number of accidents decreased 10%, the number of deaths decreased 14%, and the number of injuries decreased 12.7%.

Where cause of death was known, seventy-seven (77) percent of fatal boating accident victims drowned. Of those drowning victims with reported life jacket usage, eighty-four (84) percent were not wearing a life jacket.

Where instruction was known, twenty (20) percent of deaths occurred on boats where the operator had received boating safety instruction. Only thirteen (13) percent of deaths occurred on vessels where the operator had received boating safety instruction from a course provider offering a course meeting the U.S. Coast Guard recognized national standards.

Eight out of every ten boaters who drowned were in vessels less than 21 feet LOA.

Operator inattention, improper lookout, operator inexperience, excessive speed, and machinery failure rank as the top five primary contributing factors in accidents.

Alcohol use is the leading known contributing factor in fatal boating accidents; where the primary cause was known, it was listed as the leading factor in 16% of deaths.

Twenty-two children under age thirteen lost their lives while boating in 2013. Eight children or approximately thirty-six (36) percent of the children who died in 2013 died from drowning. Five children or 62.5% of those who drowned were not wearing a life jacket as required by state and federal law.

Where data was known, the most common types of vessels involved in reported accidents were open motorboats (46%), personal watercraft (18%), and cabin motorboats (17%).

The 11,993,067 recreational vessels registered by the states in 2013 represent a 0.9% decrease from last year when 12,101,936 recreational vessels were registered.

Accident Reporting as Required by Federal Law

Under federal regulations (33 CFR Part 173; Subpart C – Casualty and Accident Reporting) the operator of any numbered vessel that was not required to be inspected or a vessel that was operated for recreational purposes is required to file a BAR (Boating Accident Report) when, as a result of an occurrence that involves the vessel or its equipment:

1. A person dies; or

2. A person disappears from the vessel under circumstances that indicate death or injury; or

3. A person is injured and requires medical treatment beyond first aid; or

4. Damage to vessels and other property totals $2,000 or more; or

5. There is a complete loss of any vessel.

If the above conditions apply, the federal regulations require the operator or owner must report their accident to a state reporting authority. The reporting authority can be either the state where the accident occurred, the state in which the vessel was numbered, or, if the vessel does not have a number, the state where the vessel was principally used.

Boat operators or owners must submit accident reports within 48 hours of an occurrence if:

a. A person dies within 24 hours of the occurrence; or

b. A person requires medical treatment beyond first aid; or

c. A person disappears from the vessel.

2. Accident reports within 10 days of an occurrence if there is damage to the vessel/property only.

The minimum reporting requirements are set by Federal regulation, but states are allowed to have more stringent requirements. For example, some states have a lower threshold for reporting damage to vessels and other property.

PYC recommends any such accident be reported to the local authorities first, PYC summoned for assistance as may be needed. This section was included to provide information, heighten awareness but not to recommend that these procedures supersede those offered by the local police and Lake Norman governing entities.

The USCG report and much more valuable boating information is available at: http://www.uscgboating.org/statistics/accident_statistics.aspx

Traditional Paper Charts

Anyone who grew up navigating with paper charts, taking compass bearings or sights, and using dividers or parallel rules to find their position can't help but feel saddened by the announcement in October, 2013 that, as of this April, 2014 the government will be getting out of the business of printing traditional charts. But before getting too overemotional, reflect on your own chart usage and how it has changed. "The demand for traditional paper charts has fallen more than 90 percent in the last 30 years," said Susan Shingledecker, Vice President of the BoatU.S. Foundation and a member of the NOAA Hydrographic Services Review Panel.

But the end of lithographic charts doesn't mean you can't still navigate the old-fashioned way.

NOAA is beefing up its Print-on-Demand charts, available through private vendors; the NOAA Booklet Charts, which cover 95,000 miles of U.S. coastline including the Great Lakes, are available for free download directly off its website (nauticalcharts.noaa.gov). In addition, we are seeing numerous innovative products that combine the best of paper and electronic charting. One excellent source of chart information is Nautical Charts Online (http://www.nauticalchartsonline.com)

CHAPTER 4 ----- RULES, REGULATIONS AND SAFETY ON THE WATER

- **North Carolina Regulations**
- **Change in Personal Flotation Device Requirements**
- **Boating Safety Frequently Asked Questions**
- **Guide to PWC Safety**
- **Boating with Children**

Volume I contained in depth explanations on topics found in the Vessel Operator's Guide, produced by the North Carolina Wildlife Resources Commission as a convenient reference to the requirements of North Carolina boating laws and regulations.

North Carolina Boating law applies to all public waters within the territorial limits of the State, to the marginal sea adjacent to the State and to the high seas when navigated as a part of a journey or ride to or from the shore of this State. This includes all streams, rivers, lakes and sounds within or bordering the State, but it does not include private ponds. Private ponds are generally small impoundments that lie wholly on the land of one owner and into which and from which fish cannot enter or escape. Vessels operating on waters subject to the Jurisdiction of the United States are subject to Federal Boating laws as well as State laws.

We cannot strongly enough urge you to obtain a copy of The Vessel Operators Guide, available at the Ships Store, and take time to read it thoroughly. Captain Harry is certainly always available to further explain any topic or address questions. The singularly most important part of boating, regardless of the body of water, is conforming to the federal and local requirements as well as making safety your primary rule of boating.

For those wanting to maintain digital copies of pertinent regulations, they can be found on the following websites:

Federal - - http://www.uscgboating.org/regulations/federal_laws.aspx

NC - - - http://www.ncwildlife.org/Boating/LawsSafety/BoatingRegulations.aspx

For information regarding Federal boating requirements, contact:

Fifth Coast Guard District
Federal Building
431 Crawford Street
Portsmouth, Virginia 23705
(757) 398-6390

Boating Safety Education Required In North Carolina

N.C. §75A-16.2

Initiated by the boating community, enacted into law by the General Assembly and implemented by the N.C. Wildlife Resources Commission, a boating safety education requirement went into effect on May 1, 2010.

75A-16.2. AN ACT SIGNED INTO LAW ON JULY 10, 2009 TO IMPROVE BOATING SAFETY BY REQUIRING BOATING SAFETY EDUCATION PRIOR TO OPERATING A VESSEL WITH A MOTOR OF TEN HORSEPOWER OR GREATER, AS RECOMMENDED BY THE JOINT SELECT COMMITTEE ON MANDATORY BOATING SAFETY EDUCATION.

(a) No person shall operate a vessel with a motor of 10 horsepower or greater on the public waters of this State unless the operator has met the requirements for boating safety education.

(b) A person shall be considered in compliance with the requirements of boating safety education if the person does one of the following:

(1) Completes and passes the boating safety course instituted by the Wildlife Resources Commission under G.S. 75A-or another boating safety course that is approved by the National Association of State Boating Law Administrators (NASBLA) and accepted by the Wildlife Resources Commission;

(2) Passes a proctored equivalency examination that tests the knowledge of information included in the curriculum of an approved course;

(3) Possesses a valid or expired license to operate a vessel issued to maritime personnel by the United States Coast Guard;

(4) Possesses a State-approved nonrenewable temporary operator's certificate to operate a vessel for 90 days that was issuewith the certificate of number for the vessel, if the boat was new or was sold with a transfer of ownership;

(5) Possesses a rental or lease agreement from a vessel rental or leasing business that lists the person as the authorized operator of the vessel;

(6) Properly displays Commission-issued dealer registration numbers during the demonstration of the vessel;

(7) Operates the vessel under onboard direct supervision of a person who is at least 18 years of age and who meets the requirements of this section;

(8) Demonstrates that he or she is not a resident, is temporarily using the waters of this State for a period not to exceed 90 days, and meets any applicable boating safety education requirements of the state or nation of residency;

(9) Has assumed operation of the vessel due to the illness or physical impairment of the initial operator, and is returning the vessel to shore in order to provide assistance or care for the operator;

(10) Is registered as a commercial fisherman or a person who is under the onboard direct supervision of a commercial fisherman while operating the commercial fisherman's boat; or

(11) Provides proof that he or she was born before Jan. 1, 1988. Any person who operates a vessel with a motor of 10 horsepower or greater on the waters of this State shall, upon the request of a law enforcement officer, present to the officer a certification card or proof that the person has complied with the provisions of this section.

(c) Any person who violates a provision of this section or a rule adopted pursuant to this section is guilty of an infraction, as provided in G.S. 14-3.1. The court shall assess court costs for each violation but shall not assess a penalty. A person may not be convicted of violating this section if, when tried for the offense, the person produces in court a certification card or proof that the person has completed and passed a boating safety course in compliance with subdivision

(b)(1) of this section.

(d) No unit of local government shall enact any ordinance or rule relating to boating safety education, and this law preempts all existing ordinances or rules.

(e) An operator of a personal watercraft on the public waters of this State remains subject to any more specific provision of law found in G.S. 75A-13.3.

FOR MORE INFORMATION
www.ncwildlife.org or 919-707-0031

Personal Flotation Devices (Change in Requirements)

Beginning on Oct. 22, 2014. The US Coast Guard dropped the current life jacket type code scheme -- Type I, II, III, IV and V -- that has been used for years to label and differentiate the types of life jackets and their specific use. Chris Edmonston, BoatUS Foundation for Boating Safety President and Chairman of the National Safe Boating Council, said, "The boating safety community believes this move by the Coast Guard will help lead the way toward more comfortable and innovative life jacket designs, help boaters stay on the right side of the law, lower costs, and save lives."

However, Edmonston cautions boaters must still abide by the current standards when using older life jackets marked with the Type I-V labeling, as they will remain legal for use. "We must continue to have a properly fitted life jacket for all aboard, and as always, you'll need to follow the label's instructions regardless of when it was made. Simply put, if you follow the label, you're following the law." A full list of the current life jacket types and descriptions can be found at BoatUS.org/life-jackets, and any update on new life jacket types and styles will be posted here when available.

In additional effort to help change the mindset of what a life jacket must look like, The BoatUS Foundation, the Personal Floatation Device Manufacturers Association (PFDMA) and the National Marine Manufacturers Association (NMMA), recently kicked off a "Innovations in Life Jacket Design Competition" to seek out the newest technologies and design ideas. Running through April 15, 2015, the contest seeks entries from groups or individuals, including collegiate design programs, armchair inventors or even boat and fishing clubs. Entries may be as simple as hand-drawn theoretical designs to working prototypes and will be judged based on four criteria: wear ability, reliability, cost and innovation. For more, go to BoatUS.org/design.

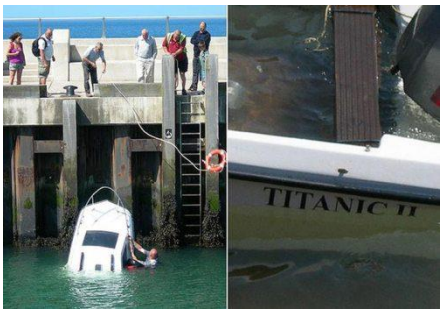
North Carolina requires anyone younger than 13 to wear an appropriate life vest when on a recreational vessel that is underway. Anyone riding a personal watercraft or being towed by one must also wear an appropriate life vest.

Speed Limits and Reckless Operation:

Although local conditions may warrant the imposition of definite limitations on speed of vessels, a general speed limit is that which is implied in safe vessel operation under existing circumstances. Speed which is excessive under the circumstances, and which endangers persons or property, is one form of reckless operation which is prohibited by North Carolina boating law.

Watercraft entering, leaving or passing within 50 yards of a state-owned or controlled boating and fishing access area must do so at "no-wake" speed.

No person shall operate any motorboat or vessel, or manipulate any water skis, surfboard, or similar device in a reckless or negligent manner so as to endanger life, limb or property of any person.



Navigation Rules

The State of North Carolina adopts and enforces all federally mandated boating safety laws. Every vessel operating in the State of North Carolina shall carry and use safety equipment in accordance with U. S. Coast Guard requirements as specified in the Code of Federal Regulations. Additionally, every vessel shall display the lights and shapes required by the navigation rules.

Diving and Snorkeling

All divers, in waters open to boating, shall display a diver's flag (red with white diagonal stripe) in the area in which the diving occurs. They may not display the flag when not engaged in diving or at any location where it will unreasonably obstruct navigation. Boaters should stay at least 50 feet away from a diver-down flag.

Water Skiing

No person shall tow a person on water skis, surfboards or similar device in a reckless and dangerous manner, while under the influence of an impairing substance or where the direction or location of the device may be manipulated or controlled from the boat so as to cause the person being towed to collide with any object or person

Water Skiing is prohibited between one hour after sunset and one hour before sunrise.

The vessel towing the skier shall be equipped with a rear vision mirror or carry an observer (not the boat operator), or the person being towed is wearing a PFD.

North Carolina and federal boating laws are presented in a summarized form. The laws in their entirety can be found by consulting North Carolina State Law.

These laws are subject to change. It is the responsibility of the operator to be aware of the most current laws when using a boat.

Certain bodies of water in North Carolina have local restrictions as to type and size of watercraft or motor horsepower, restricted use areas, boat speed, and times for use. Check with the local authorities for these additional restrictions.

http://www.ncwaterways.com/boating/regulations.htm

Boating Safety FAQ:

Q: What is a NASBLA-approved boating course?

A: The National Association of State Boating Law Administrators (NASBLA) is responsible for the review and approval of recreational boating safety courses in the United States. NASBLA-approved courses must meet National Boating Education Standards 1 through 7, and 9. All states and territories must maintain their state-specific topics in standard 8. All recreational boating safety courses approved by NASBLA are recognized by the U. S. Coast Guard.

Q: Does the Coast Guard approve boating safety courses?

A: No. NASBLA is responsible for the review and approval of Boating Safety Courses in the United States. All recreational boating safety courses approved by NASBLA are recognized by the U. S. Coast Guard.

Q: Is my boating safety certificate valid to operate a boat in another state?

A: The certificates are recognized by most states, which extend reciprocity as long as the issued boating safety certificate is NASBLA-approved. This reciprocity applies to operators of powerboats, but not in all states to operators of Personal Water Craft (PWC). Check the boating laws in the state you plan to visit prior to operating a boat or PWC there. Visit www.nasbla.org to find state-specific laws and regulations, as well as contact information for the boating authority in each state and territory.

Q: How can I find a boating safety course offered by the Coast Guard Auxiliary?

A: Visit the United States Coast Guard Auxiliary website to locate a course offered near you: http://www.cgaux.org/boatinged/class_finder/index.php

Q: How can I find a boating safety course that is offered by the U.S. Power Squadrons?

A: Visit the United States Power Squadrons? Website to find a course offered near you: http://www.usps.org/cgi-bin-nat/eddept/cfind.cgi

Q: What is a Vessel Safety Check?

A: A Vessel Safety Check (VSC) is a courtesy examination of your boat (vessel) to verify the presence and condition of certain safety equipment required by state and federal regulations. The volunteer VSC examiner may also make recommendations and discuss safety issues that can make you a safer boater. No citations will be given if the boat does not pass. The examiner will supply you with a copy of the evaluation so that you may follow up with any recommendations. Vessels that pass the examination will be able to display the distinctive VSC decal. The decal does not exempt boaters from law enforcement boarding but indicates to boarding officers that the boat has been examined and found to be in compliance with safety equipment regulations. Captain Harry also arranges Vessel Safety Checks at any convenient time as well as hosting an annual Boating Safety Check day.

Q: What agency is responsible for performing a Vessel Safety Check?

A: The volunteer Vessel Examiner is a trained specialist and a member of either the U.S. Coast Guard Auxiliary, United States Power Squadrons, or in some cases state volunteer examiners.

Q: How can I get my recreational vessel inspected by the U.S. Coast Guard Auxiliary?

A: Visit the Vessel Safety Check website at: http://www.safetyseal.net. Click on the tab labeled "I want a VSC." Enter your 5-digit ZIP Code and the program will search the database to locate examiners closest to your location.

Q: How can I find boating laws applicable to another state?

A: Visit http://www.nasbla.net/referenceguide/ and check the state-by-state reference guide.

Q: What are the specific size-criteria for my boat to be Coast Guard documented?

A vessel must measure at least five net tons and, with the exception of certain oil spill response vessels, must be wholly owned by a citizen of the U.S. Net tonnage is a measure of a vessel's volume. It should not be confused with the vessel's weight, which may also be expressed in tons. Most vessels more than 25 feet in length will measure five net tons or more. For information about how tonnage is determined, including a web-based interactive form that calculates tonnages, visit the U.S. Coast Guard Marine Safety Center's web site at the Marine Safety Center's Tonnage Page.

Q: How do I document my vessel?

A: Visit the following website: http://www.uscg.mil/hq/cg5/nvdc/ it will provide you with all of the information you will need to document your vessel. You can download all necessary forms.

Q: How do I order a copy of the Navigation Rules (Rules of the Road)?

A: To order a copy of the Navigation Rules - Commandant's Instruction M16672.2E, call the Government Printing Office at (202) 512-1800 and provide the GPO stock number (050-012-00407-2). The GPO will advise you of the required fee.

Q: Is it required to have registration numbers on a 12-foot Jon boat with a 3 HP gasoline motor?

A: In general, all recreational vessels that are propelled by machinery must be registered in the state of their principal use. The exceptions are:

a. Foreign vessels temporarily using waters subject to U.S. jurisdiction;
b. Military or public vessels of the United States, except recreational-type public vessels;
c. A vessel whose owner is a State or subdivision thereof, which is used principally for governmental purposes, and which is clearly identifiable as such;
d. Ships' lifeboats; and
e. A vessel which has or is required to have a valid marine document as a vessel of the United States.

Q: When should I energize or display my navigation lights?

A: Navigation lights are to be energized or displayed, from sunset to sunrise and when operating in or near areas of restricted visibility (fog, snow, heavy rain, etc.).

Q: What are the federal regulations for life jacket wear for children?

A: On a vessel that is underway, children under 13 years of age must wear an appropriate U.S. Coast Guard-approved wearable life jacket unless they are below deck, or within an enclosed cabin.

Q: Do I need a horn on my boat?

See a Boater's Guide to the Federal Requirements for Recreational Boats for the types of sound producing devices required for your specific vessel. A vessel of less than 39.4 feet (12 meters) must, at a minimum, have some means of making an efficient sound signal – i.e., handheld air horn, athletic whistle, installed horn, etc. A human voice/sound is not acceptable. A vessel 39.4 feet (12 meters) or greater, must have a sound signaling appliance capable of producing an efficient sound signal, audible for ½ mile, with a 4 to 6 second duration.

Guide to PWC Safety

First, a word about today's PWC technology. With clean and quiet four-stroke motors, comfortable seating, stable decks and a long list of improved safety features, the PWC being sold today really have earned the title "Next Generation." With the proper education, riders can use PWC in new, exciting ways including watersports like skiing and wakeboarding, fishing and even camping expeditions.

The unique nature of a PWC requires a basic understanding of operating procedures. Before grabbing the throttle, it is important to learn about responsible riding. You see, riding responsibly is not just about protecting yourself, it's about being aware (and honest) about your skill level, conscious of your boat and the wake it leaves behind, considerate towards other boaters and being sensitive to marine life.

There are lots of different rules that you should know before leaving the dock, but here's one you need to know about PWC....they never have the right of way. Long story short, boats under power give way to sailboats and paddlers like canoes and kayaks. And the shorter and more maneuverable the powerboat, the lower on the pecking order you are. In other words, PWC riders always have to give way to other boats. Never assume the other guy will dodge you...take evasive action and get back to the fun.

As PWC owners & riders, you may think our impact on the environment doesn't really matter. After all, it's a smaller boat, without a propeller, that gets better gas mileage. But every little bit does add up, and by following a few basic guidelines (and encouraging our fellow riders to do the same) we can make a difference and still have a great time on the water.

When it's possible, try to refuel on land to reduce the chances of spilling oil or gas into the water. Spills can harm the water's delicate microorganisms as well as the animals that feed on them, potentially upsetting the entire food chain.

Although PWC don't have exposed propellers to potentially chop up underwater vegetation, you can still stir up sediment and disturb delicate ecosystems in shallow water. Plus, weeds, grasses, sediment and trash can wreak havoc on your boat's jet pump and impeller, ultimately causing damage to your engine.

Riding too close to the shoreline, docks and boathouses, and swimming areas is not only rude, but it feeds any negative perceptions of PWC riders. Help keep access available to everyone by operating your boat in a courteous manner.

Steer clear of any and all wildlife. Anything that will cause an animal to deviate from its normal behavior such as interrupting feedings, nesting or resting — and especially chasing — is just wrong and may be illegal in your area.

One of the biggest issues with creating a wake near the shoreline is erosion. Whether it's an environmentally sensitive marsh area or a homeowner's beach area, you can do more damage than you might think. Follow all posted wake, operation and access restrictions to minimize your impact.

Avoid docking or beaching near plants which are essential to the local ecosystem because they help control erosion, they provide a nursery ground for fish and wildlife.

At an average length of around 10 feet, personal water (PWC) may seem small, but they come with some pretty big responsibility. With the horsepower of a large outboard engine and the acceleration of a motorcycle. PWC are not toys. In fact, the U.S. Coast Guard considers personal watercraft Class A vessels, which means all safety equipment and operation laws that apply to boat under 16 feet also apply to a PWC. Most states have operator age and education requirements, too.

Required Equipment for A PWC

A life jacket for each operating passenger, and person being towed

A Coast Guard-approved B-1 fire extinguisher

An approved sound-signaling device such as a whistle or horn

An emergency engine cutoff lanyard attached to the operator

Proper display of registration numbers, letters and validation decals

A functioning backfire flame arrestor and passive ventilation system

Recommended Safety Equipment

Hand-held VHF radio or cell phone.

A basic first-aid kit

An anchor and enough anchor line for your area

If pulling a skier or other tow-sport participant, a skier-down flag; rear–view mirrors may also be required.

When operating on inland waters, it's recommended you have a suitable, daytime distress signal such as flares, an orange flag, or signal mirror.

For more on Rules of the Road, take a boating safety course. For online study materials and a safety course or to find a classroom-based class near you, click on the Educational Programs at www.BoatUS.com/Foundation.

Personal Watercraft Law

The N.C. General Assembly enacted a personal watercraft law that took effect Dec. 1, 1999. On June 30th, 2000 this law was amended. Below is a summary of the law:

Who Can Operate a PWC?

Anyone 14 years old but younger than 26 can operate a PWC if they meet one of the following requirements:

- they have successfully completed an approved boating safety education course (proof of age and safety course completion must be carried during operation)
- they are riding with a person who is at least 18 and is in compliance with the Boating Education Requirement Law (G.S. 75A-16.2)
- It is unlawful for the owner of a PWC to knowingly allow a person younger than 16 to operate a PWC unless they have first completed an approved boating safety education course.
- It is unlawful for anyone who has temporary or permanent responsibility for a person younger than 16 to knowingly allow that person to operate a PWC unless they have first completed an approved boating safety education course.

PWC Operation

If the PWC is equipped with a lanyard-type engine cut off switch, the lanyard must be worn by the operator at all times.

A PWC must have a rearview mirror or an observer on board besides the operator to legally tow someone on skis or similar device.

PWCs must be operated at all times in a reasonable and prudent manner. Maneuvers that endanger people or property constitute reckless operation.

No person shall operate a personal watercraft on the waters of this State at greater than no-wake speed within 100 feet of an anchored or moored vessel, a dock, pier, swim float,

marked swimming area, swimmers, surfers, persons engaged in angling, or any manually operated propelled vessel, unless the personal watercraft is operating in a narrow channel (see below).

No person shall operate a personal watercraft in a narrow channel (see below) at greater than no-wake speed within 50 feet of an anchored or moored vessel, a dock, pier, swim float, marked swimming area, swimmers, surfers, persons engaged in angling, or any manually operated propelled vessel.

No person shall operate a PWC towing another person on water skis or similar device unless the total number of persons operating, observing, and being towed does not exceed the number of passengers identified by the manufacturer as the maximum safe load for the vessel.

Reckless Operation:

Unreasonable or unnecessary weaving through congested boat traffic.

Jumping the wake of a vessel within 100 feet of the vessel or when visibility is obstructed.

Intentionally approaching a vessel in order to swerve at the last moment.

Operating contrary to the "rules of the road".

Following too closely (see below) to another vessel, including another personal watercraft.

Following too Closely

The term "following too closely" means proceeding in the same direction and operating at a speed in excess of 10 miles per hour when approaching within 100 feet to the rear or 50 feet to the side of another vessel that is underway unless that vessel is operating in a narrow channel, in which case a personal watercraft may operate at the speed and flow of other vessel traffic.

Boating With Your Infant & Children

5 Helpful Tips for Getting your Newborn Out on the Water

Spin Sheet Magazine recently shared some good tips for sailing with your kids: start early, make it fun, provision ahead of time, and be flexible with the weather. As grandparents of 3 boys who love boating on Lake Norman, Barbara and I got our jump start on family boating early and proudly boast that all of our grandsons went boating before they were 4 months old.

We all have many questions about boating with an infant: What is the smallest lifejacket size? Can babies use sunscreen? What do we do when it is nap time? What about those smelly diapers? Keeping the baby comfortable, feeding and more.

I'm proud to say that all of our grandsons are boaters. The season and weather are insignificant! Growing up, boating as a family was an amazing experience to me and that continued with my daughters who began boating before long before they could walk. I am one of those who has earned being in the 4 generations of boating club.

Infants and dogs seem to have a commonality on the water – they love the feeling of wind and it is not uncommon for that little tongue to pop out as if they were tasting the wind. I guess wind tastes good because those tastes were often followed by a giggle (from the baby).

Are the logistics of boating with an infant keeping your family on shore? If so, I hope the following tips will help your family cast off.

Physical Safety

Avoiding drowning is, of course, a big concern. A lifejacket is an obvious answer, but I've yet to find a true infant sized lifejacket. Fortunately, U.S. Coast Guard-approved infant lifejackets are readily available and while bulky, wearable. That said, keeping the baby safely in the boat (and out of the lake) was key. It was important to determine where a small baby would sit and how we could avoid dropping them. I've read that a car seat or bouncer tightly lashed to the base of mast down below or secured in the cockpit provided infants a good and comfortable place to sit.

Health Issues

It's very important to prevent sunburns in infants, but children's sunscreen labels indicate they are for infants six months and older. So, what can you do to protect your newborn while on the water? A UV sunshade, sun-protective clothing, a wide-brimmed hat, and quality baby sunglasses will help protect babies' skin and eyes. We found that a hat with a head strap will actually stay on. Since some sun exposure is unavoidable while boating and pediatricians can recommend non-chemical sunscreens. It is not easy to get an infant to wear a bulky lifejacket, wide-brimmed hat and sunglasses!

Infants are unable to regulate their body temperature effectively. To help, if you have a cabin boat, open cabin windows and use fans (small, battery-operated fans work well) to keep the air moving down below. Breathable fabrics also provide ventilation while keeping babies' skin covered. If your baby is going to be continually exposed, keep them under a Bimini top if possible and keep a small tub and cool water on hand. Dip a facecloth in cool water, wring it out gently and rub the baby's skin often. If the baby seems to overheat, a cool bath can reduce body temperature.

Sleeping

A car seat, bouncer, or infant hammock (rigged with a sideways preventer) can provide the baby a place to comfortably sleep while underway, especially if you have a cabin. For overnights, we've also seen families use a portable baby bed that rests between the parents or a Pack n' Play. The most effective seems to be cordoning off the V-berth with netting and following safe co-sleeping recommendations, such as those as outlined in Sleeping with Your Baby. If your vessel is an open boat, and your infant is sleeping on an elements-protected area of the deck or on a cushioned platform, keep a close touch on the body temperature and follow the above recommendations.

Diapers

Believe it or not, a well-ventilated cabin and using double plastic bags will keep those stinky odors at bay. For changing diapers, a foldable, contoured changing pad worked wonders for keeping the baby in place and messes off of the settee, deck or other areas of the boat. Do not be reticent to ask guests to move aside to provide a convenient and comfortable spot to change diapers.

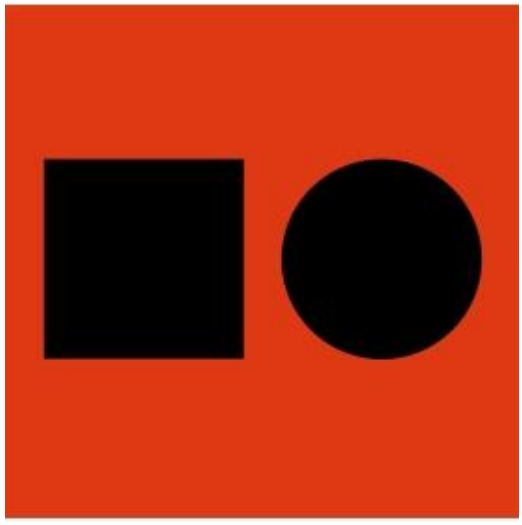
Emergencies

Perhaps one of anyone's biggest concerns is how to handle both the boat and the baby in an emergency. Our answer was to be prepared to single-hand (lines run aft, tiller lock/ autopilot, prepped for easy reefing and sail drops on sailboats); to have a safe spot for the baby (easily accessible seat able to be secured if necessary); and to have enough and competent people along to provide attending to the baby and the boat to be safely operated. It is a great thrill for a parent to take a child on a boat and enjoy the solitude of one-on-one time, but it is clearly putting everyone at risk.

But there's more.

We have an impressive population of children, of all ages, in our club. As one barometer, the PYC Summer Camp program grew to a record number of campers last summer and is expected to grow more this year. And that doesn't include all of our children who boat and aren't part of our camp program.

Regardless of whether your child is an infant, toddler, pre-teen, teen, young adult and so on, we hope you will share stories and helpful tips. We included this topic to serve as the start of a continuing education exchange of boating safety tips between The Fleet Committee and our members. Please take time to pass along your thoughts, comments, recommendations, experiences and photos. Sharing experiences is one of the elementary platforms of learning.



CHAPTER 5 ----- SWIMMING IN A MARINA, ELECTRIC SHOCK DROWNING

Of all Boating Safety topics, the advisory and regulation of no swimming in marina fairways, between docks or anywhere near slips, docks, fuel areas or other marina locations where boats are tied up and Electrical Shock Drowning are discussed so frequently, they should be allocated their own horn blast sequence. PYC is vigilant in keeping these two focusses at the forefront of awareness to the staff and members. We are fortunate that Captain Harry is dedicated to heightening both member and other boating organization awareness and has become a noted expert author of many articles on Electrical Shock Drowning (ESD).

If there is any one topic that should be required reading for any marina resident, this is it! Here is a recently published article, written by Captain Harry and is only one example of why he is known as "The Bright Beacon of Boating".

"ESD (Electric Shock Drowning)

Individuals of all ages die due to electric shock drowning, a hidden killer around marinas and residential docks. My name is Harry Smith, Marina Manager at the Peninsula Yacht Club, 99.9% of people/boaters, from my on observation; don't think about the unseen danger at the dock.

So many people are simply not educated about the dangers lurking in water and it's important to know why!

Electrical current is supposed to enter the boat and return to the source such as the power pedestal on the dock. If this cycle is interrupted then electricity is likely to find another way back to the source. This can occur through the water. Current can escape into the water through power cords dangling in the water, metal through hulls, outdrives, etc. Knowing your boat and checking your shore power cord is very important and often over looked! Don't take things like this for

granted…something we all often do! Shore power cords and wires on the boat don't last forever. Like anything else things deteriorate over time. Cords become brittle, outer insulations can be worn or chewed away, leaving exposed wires. These exposed wires around the dock or on the boat can be very dangerous. **Swimming in the marina is prohibited for that reason!!** Swimming in marina is a constant battle…the hot summer sun is beating down and the natural thing is to want to cool off. We understand that a nice cool dip in the water can be refreshing…but it can also be fatal!

Remember current is trying to find its way back to the ground taking the path of least resistance. Unlike saltwater, freshwater is less conductive. Therefore in freshwater your body is likely to attract stray current! Saltwater is 50 to 1000 times more conductive than fresh water therefore ESD is less likely to occur. With the conductivity of saltwater the current is likely to travel around the body (not as conductive as saltwater), again taking the path of least resistance, to return to the source or ground. ESD is less likely to happen in saltwater unless you come in contact with a charged item. Items that that can become charged in any case are outdrives, metal fittings, dock latter's and most important the water around you, especially in freshwater. Most of the time the person never knows what is happening. Depending on the amount of current a person may lose the ability to speak, muscles may seize up therefore causing a person to ingest water, sink and drown! ESD is becoming more and more prominent around marinas and residential docks and we need to do our part to prevent this from happening! Power cords and boats need to be inspected! Inspections can save a life possibly your own. The beginning of each season is a great time to do dock side and boat inspections. The weather starts to be more tolerable allowing everyone to venture out to check their boat. Remember wherever there is electricity near water there is the potential for danger.

I have said many times before;

"When it happens it's too late!"

How to prevent ESD!

1. **Do not swim in and around a marina!**
2. **Find out if your boat is leaking current.**
3. **Inspect your boat and all power cords, wires, etc. regularly**
4. **Keep cords out of the water! (Cords under the dock are often forgotten.)**

Important facts about electrical current:

Current Level	Probable Effect On Human Body
1 mA	Perception level. Slight tingling sensation. Still dangerous under certain conditions.
5 mA	Slight shock felt; not painful but disturbing. Average individual can let go. However, strong involuntary reactions to shocks in this range may lead to injuries.
6-16 mA	Painful shock, begin to lose muscular control. Commonly referred to as the freezing current or let-go range.
17-99 mA	Extreme pain, respiratory arrest, severe muscular contractions. Individual cannot let go of an electrified object. Death is possible.

Current Level	Probable Effect On Human Body
100-2,000 mA	Ventricular fibrillation (uneven, uncoordinated pumping of heart). Muscular contraction and nerve damage begin to occur. Death is likely.
2,000+ mA	Cardiac arrest, internal organ damage, and severe burns. Death is probable.

Source: OSHA

For more information on ESD please check out the websites and articles below that I am sure you will find interesting and will put it all into perspective. “

Don’t let boating fun become a shocking experience

By Harry Smith

People of all ages die because of electric shock drowning, a hidden killer around marinas and residential docks. In my job as marina manager at The Peninsula Yacht Club, I observe that 99.9 percent of people think nothing about this about the unseen danger at the dock. And if it’s happening here, you have to believe it’s happening everywhere.

So many people are simply not educated about the dangers lurking in water and it’s important to know why.

Electrical current is supposed to enter the boat and return to the source, such as the power pedestal on the dock. If this cycle is interrupted, electricity is likely to find another way back to the source. This can occur through the water.

Smith

Current can escape into the water through power cords dangling in the water and through metal in hulls, outdrives, etc. Knowing your boat and checking your shore power cord is very important and often overlooked. Don’t take things like this for granted — something we all often do.

Shore power cords and wires on the boat don’t last forever. Cords become brittle and outer insulation can be worn or chewed away, leaving exposed wires. These exposed wires around the dock or on the boat can be very dangerous. Swimming in the marina is prohibited for that reason, which is a constant battle with the hot summer sun beating down and the natural desire to cool off in the water. This is where a cool dip in the water can be refreshing, but it can also be fatal.

Current will always follow the path of least resistence while seeking a way to the ground. Unlike salt water, fresh water is less conductive. Therefore, in fresh water your body is likely to attract stray current. Salt water is 50 to 1,000 times more conductive than fresh water, therefore ESD is less likely to occur. With the conductivity properties of salt water, the current is likely to travel around the body as opposed to through it. Electrical shock drowning is less likely to occur in salt water unless you come in contact with a charged item.

Such items include outdrives, metal fittings, dock ladders and most, importantly, the water around you, especially in fresh water. Often, the victim never knows he or she is being electricuted. Depending on the amount of current, a person may loose the ability to speak, muscles may seize and result in drowning.

Incidents of ESD are becoming more common around marinas and residential docks, but there are precautions you can take. Power cords and boats should be inspected. The beginning of each season is an ideal time to do dockside and boat inspections. Remember, wherever there is electricity near water, there is the potential for danger.

For more information about ESD, visit electricshockdrowning.org/ or boatus.com/seaworthy/magazine/2013/july/electric-shock-drowning-explained.asp.

Harry Smith is the marina manager at The Peninsula Yacht Club in

Current Level Probably Effect

- 1 milliamp Perception level. Slight tingling sensation. Still dangerous under certain conditions.
- 5 milliamp Slight shock felt; not painful but disturbing. Average individual can let go. However, strong involuntary reactions to shocks in this range may lead to injuries.
- 6-16 milliamp Painful shock, begin to lose muscular control. Commonly referred to as the freezing current or let-go range.
- 17-99 milliamp Extreme pain, respiratory arrest, severe muscular contractions. Individual cannot let go of an electrified object. Death is possible.
- 100-2,000 milliamp Ventricular fibrillation (uneven, uncoordinated pumping of heart). Muscular contraction and nerve damage begin to occur. Death is likely.
- 2,000+ milliamp Cardiac arrest, internal organ damage, and severe burns. Death is probable.

—Source: OSHA

CHAPTER 6 ----- BOATS

- **Boat Types**
- **Pros and Cons of Boat Type Designs**

I found researching boat types interesting as it included boat types that were once practical but due to technology, materials, design transformations rendered the predecessors obsolete. Many books exist on The History of Boating and History of Boat Designs. There's lots of information to write about given boating, as we read earlier, evolved 900,000 years ago, a mere 400,000 years from the evolution of our universe. That should help explain why boating is so popular. It's simply been around for a long time.

Fast forward from The Big Bang Theory to today, what types of boats are most common, what are their individual characteristics, how do we define the types of boats and are there significant plusses and minuses to boat designs?

All-Purpose Fishing Boats

Built for versatility, these boats can be used in both salt water and freshwater. They are designed to navigate many different types of waterways so you can pursue many different species of fish.

Aluminum Fishing Boats

Small lightweight and, durable trailer boats made of aluminum are most often used for freshwater fishing. Generally very simple craft, featuring riveted or welded aluminum hulls and bench seating, they can be operated in fish-friendly places - shallow water, coves, inlets - not many other boats can reach. Powered primarily by outboard engines, this type of boat offers both tiller and remote steering options.

Bass Boats

Bass boats have low, sleek profiles and are built to fish with two or three anglers on board. The minimum length of bass boats starts with 16 feet and can go up to 26 feet.

Bay or Flats Boats

These boats are popular in very shallow bay and coastal areas, very common in the Florida Keys and safely in water less than 2 feet and are ideal for fishing with two to three people on board.

Bowriders

These family boats are the most popular in the runabout/sportboat category and are equipped with extra seats and forward access to the bow, a convenient spot to relax and sun.

Cabin Cruisers

Recreational by nature, Cabin Cruisers are generally equipped with cooking, sleeping and bathroom facilities and are ideal for those who want to feel the sun above and the ocean below.

Center Consoles

These open fishing boats are built to take rough waters and commonly used for fishing. Rod holders, outriggers and other gear are common fittings onboard.

Canoe, Kayak, Paddleboard

A canoe is a lightweight narrow boat, typically pointed at both ends and open on top, propelled by one or more seated or kneeling paddlers facing the direction of travel using a single-bladed paddle.

A kayak is a small, relatively narrow, human-powered boat primarily designed to be manually propelled by means of a double bladed paddle. The traditional kayak has a covered deck and one or more cockpits, each seating one paddler. Their cockpit is sometimes covered by a spray deck (or "skirt") that prevents the entry of water from waves or spray and makes it possible for suitably skilled kayakers, to roll the kayak: that is, to capsize and right it without it filling with water or ejecting the paddler.

Stand up paddle boarding originated in Hawaii, is an offshoot of surfing, which enables surfers to paddle farther into the ocean. A just published 2014 report called it the outdoor sporting activity with the most first-time participants of any in the United States that year. Paddleboarding is a surface water sport in which participants are propelled by a swimming motion using their arms while lying or kneeling on a paddleboard or surfboard.

Cuddy Cabins

Cuddy cabins are ideal for day cruising, watersports, and other on-the-water activities such as fishing and swimming.

Deck Boats

Deck boats have wide deck to carry 8 or more passengers (like pontoons) but look and perform more like runabouts. They are powerful, making them excellent for skiing, tubing and wakeboarding.

Dinghies

Dinghies are small, easy-to-transport craft, most often used as companion boats for larger vessels.

High Performance Boats

High performance boats are the sleek sports cars of the boating world, offering high speeds and precise handling to boaters who prefer their thrills full throttle. Marrying big horsepower with sleek hulls results in boats that are equally at home slicing through ocean swells or tearing up inland lakes. Cranking offshore or simply relaxing in a cove, performance boats deliver lots of miles per hour.

Houseboats

Houseboats are designed to offer lake living on the water complete with spacious floor plans and modern amenities for entertaining, dining and sleeping.

Inboard Ski/Wakeboard Boats

Fast, wet and wild — inboard propulsion delivers the power and speed fans of water sports such as skiing and wakeboarding need.

Inflatables

Inflatable boats range in size from 8-foot dinghies for tenders to 30-foot high performance boats.

Jet Boats

Like bowriders and deckboats, they offer comfortable seating and sunning areas. They are distinguished from runabouts by their propulsion system, which is enclosed inside the hull.

Motor Yacht/Cruisers

Large boats equipped with powerful single or twin engines, these craft are ideal for ocean cruising, navigating large rivers or lakes, as well as entertaining at the dock, and can stay on the water for days.

Multi-Hull Power Boats

Featuring two or three hulls, rather than the more common single hull, multi-hull powerboats include designs for hardcore freshwater and saltwater fishing, as well as recreational and cruising, complete with expected amenities.

Personal Watercrafts

Lightweight and maneuverable, personal watercraft are manufactured in many configurations, engine powers and seating capacity.

Pontoon Boats

Pontoon boats give families with younger boaters a secure place to enjoy the ride or toddle about when at anchor, thanks to wide decks and "lay pen-like" side rails and gates. When equipped with larger engines they can be as quick as runabouts.

Sailboats

Sailboats differ from other types of boats in that they are propelled partly or entirely by wind; they use sails to transform the power of the wind into power that moves the boat through the water. The term sailboat covers a wide variety of sailing craft, each with its own characteristics and styles. In general, sailboats are distinguished by size, hull configuration, and keel type, number of sails, use and purpose.

Sportfishing Boats

These boats are great for pursuing fish! Often equipped with sleeping berths, a galley for cooking and plumbing for convenience, they have the capacity to stay on the water for days.

Trawlers

Facilities for sleeping, cooking and plumbing provide boating fun for weekends on the water with family and friends. They can handle big rivers, lakes and oceans on moderate days. Trawlers are known for their economical fuel consumption and traditionally cruise at around 8 knots.

Walkarounds

These boats may be the ultimate family fishing boats and are most popular in coastal waters, large bays and lakes where anglers want the combination of a cutty cabin and center console configuration. They are traditionally equipped with rod holders, livewells and steps to the forward deck to make it easy to follow a fish around the boat.

Below is a summary prepared by Captain Harry offering some pros and cons on some of the boat type designs.

Type of Vessel	Vessel Design	Pros	Cons
POWER	Cabin	Generator, good for sleeping, well for TV watching, movies, has bathroom (head) facilities, cabin offers get out of the sun opportunity, and boat offers heat and air conditioning and fresh water storage for shower or sink water.	Higher maintenance and expense cost compared to other vessels.
	Bow Riders	Open air, can be equipped with head and outdoor shower, smooth riding, good for towing people on inflatable water toys, Bimini top for sun protection, freshwater water system.	Exposure to sun, heat, storms, rain, etc. No privacy.
	Pontoon Boats	Great for small kids/infants, practical, roomy, comfortable, economical,	Exposure to sun, heat, storms, rain, etc. No privacy. Some do not offer fresh water storage.
SAIL	All types	Cabin, Fresh Water, Head, AC/Heat, Very peaceful and quiet,	Many moving parts, smaller sailboats may be unstable to inexperienced sailors.

CHAPTER 7----- ROPES & KNOTS

- **Learning The Ropes**
- **Tying The Knot**
- **Knots Commonly Part of Boating**

According to the Wikipedia definition, a rope is "a thick string, yarn, monofilament, wire or strands of other cordage that are twisted together to form a stronger line". Rope strands are plaited, twisted or braided together in a manufacturing process that has changed very little since ancient times.

For thousands of years, ropes in some form have been used as basic but essential tools in a wide variety of applications. Fossils and artifacts have been discovered showing that prehistoric man learned how to make rope-like products out of plant materials and put them to good use when he first tied that rock onto a stick and created an effective weapon!.

Since those early beginnings, a plethora of rope uses has evolved but perhaps their greatest contribution and widest range of uses have been in boating and boatmanship. Ropes used in boating are durable, re-usable and expensive. They are able to handle the heavy loads associated with mooring, berthing, towing, preparing for stormy weather and rough waters, and setting and manipulating sails of all sizes.

Today, any well-equipped commercial or recreational boat, no matter what its size, is stocked with ropes of different lengths and thicknesses and a competent boatmen knows when and how to put them all to good use. He also knows that, once a length of rope has been cut to suit a specific end-use, it undergoes a nautical name change – it now is referred to as a "line". Those ropes become anchor lines, mooring lines, tow lines, stern lines fishing lines and a host of lines to control and adjust those billowing sails so we can harness the winds and skim across the water.

Once a length of rope has been cut, the strands of material are subject to fraying and unraveling. To prevent this, the ends of rope made from natural fibers are tightly bound with twine and the ends of rope made from synthetic materials are heated so that the filaments fuse into a cohesive and hard mass.

Back in the olden days, ropes were all made from natural plant fibers like hemp, sisal, coir, reeds or cotton. Hemp, a fibrous plant from the cannabis family and a kissing cousin of marijuana, was the essential raw material back in the days when sailing ships ruled the seven seas. Hemp was used to make ropes and rigging and was also used to make canvas fabric for sails. The term "canvas" actually comes from the word "cannabis". Coir, the natural fiber lining the inside of coconut husks, has long been used to make ropes and cords. Way back in the 11th century AD, Arab writings described extensive coir use in

ropes and rigging for ships. It is still being used today to make fish nets because it is resistant to damage from salt water.

One problem sailors had with hemp products was that it tended to rot very easily after it got wet because it held moisture on the inside long after the outside dried.

It was necessary to apply a moisture barrier so hemp rope was treated with pine tar. The tarring process was very labor intensive so any sailor worth his sea salt had to know all about tarring. Tarring was also used in combination with rolling a person in a layer of feathers as a method of public humiliation.

The introduction of synthetic fibers in the 1950's ushered in a new generation of high performance manmade fibers. That could be chemically engineered to provide enhanced physical properties and tailor-make rope products designed for specific applications.

Today's high-performance products offer built-in advantages over ropes made from plant fiber. They do come at a higher cost but this is offset by better performance, very low stretch and longer life cycles. Before purchasing boat lines, it is wise to do some research into the available products. It is important to read the product descriptions to make sure that the performance specifications meet the requirements for whatever end-use is planned.

There are several different synthetic fibers used in nautical ropes. These are the most common:

Nylon

Although nylon was introduced back in the 1930's and was first used to make sheer hosiery, WWII forced a time-out in its broader usage and it was not until the 1950's that a host of other markets were being supplied with a range of nylon products. One of these was nylon rope and its introduction represented a major switch from rope made from plant fiber. Nylon rope does not deteriorate with age and is twice as strong as hemp. Even though it does stretch, that stretch is within acceptable limits for uses like anchor lines and mooring lines. One disadvantage is that nylon lines sink in water because of high density; this means that nylon lines and propellers should keep their distance!

For most docking and anchoring lines, nylon is a good choice. It has great strength, adequate "give" under heavy loads, and is relatively inexpensive. Besides being easy to handle, it also is not degraded by sunlight as much as some other synthetic materials.

Nylon rope comes in two different constructions: strands and braids. Three strand nylon lines are used for anchoring because of their greater stretch and resistance to abrasion while braided products are most commonly used for docking lines and sail rigging.

Polypropylene

This rope is often called “yellow rope”. It is used to tow all those water skis, tubes, dinghies and water boards. While polypropylene lines are almost as strong as nylon, they are more susceptible to degradation from ultraviolet rays so they may only be safe to use for one or two years. This short life cycle is offset by their major advantage: they float. This, together with their greater yellow visibility, is an important consideration when boaters are positioning any exhibitionist water-skiers or retrieving downed towlines.

Polyethylene

First manufactured in 1939, this fiber is similar to polypropylene but it has much better abrasion resistance. The ropes are usually made in smaller diameters. Since it floats, the uses include waterski towlines but it is also used in fishing lines and nets.

Polyester

Following its introduction in 1941, polyester became better known by its “Dacron” trade name. Dacron rope was first marketed in 1953. While it offers nearly all the same benefits as nylon rope, Dacron does not stretch as much, it is not weakened by water, and does not degrade in ultra-violet light.

The well-organized boater not only knows his ropes but he can put his hands on the right lines in an emergency or if quick action is needed for any reason. The Boat Owners Association of America recommends that an on-board rope inventory be color coded to avoid any confusion or last minute desperation hunt. Some boaters color code according to length while others code according to end-use.

Regardless of what those lines are made of or what they are being used for, safety is a most important six-letter word governing their handling and use. A heavily loaded rope under any level of strain should never be handled or controlled with bare hands. Even a small line wrapped around a finger can cause a serious injury if it is unexpectedly jerked or the boat suddenly is hit by a rough wake or rogue wave, Instead, lines should always be wrapped around a post or a cleat for a couple of turns to avoid exposing anyone to risks.

Tying the Knot

Once ancient man learn how to put rope-like products to work for him, he probably realized he needed to devise some way to keep them in place and some way to join lengths together. It did not take very long before necessity spawned the art of knotting. Literally thousands of different ways to tie knots have been created and they have been married to rope, twine, cord, string and any other linear materials providing sufficient flexibility to accommodate a host of different patterning for use in myriads of applications.

Knowing how to tie a secure knot is not exclusive to humans. Naturalists have recently found a gorilla nest suspended in a hammock-like structure made from vines and tied securely to tree limbs by a series of over two dozen knots. They were able to identify recognizable grannie knots and square knots. Some birds are also known to use knotted grasses to build and secure their nests.

The good news for recreational boaters is that you do not have to learn how to tie thousands of knots and you do not have to devote time and energy in an attempt to become your marina's knotting whiz-kid! It is only necessary to master the handful of knots that are most commonly used in boating activities and functions but, if you really want to become a knot expert, the knot bible was compiled by Clifford W. Ashley. "The Ashley Book of Knots" has 415 pages first published by Doubleday in 1944, it has become the world authority with more information than the average boater needs to know about knots.

In general, all knots fall into one of three classifications: 1) Loop knots make a bulge in a length of rope to keep it in place, 2) Bends tie two ropes together, and 3) Hitches attach and secure a length of rope to another object.

"Better to know a knot and not need it, than need a knot and not know it."

Knots Commonly Part of Boating

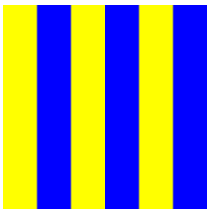
			
An excellent knot to use for attaching an anchor line to an anchor	Makes a secure loop in the middle of a piece of rope.	Makes a secure loop in the end of a piece of rope. Has many uses, e.g., to fasten a mooring line to a ring or a post. Under load, it does not slip or bind. With no load it can be untied easily	Joins two ropes together. Also makes the center of the very decorative Lanyard Knot
			
Secures a rope to a cleat. Deceptively simple and an unwary skipper who invites visitors to cleat a mooring line may be astonished and dismayed by the unsatisfactory results.	Secures a rope to a cleat. Deceptively simple and an unwary skipper who invites visitors to secure a halyard may be astonished and dismayed by the unsatisfactory results.	**Caution:** The Clove Hitch was, originally, included here with the intention of condemning it. It does have two giant faults: it slips and, paradoxically, can also bind. It should be deeply distrusted when used by itself.	Based on the Overhand Knot with one additional turn. It creates a reliable, moderately large, stopper knot.

			
Modern synthetic materials tend to be slippery and require a minimum of five complete tucks, seven tucks for mooring, tow and other long lines.	Provides a quick and convenient stopper knot to prevent a line sliding out of sight.	Provides a way to quickly and temporarily attach a mooring line to a dock post. It is secure and very rapidly cast off but not suitable for a permanent mooring.	Attaches a rope (usually smaller) to another (usually larger) when the line of pull is almost parallel.
			
Useful for attaching a mooring line to a dock post or ring although probably less secure than the Anchor (Fisherman's) Hitch.	Recommended for joining two ropes of unequal size. The thicker rope must be used for the simple bight as shown. It works equally well if the ropes are of the same size.	Modern synthetic materials, however, tend to be slippery. Minimum of five tucks is recommended.	Usually learned when we tie shoes. The underlying knot is a Square (Reef) Knot. We also learn just how unsatisfactory the knot is. It slips, it comes undone, it jams, and it is all too easy to tie a **Granny** instead which behaves even less well.

CHAPTER 8----- EDUCATIONAL AND USEFUL INFORMATION

- **Nautical Flags**
- **Download NOAA Charts - - FREE**
- **Time Travel – The Smithsonian Institute**
- **Flag Pole Etiquette**
- **All About Boat Language**
- **Glossary of Boating Terms**
- **Naming your Boat, Christening, Changing The Vessel Name**
- **Boat Name Examples**
- **Stupid Boat Names**

Nautical Flags



For thousands of years, mariners have devised ways to communicate with each other over vast ocean expanses. Even back in ancient Roman times, armies and navies signaled and communicated by waving a red cloak or a red flag. It was not until the 1700's that anyone tried to come up with a system in which different flags would be used singly or in combinations to transmit visual messages. A French naval officer was the pioneer who proposed a standardized code of flag signals but his idea got a very lukewarm initial reception. By the 19th century, several different signaling systems were in use. There was no consistency between them and seaman found it all to be very complicated and confusing. Eventually, the British Board of Trade stepped in and came to the rescue when it published the "Commercial Maritime Code" in 1857. This is an early version of what is still in use today and it consists of signal flags of different colors which can be used singly or in combinations to enable over 70,000 standardized messages. Today this original code has evolved into the International Code of Signals (ICS) which is in universal use.

Nautical flags come only five colors (white, black, blue, yellow and red) because these colors are better seen from great distance. The flags for the 26-letters of the alphabet can be applied in any language using the Latin alphabet. These letter flags are always square except for the letters A and B which have a triangular notch on the right side. You may see alphabet flags with crosses, checks or stripes on them; these designs convey different types of standardized messages and represent a form of messaging shorthand

The nautical flags for the numbers 0-9 are pennant or triangular shaped. They also use the same five colors. The number 1 and 2 flags have a circle in the center while the other numbers have straight line patterns. Individual numeric flags are not designed to convey any other information.

This basic set of alphabetical and numeric flags is supplemented by an additional 22 official flags used to communicate between ships. They represent words such as "port"

and “starboard”, to indicate turns or course changes, to answer “message received”. Or to signal “repeat the message”.

Recreational boaters seldom need to become completely nautical flag literate. For this reason, a dual flag signaling system has been developed for the inland recreational boater and the ocean-going vessel. This system has a different message, depending on where you are. But, just in case your boating ambitions stretch beyond the shores of Lake Norman and you want to rise to the challenge of big salty waters and wildly rolling waves, it would be wise to have condensed information on nautical flags and their dual meanings tucked away somewhere safely for speedy reference on your vessel. Familiarity does not always breed contempt and it might make interesting and vital re-reading someday when you are anchored on the Chesapeake Bay or on the Caribbean!

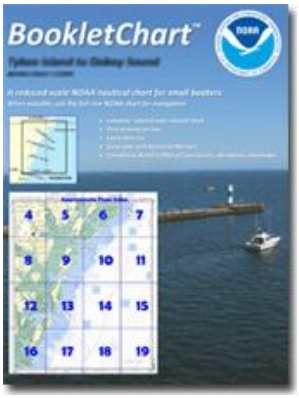
Sailing Fortuitous[1] is widely known as the complete nautical reference. It includes the International as well as a humorous set of meanings.

Flag	Phonetic	International Meaning	Modern Inland Meaning
	ALPHA	Diver down; keep clear.	Thank you for your wake.
	BRAVO	I am taking in, discharging, or carrying dangerous goods.	I am taking on rum.
	CHARLIE	Affirmative.	Yup.
	DELTA	I am maneuvering with difficulty.	I do not know my aft from my elbow.
	ECHO	I am altering my course to starboard.	I routinely confuse port and starboard.
	FOXTROT	I am disabled, communicate with me.	I wish ill upon your jet ski.
	GOLF	I require a pilot.	I am holding an extended conversation on channel 16.
	HOTEL	I have a pilot on board.	I am using autopilot to maintain collision course.

	INDIA	I am altering my course to port.	I routinely confuse port and starboard.
	JULIET	I am on fire and have dangerous cargo.	I've fallen; can't get up.
	KILO	I wish to communicate with you.	Hey. How's it going?
	LIMA	You should stop your vessel instantly.	I cannot hear you; my vessel is making 165+db.
	MIKE	My vessel is stopped.	Drinking since dawn; ignoring all laws/rules.
	NOVEMBER	Negative.	Negatory.
	OSCAR	Man overboard.	Water skiing through narrow channel; keep clear.
	PAPA	All persons should get onboard, vessel is about to sail.	Papa don't preach; in trouble deep.
	QUEBEC	My vessel is healthy	I am motoring despite good wind.
	ROMEO	(none)	(none)
	SIERRA	I am operating astern propulsion.	I am peeing astern.
	TANGO	Keep clear; I am pair trawling.	Bikini sighted; alter course to intercept.
	UNIFORM	You are running into danger.	She should have gone with the one-piece; evasive action.
	VICTOR	I request assistance.	Low on booze.
	WHISKEY	I request medical assistance.	Rum supplies stable; send rum.
	X-RAY	Stop carrying out your intentions.	Boat rocking; don't come knocking.
	YANKEE	I am dragging anchor.	I only have 12ft of nylon anchor rode.

ZULU I require a tug. I need a hug.

Download NOAA Charts



One of NOAA's handiest navigation products for recreational boaters has been the experimental nautical *Booklet Charts* that can be downloaded and printed from home computers. NOAA's Coast Survey moved, as of mid-2013, from the experimental stage to official production. Nearly 1,000 updated Booklet Charts are now available covering 95,000 miles of U.S. Coastline and The Great Lakes. The booklets contain most information found on full scale charts but in reduced scale. The print out as PDF's in 8-1/2" x 11" format. For chart downloading, visit http://www.nauticalcharts.noaa.gov/staff/BookletChart.html

There is no NOAA online chart for inland lakes, however, it is fun to download one of your favorite dream locations and take a look at the structure of the waterways.

Boating Museums

Museums are institutions that care for (conserves) a collection of artifacts and other objects of scientific, artistic, cultural, or historical importance and makes them available for public viewing through exhibits that may be permanent or temporary. Most large museums are located in major cities throughout the world and more local ones exist in smaller cities, towns and even the countryside. Museums have varying aims, ranging from serving researchers and specialists to serving the general public. The continuing acceleration in the digitization of information, combined with the increasing capacity of digital information storage, is causing the traditional model of museums (i.e. as static "collections of collections" of three-dimensional specimens and artifacts) to expand to include virtual exhibits and high-resolution images of their collections for perusal, study, and exploration from any place with Internet. The city with the largest number of museums is Mexico City with over 128 museums. According to The World Museum Community, there are more than 55,000 museums in 202 countries. Museums date back to 530 BC.

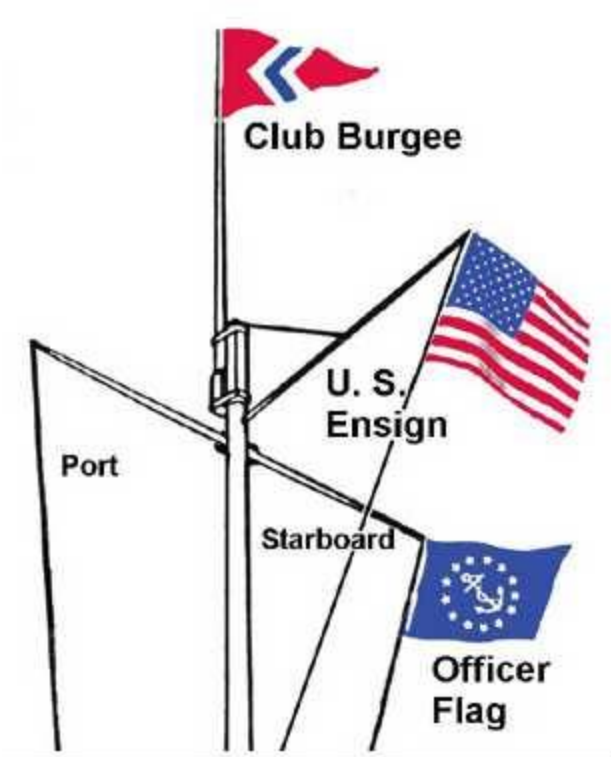
The Louvre in Paris tops the most visitors per year list at 9.4 million, followed by Washington's National Museum of Natural History at 8 million. The National Air and Space Museum is 4th with 7 million visitors. Among the group of museums is a strong representation of nautical related history which spans the globe and those who shaped the world of recreational boating, sailing, related technology, safety and that includes navigation.

There exists a great untold story of getting from here to there and The Smithsonian Institute's Air and Space Museum has answered the call with their **Time and Navigation** permanent exhibit. This exhilarating presentation of artifacts, learning resources, multimedia gallery and research includes Navigating at Sea, In The Air, In Space, Satellite Navigation, and Navigating for Everyone and the Timeline of Innovation. All of the information on the exhibit is available at: http://timeandnavigation.si.edu/.

It is difficult to pick a favorite segment of the exhibit. Navigating at Sea is the easiest for any yachtsman to relate to but all are incredibly well done and majestically fascinating. To whet your interest, the Navigating at Sea portion focuses on: Challenges of Sea Navigation , Navigating Without a Clock , The Longitude Problem , The U.S. Goes to Sea Navigate at Sea! Activity (Interactive).

Discussions will be initiated by The Fleet Committee regarding a PYC " land yacht cruise" to Washington to include a visit to this exhibit. Keep a lookout in The Watch for a survey and further details.

Gaff-Rigged Flag Poles



The motivation for including more information about Yacht Club flagpoles comes from the related article, published in The Watch, written by our Immediate Past Commodore, Chris Cawley.

"What is the proper way to fly flags on a gaff-rigged pole?" That is probably the most frequently asked question received by the USPS Flag & Etiquette Committee. Gaff-rigged poles are used by navies, boaters and yacht clubs around the world. Onshore, the "yacht club style flagpole" with a gaff represents the mast of a ship. A gaff-rigged pole may, or may not, have a yardarm or crosstree. A gaff-rigged pole with a yardarm is illustrated on the above flying a yacht club burgee and an officer flag.

Many people are confused about the proper way to fly the national ensign from a gaff-rigged pole. The national ensign should be flown from the gaff and the club or organization burgee should be flown at the masthead.

The gaff-rigged pole had its origins at sea. Because of all the sail carried by the rigging of these vessels, the flag of a nation could not be clearly viewed if it was placed at the top of the mast. The stern of the vessel was the position of command and the captain's quarters were located aft. As sails transformed, long booms sweep across the stern rail every time the ship tacked, so the ensign staff had to be removed when the ship was under way. Since the captain and other officers were still aft, the nearest position from which they found it practical to fly the ensign was the gaff. Over time, this became the place of honor to display the national flag. When the ship was moored, the ensign staff was set up again on the stern rail.

This was the practice in the eighteenth century, when the U.S. Navy was created. Now that warships are made of steel and the signal mast no longer carries a boom, our navy still flies the ensign at the gaff peak when under way and at the ensign staff when not

underway. There is no law specifying how a flag should fly on a gaff-rigged pole. Another of the long list of practices of today being based on long standing nautical tradition.

The usual argument given by those that think it is wrong to fly the national ensign from the gaff is that the national ensign is flying below a club burgee or other flag contrary to the Flag Code. Notice that even when the national ensign is flown from the stern of a ship, it is lower in height than other flags flying on the ship. When the ensign is flown from a gaff-rigged pole, a flag flown at the top of the mast is not considered above the ensign because it is not being flown directly above the ensign on the same halyard.

The ensign should be flown from the highest point of honor, and over time, that has become the peak of the gaff. Flying the national ensign from the top of the mast while flying another flag at the gaff would be flying another flag in a position of superior honor since the peak of the gaff is the highest point of honor.

There are several sources that document the proper use of a gaff-rigged pole. The first source is the USPS booklet How to Fly Flags, Nautical Flag Display. This booklet was written in consultation with the U.S. Coast Guard, Coast Guard Auxiliary, New York Yacht Club and other yachting authorities. The booklet can be obtained from USPS and other marine retailers. Section 2, Displaying Flags Ashore, states the following:

"The gaff of a yacht-club-type flagpole is the highest point of honor, as is the gaff of the gaff-rigged vessel it simulates. The U.S. ensign alone is flown there. Although another flag may appear higher (at the truck of the mast), no flag is ever flown above the national ensign on the same halyard (except the worship pennant on naval ships). The United States national ensign should be displayed

1. At the gaff of a mast or pole having a gaff

2. At the masthead of a mast with no gaff

3. At its own far right—the viewer's left—among multiple poles of equal height

4. At the masthead of the highest pole if one of the poles is taller than the others."

In regard to the orientation of the gaff, the sections states the following

"A mast should be installed as if it is the mast of a ship putting out to sea, i.e., heading toward an intended viewer. That is, the gaff should point aft. If you stand at the base of the pole looking forward (toward the intended viewer), the extremities of the yardarm are termed port (on your left) and starboard (on you right), just as they would be on a vessel. When the pole is associated with a particular building, the gaff (if any) should extend from the pole in the general direction of the building. Thus, if you stand in or next to the building looking at the pole, think of yourself as looking forward on a ship; the starboard side of the pole is on your right as you face the flagpole."

Chapman' Piloting, Seamanship and Small Boat Handling (probably the most widely recognized authority on recreational boating) also depicts a U.S. ensign correctly flying from a gaff-rigged pole. Chapman's states:

"The flagpole or mast of a yacht club is considered to represent the mast of a vessel, and the peak of the gaff, if one is used, is the place of honor from which the U.S. ensign is flown, just as if would be on a gaff rigged boat."

They continue:

"There has been some confusion because proper flag etiquette requires no other flag to be flown above the U.S. ensign, and obviously another flag, such as a yacht club burgee at the masthead, will be higher than the U.S. flag when the latter is at the gaff. This is entirely proper because 'above' in flag etiquette, means 'directly on top of."

Finally, the tradition of flying the national ensign from the gaff is used by the U.S. Navy. Paragraph 801 (b), "Display of the National Ensign at U.S. Naval Shore Activities", in the *Naval Telecommunications Procedures* document, *Flags, Pennants & Customs, NTP 13(B),* states the following on where to fly the national ensign:

"Display of the national ensign from various flagpole configurations is explained herein. The right side of a flagpole is determined by looking from the main entrance of the headquarters building to the pole

(1) Polemast - Flown from the peak. If peak is equipped with two halyards, flown from right side...

(2) Polemast with Crosstree - flown at peak of pole...

(3) Polemast with Gaff - Flown at peak of gaff...

(4) Polemast with Crosstree and Gaff - This is commonly called a "yacht club mast". Displayed from the gaff..."

Boat Language – Origin of Old Nautical Sayings

Just in case you have not noticed, serious and seasoned boaters have a unique boating language, unique names for ordinary and common objects that the rest of contemporary society calls by other names. To novice boaters, this might be interpreted as some secret and revered code by which knowledgeable and experienced mariners covertly communicate with each other. Do they speak this strange boating language and casually toss out all these unrecognizable name-tags in an effort to distinguish themselves and position distance between boating know-it-alls and boating know-it-not's? No such snobbery would be tolerated in respectable boating circles. Rather, it is all a matter of honorable history and ancient tradition!

Boating language is derived from a very long and rich maritime heritage. Many of the terms, labels and expressions have been around for hundreds and even thousands of years. Over time, some have been adopted and are currently used in applications having absolutely nothing to do with boats or boating. A classic example is the common practice of referring to a toilet as the "head". That goes all the way back to those 15th and 16th century sailing ships when the bow of the ship was called the "head". That is why all those carvings of buxom beauties mounted on the bow of those ships were called "figureheads". The ship's toilet was always located inside at the bow for a very good reason! Whatever was deposited in the toilet fell straight out into the sea and the waves breaking at the "head" (or bow) of the vessel would serve to flush and cleanse the hull. My introduction to The History of Boating Sanitation Devices.

Nautical Sayings

There are many other terms and expressions in use today having nautical origins. Besides the fact that some of these origins are very interesting to any avid boatman, they make excellent material that can be dragged out to re-charge the batteries for any boat-related conversation in danger of running dry!

Blue Monday	Sailors who were guilty of wrongdoings had these recorded in the Captain's daily log book. Punishment was administered on Monday - a "Blue Monday" indeed. Oftentimes the punishment was more severe than we would today claim to fit the crime.

Let the Cat out of the Bag	Today this expression usually means that you have said something to someone that you should have kept to yourself. In the days when sails ruled the oceans, such an expression brought fear to even the strongest sailor. The sailor would have been guilty of a crime that would have brought out the whip, or "cat-o'-nine-tails," from its bag, and a brutal whipping would be administered.
Carried Away	Today you might get so angry that you get "carried away," or become out of control. In sailing days, this expression meant that some piece of rigging had broken and was "carried away, potentially causing a loss of control.
The Bitter End	Nowadays we hold on "to the bitter end." In sailing language, the "bitts" were vertical wooden beams through which the anchor cables passed. If all the ship's cables were run out, the small amount that remained on board was referred to as "the bitter end."
Long Shot	"Not by a long shot" had its origins in naval warfare. Cannons employed in those days had an effective range of less than 50 yards. Thus anything in excess of this distance was considered "a long shot."
Windfall	Blessed is the person who comes into a "windfall," or unexpected sum of money. In sailing ship days, the Royal Navy reserved large tracts of land in Great Britain that had tall, straight trees for boat construction and for masts. If one tree blew down, however, the manager of this land could claim it for his own. A good bit of fortune or "a windfall" for him.
Posh	This is a term used today to denote the best accommodations. Aboard the vessels that sailed between India and Britain and through the stifling Red Sea, it was advisable to have a cabin that was on the shaded side of the ship. These were the highly prized cabins and the ones for which you paid extra. Thus, for the additional fee, your ticket was stamped "POSH" and meant "Port-Out, Starboard Home."

High and Dry	To be "high and dry" these days probably means that you feel out of your element. In sailing terms it means pretty much the same thing. A ship that was beached for repairs was said to be "high and dry" when the tide went out and allowed workers to repair the bottom.
Aboveboard	A person who deals honestly is said to be "aboveboard." When pirates sailed the seas, they had a rather sneaky practice of keeping many of their crew below decks. Thus, when a merchant ship loaded with treasure caught sight of a pirate ship, only a few crew members would be visible. The pirate vessel could then capture the luckless ship by employing their below-decks crew. Honest captains kept their crew "above board."
A-1	Nowadays this expression denotes the very best. Lloyd's of London, the world-famous insurance firm, adopted this expression to show that its vessels were A - in superior condition in regard to the ship's hull - and 1 - in the best condition regarding the gear.
Hands Off	This comes to us from the earliest period of sailing vessels. Sailors were considered a rough bunch who were not permitted to have weapons except when in combat. The one exception to this was a knife that was part of every sailor's kit bag. But should that sailor draw his knife in anger against another man, British Admiralty law dealt harshly with him - the man would lose his hand.

Glossary of Boating Terms

Whether you are on the water in a kayak, canoe, wakeboard, personal watercraft, sailboat or some type of motorized boat, it is your responsibility to know some basic boating terminology. This starter list might be a handy reference tool, simply interesting information, and a test of knowledge or an addition to learned information.

-A-

Abaft – towards the back of the boat
Adrift - floating with no means of propulsion
Aerate - to force air and oxygen into livewells to keep fish or bait alive. Also, to force air under the running surface of a hull
Aft - the rear of the boat
Aft cabin - sleeping quarters beneath the aft or rear section of the boat (sometimes called a mid
Aground - stranded in shallow water or on a sandbar
Alongside – by the side of
Aloft - above deck in the rigging
Aluminum fish boat - small, lightweight, durable trailer boat constructed of aluminum that is either welded or riveted; generally used for freshwater fishing
Anchor – a large metal hook used to keep the boat in place
Anti-fouling paint – a special paint applied to the boat's hull to prevent marine growth
Astern - the direction toward or beyond the stern
Aweigh - an anchor that is off the bottom

-B-

Backing down - maneuvering in reverse when offshore fishing while attempting to land a fish.
Bail - to remove water with a bucket or pump. Also, a component that controls fishing line on a spinning reel
Bait - anything used to attract fish like a worm, lure, or minnows put on a fishhook
….Bait station – an area on a fishing boat where the bait is prepared
….Baitwell - compartment on a fishing boat for holding live bait, usually with a pump to circulate the water and an aerator to provide oxygen.
….Ballast – weight added to the bottom of a boat to improve stability
….Bass boat - low-profile, outboard-powered boat, generally no more than 22 feet long and typically equipped with rod lockers, casting decks with pedestal seats and livewells
….Beam - measurement of a boat at its widest point. Also, a transmitted radio, sonar or radar signal.
….Bear off - to turn away from the wind
….Bearing - direction to an object
….Becalmed – motionless in a sailboat because there is no wind
….Berth - a place to sleep aboard a boat. Also, a boat slip.
….Bilge - lowest section inside a boat's hull where water collects.
….Bimini top – a canvas cover over the helm or cockpit area
….Binnacle – a lit area housing the boat's compass
….Bitt - vertical post extending above the deck to secure docking lines
….Bluewater fishing boat - mid-size to large deep-V boats suitable for offshore fishing. They are typically fitted with outriggers, fish boxes, aluminum towers, a host of electronics and large fuel tanks
….Boom – a wooden or metal pole attached at right angles to a mast and supporting the bottom of a sail

….Bow – forward portion of a boat
….Bow Eye - a stainless steel U-bolt on a boat's bow stem used to secure tow lines or trailer winch hooks
….Bow Stop - rubber blocks on a boat trailer on which the boat's stem rests
….Bowrider - a runabout boat with open-bow seating
….Bowsprit - a spar extending forward of the bow on a sailboat
….Bridge Clearance - distance from waterline to a boat's highest point
….Bulkhead - transverse wall in a boat that usually bears weight and supplies hull support
….Bunks - long carpeted sections of a boat trailer that support the boat's weight
Buoy - an anchored floating object that serves as a navigation aid. Also used to mark a mooring spot
Burgee - small flag that bears a yacht club's symbol

-C-

Cabin – a room in a boat
Camber curvature of a sailCan Buoy - cylindrical navigation buoy with a flat top, generally green in color
…Capsize - to flip a boat over
Capstan - a winch used for hauling heavy objects such as anchors
Cast off – to unfasten all lines in preparation for departure
Casting platform - elevated deck clear of obstruction used by anglers to make casts, often equipped with pedestal chairs
Catamaran - a twin hulled boat, either power or sail
Catboat - small, simple sailboat with one mast and sail set far forward Cavitation - inefficient low-pressure pockets on propellers form bubbles that collapse against the blades resulting in premature wear
Center console boat - fishing boat with the helm station located amidships for maximum walk-through space around the perimeter of the boat
Centerboard - a keel-like pivoting device, typically in a trunk, that can be lowered or raised to act as a keel
Channel - the navigable portion of a waterway.
Chart – paper or electronic navigational map
Chart plotter - electronic navigation device that displays charts for use in plotting a course
Chart recorder - an electronic depth sounder that records bottom structure data on paper
Chine - portion of the hull where the bottom and sides intersect (can be rounded or angled).
Chumming - placing fish or fish parts in the water to attract gamefish
Cleat – a wooden, metal or nylon peg on a boat. Dock or slip to which a boat's lines are attached
Clew – the after-most corner of a sail
Close-hauled - sailing as close to the wind as possible
Coaming - a raised edge, as around the cockpit or around a hatchway, to keep water out
Coast Guard Safety Package - basic safety gear required by federal law consisting of personal flotation device, throwable flotation device, visible distress signals, fire extinguisher and a horn, whistle or bell.
Cockpit - deck space for the crew of a boat, typically recessed
COLREGS - Coast Guard term for the navigation rules of the road; full name is International Regulations for Preventing Collisions at Sea
Come About - to tack or change heading relative to the wind.
Companionway - entryway from the deck to the belowdeck cabin area.
Convertible - a bluewater fishing boat typically more than 35 feet long with a full cruising salon, a fish-fighting cockpit and many other saltwater fishing features.

Corinthian – an amateur yachtsman
Counter rotation - the act of two propellers spinning in opposite directions on a single shaft.
Course - direction in which a boat is steered.
Cruiser - a boat with overnight accommodations.
Cuddy cabin - below decks accommodations in the bow area for overnighting and stowage.
Current - a stream of water running through a river or ocean
Curtains - attachable front and side enclosures that protect the helm area from weather.
Cutter - single-masted sailboat similar to a sloop, but with the mast farther aft to allow for a double headsail

-D-

Daggerboard – a keel-like device that is manually raised and lowered vertically without using a hinge
Davit - a small crane used to hoist a boat or dinghy or other object
Daysailer - small, open sailboat sometimes raced or short-distance cruised, primarily used for recreational sailing
Dead ahead - directly ahead of the bow
Deadrise - degrees of V-shape hull angle measured at the transom of planing powerboats
Deck Boat - blunt-bowed power boat generally characterized by an open deck and generous passenger seating
Deep-V - a hull shape characterized by a sharp deadrise, typically more than 20 degrees
Depth sounder - electronic sonar device that displays water depth
Deviation - the amount of error from displaying magnetic north in a boat's compass caused by the boat's own magnetic interference
Differential GPS (DGPS) - a highly accurate global positioning system (GPS) that utilizes a differential radio beacon and receiver to compute and correct the error of all visible satellites sending data to a conventional GPS unit
Dinette - a small dining area usually consisting of a table and facing bench seats; it can often be converted into a berth
Dinghy - a small sailboat often raced that can be sailed on and off a beach. Also a tender, either rowed or equipped with power, used to go to and from a larger vessel
Direct drive - an engine configuration in which the drive shaft runs in a straight driveline through the bottom of the hull
Displacement - the weight of water displaced by a hull. Also, a type of hull that smoothly displaces water as opposed to riding on top of it
Displacement hull - a hull shape designed to run through water rather than on top of it in the manner of a planing hull
Downrigger - a gunwale-mounted weighted line device used for deep-water trolling
Draft - vertical distance a boat penetrates the water
Drogue - a parachute-like sea anchor
Dry weight - weight of the boat without fuel and fresh water
Dual-console boat – a type of boat with twin dashboards separated by a centerline walk-through deck leading to the bow

-E-

EPIRB - acronym for Emergency Positioning Indicating Radio Beacon. When this electronic device is activated it transmits a radio signal with user registration data and positioning information to a network of satellites that assist the Coast Guard in conducting an emergency rescue.

Express cruiser - a cruising boat without a deck-level salon.

-F-

Fathom - nautical depth measurement equaling six feet

Fender – a cylindrical or round cushion used to protect the hull sides of a boat, typically used when tied up at dock

Fetch - to clear a buoy, point of land or object without having to make a tack

Fighting chair - a fix-mounted chair used to help land large gamefish on bluewater fishing boats equipped with a footrest, gimbal-mounted rod holder, safety harness and other fish-fighting gear

Fin Keel - a keel shaped like the fin of a fish that is shorter and deeper than a full-length keel

Fishfinder - electronic device that uses sonar to locate and display fish on a monitor

Fix - the position of a boat recorded in coordinates or bearings

Flare – a pyrotechnic device used to indicate distress. Also, the outward curvature of the sides on the bow of a boat

Flat-bottom boat – a type of boat or hull shape with very little or no deadrise

Flats Boat – a type of small, inshore saltwater fishing boat with moderate deadrise and draft, usually equipped with a raised platform aft used by a guide pushing a long pole to silently maneuver the boat through shallow tidal water

Flying bridge – a raised, second-story helm station, often located above the primary helm.

Following sea - wave pattern running in the same direction as the boat

Foot - the bottom edge of a sail

Fore - located at the front of a boat

Foredeck – the forward part of the main deck, ahead of the superstructure

Foul-weather gear - jacket, pants and hat used during inclement weather

Four-cycle engine - a gasoline or diesel powered internal combustion engine that takes four cycles or strokes of the piston to complete its power phase. Also called four-stroke engine

Freeboard - vertical distance between the waterline and the top of the hull side

Furling - rolling or folding a sail on its boom

-G-

Gaff – a metal pole with a hooked end used to boat a fish. Also a pole or spar that holds the upper portion of a four-sided sail

Galley - the kitchen area on a boat

Gelcoat - a combination of resin and pigment that comprises the smooth outside coating of a fiberglass boat

Genoa - an overlapping jib

Genset- another name for a gas- or diesel-powered electric generator

Give way - yield to other traffic

GPS - acronym for Global Positioning System, a satellite-based navigation system that uses transmitted signals and mathematical triangulation to pinpoint location.

Gunkhole - to explore creeks, coves, marshes or other shallow areas near shore

Gunwale - the upper edge of the side of a boat
Gybe - also spelled jibe. To change the course of a boat so that the boom swings over to the opposite side

-H-

Halyard - line used to hoist a spar or sail
Harbor master - the person at a harbor in charge of anchorages, berths and harbor traffic

Hard chine - a sharp angle at the intersection of the hull's side and bottom
Hard over -turning the steering wheel or tiller all the way in one direction
Hard-top - a large fiberglass roof or platform over the helm area
Hatch - a deck opening
Hauling - to lift a boat out of the water.
Hawse Pipe - fittings in the deck or gunwale through which the anchor rode or dock lines run
Head - toilet facilities or room where they are located
Head Seas - waves coming from the direction a boat is heading
Heading - the direction a boat is pointed
Headsail - any sail set forward of the mast
Headway - forward motion of a boat in the water
Heave - to pull on a line. Also to throw a line
Heaving to - setting the sails so the boat makes little headway, either used in a storm or a waiting situation
Heel - to temporarily tip or lean to one side.
Helm - area of a boat where operational controls are located
High-performance boat - a type of boat capable of running at high speeds, often equipped with high-horsepower and exotic propulsion systems, sometimes used for racing
Hike - to lean out on the windward side of a sailboat to achieve optimal speed by offsetting heeling.
Hitch - steel framework on a tow vehicle used to hook up a trailer
Hitch ball - the ball-shaped component of the hitch that fits into the trailer coupler
Holding Tank - storage tank for gray water
Houseboat - a large, flat-bottom boat with square sides and house-like characteristics, such as comfortable furniture and living accommodations
Hull - the structural body of the boat that rests in the water

-I-

Inboard engine - an internal combustion engine often mounted amidships that runs a drive shaft through the hull bottom
Inboard/outboard (I/O) - See stern drive.
Inflatable - capable of being inflated either with air as in a life raft or life vest
Inflatable boat - a type of boat with air chambers into which air is pumped either manually or automatically for buoyancy, some having rigid bottoms
Inverter – a device that changes 12-, 24- or 32-volt direct current (DC) from a battery to 120-volt alternating current (AC)

-J-

Jack Plate - a mounting device for an outboard motor that enables operators to vertically raise or lower the motor, thereby controlling propeller depth in the water.

Jet boat – a boat powered by an engine with a water-pump used to create propulsion

Jib – triangular sail projecting ahead of the mast

Jibe – (see gybe)

-K-

Keel – the bottom-most portion or longitudinal centerline of a hull

Ketch – a sailboat similar in appearance to a yawl with a tall main mast and a shorter mizzen mast ahead of the rudder post

Kicker motor - a small auxiliary outboard motor

Kill switch - a switch with a lanyard that automatically shuts off an engine if disconnected

Knot - speed measured in nautical miles per hour.

-L-

Laminate – a single layer of material used in multi-layered fiberglass construction.

Latitude - geographic distance north or south of the equator expressed in degrees and minutes

Leaning post - wide, padded bolster at the helm used instead of or in lieu of conventional seats

Lee - direction toward which the wind blows.

Lee side - the side of an object that is sheltered from the wind

Leeway - to slip sideways downwind while moving forward

Lifeline - safety lines on deck that are grabbed to prevent falling overboard.

List - a continuous lean to one side due to improper weight distribution

Livewell - compartment on a fishing boat designed to keep fish or bait alive.

LOA - Length overall; the distance between the most forward part of the boat and the most aft part

Locker – a stowage compartment, whether equipped with a lock or not.

Longitude - geographic distance east or west of the prime meridian expressed in degrees and minutes.

LORAN C – is an acronym for Long Range Navigation, an electronic navigation system that measures the time difference in the reception of radio signals from land-based transmitters.

Luff – the leading edge of a sail

-M-

Mainsail - the largest regular sail on a sailboat

Mast a vertical spar that supports sail a sail

MAYDAY - a radio distress call

Megayacht - a large, luxurious yacht, typically longer than 100 feet

Midships - location near the center of a boat

Mizzen Mast - a shorter mast located aft of the main mast on a yawl or ketch.

Modified-V Hull - a modification of the deep-V hull shape with a deadrise of less than 20 degrees.

Mold - a hollow reinforced cavity that is the mirror-image or reverse-image of the boat and into which fiberglass, gel coat and resin are laid during composite-hull construction

Monohull - a boat with a single hull

Mooring - permanent ground tackle fixed to a buoy to which boats can be tied

Motorsailer - a hybrid boat that has sails and powerful engines

Motoryacht – a large powerboat greater than 40 feet with luxurious interior accommodations for long-range cruising

Multihull – a boat with more than one hull, such as a catamaran or trimaran

-N-

Nautical mile - a distance of 6,076.12 feet, which is about 15 percent longer than a statute mile. Equivalent to one minute of latitude on a navigation chart.

Nun buoy - conical navigation buoy that is usually red

-O-

Outboard motor – an internal combustion engine mounted at the transom that incorporates motor, driveshaft and propeller.

Outdrive - the lower unit of a stern-drive motor that houses the drive gears and to which the propeller fastens

Outrigger – a pole designed to spread out fishing lines to keep them from tangling while trolling

Overboard - over the side of a boat and into the water

-P-

Personal Flotation Device (PFD) - a safety vest or jacket capable of keeping an individual afloat

Personal Watercraft (PWC) - a small, lightweight craft designed to be either sat-on or stood-on with motorcycle-like handlebars and squeeze throttle, usually jet-propelled

Piling - a post driven into the ground below the waterline to support a pier, dock, etc.

Pilot house - A fully enclosed helm compartment

Pitch - theoretical distance a propeller would travel in one revolution. Also, the rise and fall of a boat's bow and stern.

Planing Hull - a boat hull designed to ride on top of the water rather than plowing through it.

Pleasure Boating - recreational day boating in runabouts, deck boats, pontoon boats, bowriders and sportboats

Plot - to plan a navigation course using a chart

Poling Platform – a small elevated stand on a flats boat used by a fisherman to silently pole through shallow water and scout for fish

Pontoon Boat - a type of boat with a flat deck attached to airtight flotation tubes or logs

Port - the left side of a boat when facing the bow. Also, a marina harbor or commercial dock.

Power catamaran - a multihull powerboat with two identical side-by-side hulls

Power Cruiser - a powerboat with overnight accommodations, typically up to 40 feet long

Propeller – a rotating multi-blade device that propels a boat through the water

Pulpit - forward deck and railing structure at the bow of a boat

-Q-

Quarter - the after side of a boat from amidships to stern

Quartering - the practice of aiming the boat's bow at a 45-degree angle to oncoming waves

Quarters - living and sleeping areas of a vessel

-R-

Racer - a sailboat designed primarily for speed and competition with a minimum of built-in creature comforts

Racer/cruiser - a fast sailboat designed with comfortable accommodations.

Radar – This is shorthand for Radio Detection And Ranging, an electronic device using high frequency radio waves to detect objects and display their positions on a monitor.

Range - the distance a boat can travel at cruising speed on a tank of fuel. Also, the distance to an object. Lastly, in intracoastal navigation, a set of two markers that, when lined up one behind the other, indicate the deepest part of the channel.

Reach - to sail across the wind.

Ready about – the last warning given by a helmsman before tacking and turning the bow into the wind, notifying the crew that the boom and sail will cross the boat.

Resin - a liquid substance used in fiberglass composite construction that, when combined with a catalyst, bonds laminate materials together

Reverse chine - a chine that angles downward from the hull designed to direct spray out and away from the boat.

RIB (rigid inflatable boat) - an inflatable boat fitted with a rigid bottom

Rigging - wire cables, rods, lines, hardware and other equipment that support and control the mast and spars

Rocket launcher - a device designed for a fishing boat that bolts to the cockpit floor or is incorporated into a bench seat, to hold multiple fishing rods

Rod holder – a device designed to safely and securely hold fishing rods either vertically or horizontally

Rode - line, chain, cable or any combination of these used to connect the anchor to the boat.

Rubrail - protective outer bumper that runs around the boat at the point where the top deck meets the hull

Rudder - underwater fin mounted below the hull near the stern that controls boat steering

Runabout - a kind of small, lightweight, freshwater pleasurecraft intended for day use

Running lights - required navigation lights that a vessel uses at night to indicate position and status.

Running rigging - lines used in the setting and trimming of sails

-S-

Safety Chains - legally mandated chains that connect the trailer to the tow vehicle as a safety measure in case the coupler detaches.

Safety harness - a harness worn by a boater attached to the boat with a tether to reduce the chances of going overboard

Sail plan - arrangement of sails on a boat

Sailboat - a boat that is at least partially propelled by capturing the force of wind in sails

Salon – a full-sized, well-appointed cabin on the main deck level of a motoryacht, convertible or megayacht used for entertaining

Saltwater fishing boat - any fishing boat used in the ocean or coastal waters that is specially equipped to handle the harsh saltwater environment

Schooner - a large sailboat with two or more masts where the foremast is shorter than aft mainmast

Scope - the ratio of anchor rode to vertical depth.

Scuppers - gravity fed drain in a boat to allow water to drain out and overboard

Scuttle - to cut holes or open ports to purposely let water in to make a boat sink

Scuttlebutt - Gossip. So named after a water cask around which sailors used to gather to drink their grog.

Sea Anchor - a canvas, cone-shaped device deployed to keep the bow headed into the wind to help safely ride out a storm. Also called a drogue.

Sea cock - through-hull fitting with a valve between the interior and the exterior of the boat.

Seaworthy - ability to handle rough weather. Also called sea-kindly

Sedan cruiser - a type of large boat equipped with a salon and a raised helm or bridge

Selective availability - intentional degradation of GPS signal used for position fixing by the U.S. Department of Defense for purposes of national security. With selective availability turned on, positions can be fixed to about 300 meters. With selective availability turned off, positions can be fixed to about 100 meters.

Self-bailing - drains water overboard automatically

Semi-displacement hull - a hull shape with soft chines or a rounded bottom that enables the boat to achieve minimal planing characteristics.

Sheer - line of the deck or gunwale from bow to stern as viewed from outside the boat

Sheet - line used to trim a sail

Shroud - mast support rigging, usually a wire, that runs from the mast to the side of the boat

Side console - a dash-panel unit affixed to the side of a boat. If only one, helm controls are affixed to it.

Skeg - a fin or vertical projection below the hull that provides directional stability. Also, a fin-like projection at the bottom of an outboard.

Skiff - a small, simple, shallow-draft boat

Skiing/wakeboarding boat – low profile, pleasure boats with minimal deadrise specifically designed for waterskiing and/or wakeboarding. These boats are usually characterized by an inboard engine and a towing pylon. Wakeboard boats are often equipped with a tower or extremely tall pylon to fasten the tow line in a manner to aid vertical jumping and water-ballast devices to increase the weight of the boat.

Slip - a boat berth between two piers or floats. Also, the slight loss of efficient power delivery as a propeller spins in the water.

Sloop – a single-masted sailboat in which the mast is set forward of amidships

Sole - the deck floor

Sonar - acronym for Sound Navigation And Ranging, a method to locate objects and determine distance by transmitting sound waves through water and measuring the time it takes the echo to bounce back. Used in depth finders and fishfinders.

Sounding - Charted water depth

Spar - masts, booms, gaffs and poles used in sailboat rigging

Sportfish - a type of bluewater fishing boat with at least two sleeping cabins and many dedicated fish-fighting features

Spring line - a docking line attached amidships to control fore and aft movement

Stand by - an order to crewmen to be ready, be prepared

Stand on - maintain course and speed

Standing rigging - the shrouds and stays that support the mast but are not adjusted while working a boat

Starboard - the right side of the boat looking toward the bow

Stateroom - a room with sleeping quarters, a cabin

Statute mile – a distance of 5,280 feet, the standard measure of distance on land and most inland waterways

Stay - wire, rod or other rigging that runs fore and aft of the mast

Stem - the most forward section of the hull

Step – the socket that holds the base of the mast.

Stepped Hull – a high-performance hull design with lateral notches, or steps, in the keel

Stern - aft portion of a boat

Stern drive - propulsion system composed of an inboard engine connected to a steerable drive unit extending through a cut-out in the transom

Stow - to put an object away onboard a boat, to store

Strakes - small linear protrusions that run longitudinally on both sides of the keel to give a planing hull lift and lateral stability

Stringers - internal beams and braces that give a fiberglass hull structural support. Also several fish tied together with string.

Swamp - to fill a boat with water

Sway - side-to-side wandering of a trailer under tow

Swim platform - a wide platform at the transom equipped with a ladder to help ease the effort of re-boarding after going into the water

-T-

T-top - short, aluminum tower with overhead canvas to protect the helm

Tack - the lower corner of a sail. Also, each leg of a zigzag course

Tender - see dinghy

Through-hull - a fitting or object that goes all the way through a hull

Tiller - a bar connected to the rudder and used to steer the boat

Tiller handle outboard - a small, outboard motor that uses a handle fitted with engine controls to steer instead of a steering wheel.

Topsides - the hull above the waterline. Also, everything above deck as opposed to below deck

Transducer - an electronic sensing device mounted in a boat's bilge or at the bottom of the transom to provide data for a depth sounder

Transom - the rear section of the hull connecting the two sides

Transom Shower - a plastic hose and shower head located near the transom that draws from a fresh water supply

Trawler - a pleasure boat more than 25 feet in length with a displacement hull

Trim - the way a boat floats in relation to the horizon, bow up, bow down or even. Also, to adjust a boat's horizontal running angle by directing the outboard or stern drive's thrust up or down. Also, to set a sail in correct relation to the wind

Trim Tabs - hydraulically adjusted horizontal plates located on the bottom of the transom that control the trim angle of a boat at speed

Trimaran - a type of boat with three side-by-side hulls, the center of which is usually larger with crew accommodations

Trolling - to fish by towing an array of baited lines or lures behind the boat

True Wind - direction and velocity of wind as measured on land, distinct from apparent wind

Tuna Tower - tall aluminum tower used for spotting fish in the distance, often equipped with a second set of helm controls

Two-cycle Engine – a gasoline- or diesel-powered internal combustion engine that takes two cycles or strokes of the piston to complete its power phase. Also called two-stroke engine.

-U-

Underway - a boat in motion

Utility Boat - a type of small, open powerboat, constructed of either fiberglass or aluminum, with minimal features. These include jon boats, skiffs and work boats.

-V-

V-berth - a bed or berth located in the bow that has a V-shape

V-drive - propulsion system where the drive shaft initially runs forward into a gear box and then runs aft and down through the hull. The driveline forms a V-shape with the gear box at the pivot point.

Variation - compass variable that accounts for the difference in degrees between true north and magnetic north

Ventilation - air introduced into a spinning propeller from the water's surface

VHF - Very high frequency; a bandwidth designation commonly used by marine radios.

-W-

Wake - waves created by a moving boat

Walkaround – a type of offshore fishing boat with a small to mid-size cabin and a perimeter deck that allows easy passage around the entire boat

Waterline - the intersection of the hull and the surface of the water

Waypoint - the coordinates of a specific location

Weigh - to raise anchor

Windlass - rotating drum device used for hauling line or chain to raise and lower an anchor

Working sails - sails used in normal winds

-Y-

Yacht – a relatively small boat for pleasure cruises, typically from 40-89 feet long

Yachting - to cruise in a motor yacht

Yaw - to veer off course

-Z-

Zinc anodes - small pieces of zinc that attach to metal boat and engine components to help protect them from corrosion due to electrolysis, an effect caused when dissimilar metals are placed in a saltwater solution.

Boat Naming

From personal experience, I know that choosing a name for a new-born infant is a lot easier than picking a name for that new boat! With offspring, the mandate is relatively simple - to keep family traditions going for another generation, to honor someone special in your life, to go for a first name that flows trippingly off the tongue when it is hooked to the last name, or, in moments of utter desperation, to narrow the choice down to what you find on current popularity lists, and to keep peace within the family.

Naming a boat is a lot more complicated. Each and every boat has its own style and personality and each boat owner tries to complement that by assigning a name which is unique, clever and perhaps even memorable. This is serious business because the name sprawled across the bow or the stern also tells the rest of the world about the owner of the boat. Besides his or her individual style and personality, it often reflects imagination, originality, sense of humor and "good taste". Once you think you have arrived at a naming decision and before you have that name indelibly placed on the boat, it is a good idea to play it safe by running it by family and friends for their go-ahead signal. You might chart a different name course once you get some honest and impartial feedback. And it is important to remember that the name you choose becomes part of the vessel's official identity once you have it registered.

Ships are all traditionally female so it is not surprising that many of them are named for wives, daughters or girlfriends. Once the naming decision is over and done with, the next step is to plan the boat christening. There are some long-standing traditions about this ceremony. Since boats are female, a woman usually is invited to preside. Any and all remarks are made directly to the boat rather than the group of people (be mindful that the boat's feelings should not be hurt before she even has a chance to set out on her maiden voyage). The christening party gathers adjacent to the bow of the boat, a short speech announces the name (and, if necessary, explains why the name was selected), blessings are requested from whatever gods with whom you and your guests are on talking terms, wishes are expressed for calm waters, fair weather, and safe boating where-ever she goes and festivities conclude with a bottle of champagne being

"I'm from the Internal Revenue Service, and I'm here to audit you. Next time don't name your boat, 'I don't pay taxes.'"

smashed against the bow of the boat. This does not have to be an expensive label - since everyone knows buying, operating and maintaining a boat comes at a cost, a cheap bottle of wine could be an acceptable substitute!

I am grateful to Hall Marine of Lake Norman for teaching me the appropriate, nautical and female correct ceremonial requirements for christening vessels and for allowing me do conduct their yacht christenings for the past 3 years. I am proud to be invited to preside over the christenings given I'm a male and to be able to modify several of the traditions for both added safety and enjoyment. I do not ask the owner to break the champagne (cheap or otherwise) over the bow. Too large of a possibility of chipping the fiberglass Gelcoat. Our tradition is to break it on one of the stern cleats. Allows for easier in-the-water christening and better photos. Next we added, thanks to Hall Marine, a cocktail reception with food after the christening. We friends and family of the christening yacht need fuel too.

Changing the Boat's Name

Mariners have believed for a long time that it is bad luck to change the name of a vessel.

To support this, they are quick to point out that the Titanic was never christened or that the USS Arizona was christened with water rather than wine or champagne. They stress the importance of getting it right the first time! But what if, for whatever reason, that initial boat name simply has to go? Boating encompasses that possibility with a whole different set of un-naming and re-naming traditions.

According to seafaring legend, each and every vessel has its name recorded in "The Ledger of the Deep" presided over by Poseidon or Neptune (you can take your pick). That old name must be purged from the ledger by removing every trace of it from the vessel. It is not enough to simply paint over the old name; it must first be sanded or scraped off the boat.

If you believe in superstitions, write the old name on a piece of paper, fold the paper up, put it in a little cardboard box, burn the box, scoop up the ashes and throw them into the water. If you live or boat at the coast, make sure the tide is outgoing. If you live or boat on a lake, make sure to do this at night during a full moon. If you live or boat on a river, be sure

to send the ashes downstream. Once all those old names have been put to rest, it is safe to go back to the traditional christening ceremony with the new name. H'm, better watch out for those re-naming cruises on Lake Norman the next time there is a full moon!

If you need some pointers about selecting that boat name, here are some helpful hints or rules to guide you:

Hint 1. The shorter the better. This is especially true in an emergency situation when every second counts as you call for help. The sailboat community advocates one-word names.

Hint 2. Don't tempt fate. Names such as "On the Rocks", "Bottoms Up" or "Titanic II" are best avoided.

Hint 3. Check with your mate. Before you name your boat after your wife, make sure she is willing to share her name and make sure she loves that boat as much as you do!

Hint 4. Honor thy neighbor. Even when you cannot be completely original, at least avoid copycatting another boat in your marina or owned by your friend. Not only is it silly to duplicate names on the same waters, it is also confusing.

Hint 5. Check the dot.com availability. See if that candidate boat name is free for use as a computer domain address. This is especially useful if the boat is a cruiser, charter or live-aboard or if you race it, share ownership, or simply want to blog about your boating life and adventures.

Hint 6. The Aquaholics. Within your local community of boaters, you are going to be called or referred to by the name of your boat. If a boat is named "Mary Jane", the owners are going to be called "The Mary Jane's" or if the boat is "Jenny II", the owners become "The Jennies". So, if you boat is named "Aquaholic", do you and your family really want to be known as "The Aquaholics"?

Hint 7. NSPV and IEO. These acronyms for "Not Suitable for Public Viewing" and "Inappropriate for the Easily Offended " apply to boat names that should be avoided. They are unsuited to any boating situation where children are participants and they are sources of embarrassment when other family members, friends and neighbors, clients or customers, bosses or colleagues are sharing boating time as your guests.

Hint 8. The VHF Test. Imagine that you suddenly have a boat-related emergency and you are using the VHF radio to call for help from anyone who is listening – the Coast Guard, Sea Tow, Boats US, PYC or nearby boaters. Now add static and other background noises to your broadcast. Is your boat name short, sweet, clearly annunciated, easy to understand? Your safety (or perhaps even your life) could depend on it!

And because there is always one that generates silence then a robust laugh when presented, a yacht that resided at a century's old yacht club in Stamford, Connecticut, owned by a stalwart gentleman was named "Passing Wind." About 10 miles to the west of his location in the Florida Keys is the Looe Key Passage. A crew member was hit by the boom the owner radioed the Coast Guard. "What is your name and position?" "We are Passing Wind and in the Looe".

Stupid Boat Names

A while ago, I came across the Top 10 Boat Names according to Boat US. So I did some digging around, found some other dumb names and compiled a list.

- Adoryble *(On a Cape Dory Typhoon)*
- All Gulls and No Buoys
- Bay Bee
- Baysic Necessity
- Better Knot
- Bimini Cricket
- Gravyboat
- Boat-acious *(hyphenated names, regardless of wording are not good)*
- Buoys in the Hood *(seen on a Hood custom 52 sailboat*)
- Learning Curve *(written upside down on a sailboat)*
- Loon-a-sea
- Cur-n-Sea
- Tip Sea
- Seanile
- X2Sea
- LegaSea
- Itza -Du-Zea
- Tax Seavation
- Slipless in Seattle *(now that's clever)*
- In Conference (*imagine the receptionist replying with he's not in – he's in conference)*

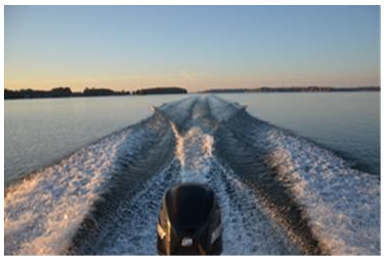
The Other Half

Ron Perelman, the head of Revlon, welcomed about 200 guests aboard his yacht 188' ULTIMA III in St. Barth's last December on his birthday, which happens to be New Year's Eve. Next to her is the dark blue hull version of the same boat, EXCELLENCE III, then owned by Herb Chambers who started A-Copy, sold it 4 boats ago and currently owns 58 auto dealerships. Herb's current boat is 197'. To put this into perspective, the 188' boats carry 44,000 gallons of fuel, cruise at 15 knots and have a cruising range of 4,000 miles. Perelman sold his boat recently for $70 million and took delivery of his new 261' gilded swan of a yacht named C2. Among other vessels in the azure waters of St. Barth's for New Year's Eve were: Eclipse, 538' owned by Russian billionaire Roman Abramovich, who brings in entertainment including Beyoncé and Jay Z, Gwen Stefani, Kanye West and Black Eyed Peas. This year it was Kings of Leon who performed for his 400 super celebs and was considered the hottest New Year's Eve party on the planet. Nirvana, Dallas Cowboys owner Jerry Jones 290' boat was in port and is for sale at $300 million, Maltese Falcon, a 289 sailing yacht, provided the harbor with a specially designed giant-sized airing of the Cowboys game with the appearance of a drive-in movie. While the captains of these boats keep a lid on who is chartering which boat, you can bet that there are superstars bunking in the super-yachts. Also seen in the harbor was Tatoosh, Microsoft mogul Paul Allen's 271-foot playpen; the 313-foot Limitless, owned by The Limited founder Leslie Wexler and a 58' Sea Ray Sundancer which is the towed behind fishing "dinghy" for one of the behemoth yachts. The tenders, water toys and accompanying fishing vessels are a story in and to themselves.

CHAPTER 9-----FISHING

Despite claims otherwise, nobody has yet developed the guaranteed method or magical lure to produce a strike on every cast. If you walk through any fishing trade expo, the number of exhibitors who boast new tackle is staggering. I always wonder what happened to those touted as the lure of all lures last year, promising to out produce anything marketed since the dawn of time.

It should be recognized that lures are developed to catch fish as well as catch on with the fisherman. Some look great but fool fewer fish. Some just make you feel good by being in your tackle box. I've learned from Lake Norman's renowned Captain Gus that all artificial lures will eventually catch fish. Some just do it better than others. Another of Gus's clever tidbits is "when the fish aren't biting, you can't stop them". More on Captain Gus a bit further into this chapter.



My formula for catching fish works in any habitat, body of water, river, lake, stream, ocean or neighborhood pond. It is known as my "CC=C" of fishing. Confidence & Concentration = Catching! Having great confidence in the bait you are casting or trolling is vital. If you don't feel that confidence, switch your lure or bait.

In the late 1980's, when Bluefishing in the near shore waters of New Jersey was still productive, my friend and I entered The Atlantic City, NJ Bluefish Tournament, then a one day, lines in no earlier than 7:00 AM, and back to the weigh-in dock by 3:30 PM fish anywhere you want outing. It was a harrowing morning in terms of the visibility being absolutely zero from when we left the dock until we were almost 6 miles offshore. Given I had a 24' boat, and no radar, to be safer we moved much slower than normal. Soon after clearing the channel buoys, I decided to start trolling in waters close to the beach and rarely identified as fertile fishing grounds. We wound up catching 42 Bluefish and weighed in 350 lbs. That was an average of a tad above 8.25 lbs/fish and that earned us first place by a substantial margin. By the time we headed for the weigh-in dock, the fish box cover was rattling from being overcrowded and the rest of our catch was sloshing around the deck. What a site!

That night, we replayed the day with other contestants and were astonished to learn that so many boats caught few or no fish, ran 20+ miles offshore to locate fish and tried dozens of lures and configurations. Our fishing that day consisted of 2 types of lures in 2 colors. That made a believer in confidence of the lure out of me. It is a shame I never abided by my own discovery and I continue to buy so many lures and rigs.

On to Captain Gus. It has been said that "No man is a legend in his own time". While this is generally a truism, here at Lake Norman we have an exception to that adage. Anyone who has enjoyed spending time with this exemplary gentleman quickly recognizes he is indisputably Lake Norman's search engine.

I first met Captain Gus soon after moving here in 2009 and immediately appreciated a distinct difference between him and dozens of other professional fishing guides. Gus is always willing to open up his enormous personal reservoir of knowledge to share everything and anything about the lake itself, about all those hallowed and special fishing spots, about fishing equipment and its use, and, of course, about his own special secret techniques for actually catching fish. But his greatest attribute is his ability to be entertaining while he is doing all this teaching! Gus is the Who's Who of Lake Norman.

I recently sat down with Captain Gus to learn more about him and what makes him tick. He is a published author of books and newspaper articles an always in demand entertaining and motivational speaker for a collection of businesses, clubs and organizations. He is knowledgeable and enthusiastic about each presentation topic and has interesting stories to accompany them all to add a little icing to the fishcakes. Getting and keeping the full attention of his audience is never a problem. He sets a great example for some very boring university professors in lecture halls I was forced to frequent years ago!

Captain Gus Gustafson has spent a lifetime fishing and sharing his experiences with others. Today, his name is synonymous with Lake Norman, North Carolina's largest freshwater impoundment. When Capt. Gus isn't guide fishing, he's writing about his favorite sport, conducting fishing seminars or telling fish tales to anyone who will listen. Over the years, he has seen over one million fish brought to the net. While most of them on this lake average a few pounds, he has traveled to Florida, Canada, Charleston, The Outer Banks and the Mountain Streams of NC to catch Tiger, Mako, Bull and Hammerhead sharks that were too big to put in the boat, sight cast for bone fish (his favorite fishing), fish for Red Drum, Sea Trout, Snook, Amberjack, Striped Bass in the ocean and fly fish in mountain streams for trout and smallmouth bass.

Capt. Gus is a member of three local Chambers of Commerce, an advisor to the Lake Norman Marine Commission and a past Board Member of Visit Lake Norman and the Mooresville Chamber of Commerce. He conducts boating safety classes, fishing clinics, small business related seminars and speaking engagements on a diverse range of topics. He writes a weekly column in The Charlotte Observer, monthly for The Angler Magazine, each issue of The Pilot and a host of other publications.

Let me treat you to some of Capt. Gus's best stories and you will understand why I plan to spend more time enjoying the company of this man. I identify these stories as The Captain Gus Chronicles.

As told by Captain Gus!

Back in the Day

Things were simple back in the day. Girls had names like Mary and Sue, movies had A or B ratings, and freshwater fishing was not very complicated. We fished mostly for bass, sunnies and catfish. Trout fishing was for the rich and famous. Saturday morning television was all about cartoons or cowboys and Indians, not about fishing. Those who wanted to learn about fishing read Outdoor Life or Field and Stream magazines.

Even back then, fishermen of the era talked about their good old days when a stringer of ten bass would sometimes weigh more than fifty pounds. Dare Devil Spoons, Hula Poppers or Snagless Sallies were the popular artificial lures. Pan fishermen preferred worms, minnows and dough balls. Worms were dug from the garden and they caught anything that swam close to a hook. In those days, the problem wasn't with hooking, but with landing a fish. Fishing tackle was primitive, to say the least. Hooks would straighten, lines would part, and rods would break just when a trophy was being netted.

Fish are not as plentiful or as big today but there are more places to fish and a greater variety of fish to target. Today's sophisticated equipment is quite effective in locating and helping to catch them. Trying to compare today's fishing to the way it was back then is as difficult as trying to compare Dale Jr's career to that of his Dad, driver of the Number 3 Car.

Even though times have changed the way we fish, one thing has remained constant: "If you're lucky enough to be fishing, you're lucky enough."

Not So Modern Fishing Conveniences

Some might recall what fishing was like on Lake Norman back before striped bass were introduced. You might even remember when yellow perch (coon-tails) were a popular pan fish. How many remember the days before big pleasure boats, jet-skis and raft-ups came to places with names like The Sandbar, Cocktail Cove and Dog Island?

Fishing was unpretentious. We took turns sculling the boat. One hand worked the paddle, while the other held the fishing rod. The angler in the bow had the first cast at every spot. But, trying to cast and scull at the same time was difficult. Rather than fight the paddle all day, it was easier to drift, simply anchor and cast at a likely spot, or beach the boat and wade the shallows. Cinder blocks were often used as anchors, but sooner or later, the cement chaffed the rope, and caused it to part. When that happened, it was back to sculling. Deep water was when a fifteen-foot section of anchor rope wouldn't reach bottom. No one had electronic depth or fish finders.

Everyone had a cheap handheld compass in a rusty tackle box. The compass had to be held level to give a proper heading. Even then, its accuracy was suspect, particularly if near a metal object.

Ship-to-shore radios were expensive and cell phones were yet to come. CB radios were the first long distance means of boat-to-boat communication on freshwater lakes. Bass fisherman began to use them in the nineteen seventies. But because there were so few boats on Lake Norman, the only conversations were with truckers traveling Highway 16 between Charlotte and Newton.

One of my earliest saltwater recollections was fishing with my dad and brothers in a fourteen foot wooden row boat. Dad rented it from a livery that housed dozens of boats, none with motors, only oars. On weekends, the livery operator would tow up to six boats at a time to the fishing hole with his motor boat. Once at the spot, we anchored and waited for the fish to swim by and bite our worms. Every hour or so the motor boat

would return to check on the fishermen or tow us back to shore. Each row boat came with a tin can that was used to dip out the water that leaked into the boat. The bay water we fished was rough at times but the fish were plentiful, and we always filled the bottom with flopping fish. Catching them was the fun part. Cleaning them wasn't. But clean them we did, so we could eat our catch or sell them to help pay for the boat rental and bait.

Spinning reels were easier to use than casting reels, because they didn't backlash. Everyone either used a Mitchell 300 or was saving to buy one. Pflueger made the most popular bait casting reel, but only the very rich sport fishermen could afford a Penn reel. Fishing rods were made from a solid piece of metal or fiberglass. They were heavy and had little, if any, tip action. The good thing was that they wouldn't break if stepped on. Initially monofilament line was difficult to tie than Dacron, and its knots would slip, come untied, and cause one to lose a lot of fish.

Today, fishing conveniences like the GPS, sonar and electric trolling motors have definitely made boating and angling easier. Fishing reels have smooth drags and are backlash free. Rods are lightweight and sensitive to the smallest tap. Tackle boxes are made of plastic materials that don't rust, even though some still leak a little. Outboard motors are big and powerful. They are fast and dependable and start with the flick of a switch rather than a pull cord. A 150 hp engine is considered small in some fishing circles.

Regardless of advancements, nothing beats my memories of catching sunfish, bass and cats on a cane pole with a bobber and a worm from a flat bottom wooden rowboat powered by a set of oars. Those were good years.

Fishing's Unwritten Rules

Like all sports, fishing has a set of rules. Many are unwritten, so you won't find them in a book. For those new to the sport, here are a few that you might like to know about.

Unwritten Rule #1 - Never cast over another's fishing line! This violation occurs frequently when fishing off crowded fishing piers, drift boats, and when people are casting from the shoreline.

Unwritten Rule #2 - Never reveal where you caught your fish. Give vague answers like, "Got it upriver, or "across the lake", or simply say, "I don't remember".

Unwritten Rule #3 - If you are a guest on someone else's boat be sure to pay your fair share of the gas, ice and bait. Don't ask; just give the money to your host! Be reminded that with the cost of gas, plus oil, ice, bait and other costs associated with a fishing trip, a five or ten dollar bill doesn't cover your share.

Unwritten Rule # 4 - Be at the appointed place on time.

Don't be late. The rest of the crew expects to leave on time.

Unwritten Rule #5 - Don't talk while the bait-man is counting out your minnows.

Unwritten Rule #6 - Be prepared for all weather situations. Bring or wear the proper clothing for rain, wind, snow or even bright warm sunshine.

Unwritten Rule # 7 - Don't forget the sun screen any time of the year.

Unwritten Rule # 8 - Keep your rod tip up and your line tight while playing a fish.

Unwritten Rule #9 – Always net a fish head first.

Unwritten Rule #10 – Remember that, like a bird, the early fish gets the worm.

Unwritten Rule # 11 – Keep in mind that it's not always the fish you're really after, so enjoy the day regardless of how well they bite!

Captain Gus can be reached at 704-617-6812, fishingwithcaptgus@gmail.com or www.fishingwithgus.com.

Fishing Facts for Lake Norman

Best Spots to Fish if you don't have a boat:

Peninsula Yacht Club – designated areas only
Lake Norman State Park – fishing pier and fishing areas on the bank.
McGuire Nuclear Station – a pier and fishing areas on the bank
Ramsey Creek Park – pier

Fishing License:

North Carolina Fishing License. For complete and the most up to date info go to http://www.ncwildlife.org/

Below are the rules that apply to Lake Norman. For other areas use the link above.

- *Persons under age 16 are exempt from the requirement of a basic fishing license. Senior citizens are entitled to a lifetime license at a greatly reduced cost.*
- *The game lands license is not required to fish in any waters on game lands.*
- *A fishing license is not required to fish a private pond. A pond or lake located on land owned by a public body such as a state-supported university or a government entity is not a private pond.*
- *A resident may fish with natural bait in his county of residence without a basic fishing license. "Natural Bait" is any bait that can be beneficially digested by fish. An individual must carry a form of identification that shows his or her photograph, name and current address. This exemption does not apply to the special trout license.*
- July 4th is declared "FREE FISHING DAY" and a fishing license is not required on this date.

Creel Limits

Species	Minimum size limit	Daily limit
Crappie	8” Min.	20
Catfish	None	None
Bream	None	None
White Perch	None	None
Spotted and Largemouth Bass	14” min, except 2 may be less	5 per day
Striped Bass, Hybrid Bass	16” min (10/01-5/31), otherwise no minimum.	4 per day

Fish Consumption Advisory for Lake Norman

Mecklenburg, Iredell, Lincoln, and Catawba Counties affected North Carolina Department of Health and Human Services - - - - For Immediate Release, April 9, 2013

“Raleigh, NC - The North Carolina Department of Health and Human Services, Division of Public Health has issued a fish consumption advisory for striped bass and largemouth bass in Lake Norman in Mecklenburg, Iredell, Lincoln, and Catawba Counties. Elevated levels of polychlorinated biphenyls (PCBs) were found in striped bass that exceeded the state action level for PCBs of 0.05 mg/kg. Because previous studies have shown that largemouth bass in all waters of North Carolina have elevated levels of mercury, this advisory for Lake Norman includes largemouth bass as well as striped bass.

DHHS is recommending that pregnant women, nursing women, women who may become pregnant, and children under age 15 should not eat any striped bass or largemouth bass from Lake Norman. To guard against mercury exposure and potential PCB exposure, other people should not eat more than two meals a month of largemouth bass and one meal a week of striped bass from Lake Norman. A meal of fish is considered approximately 6 ounces of uncooked fish.

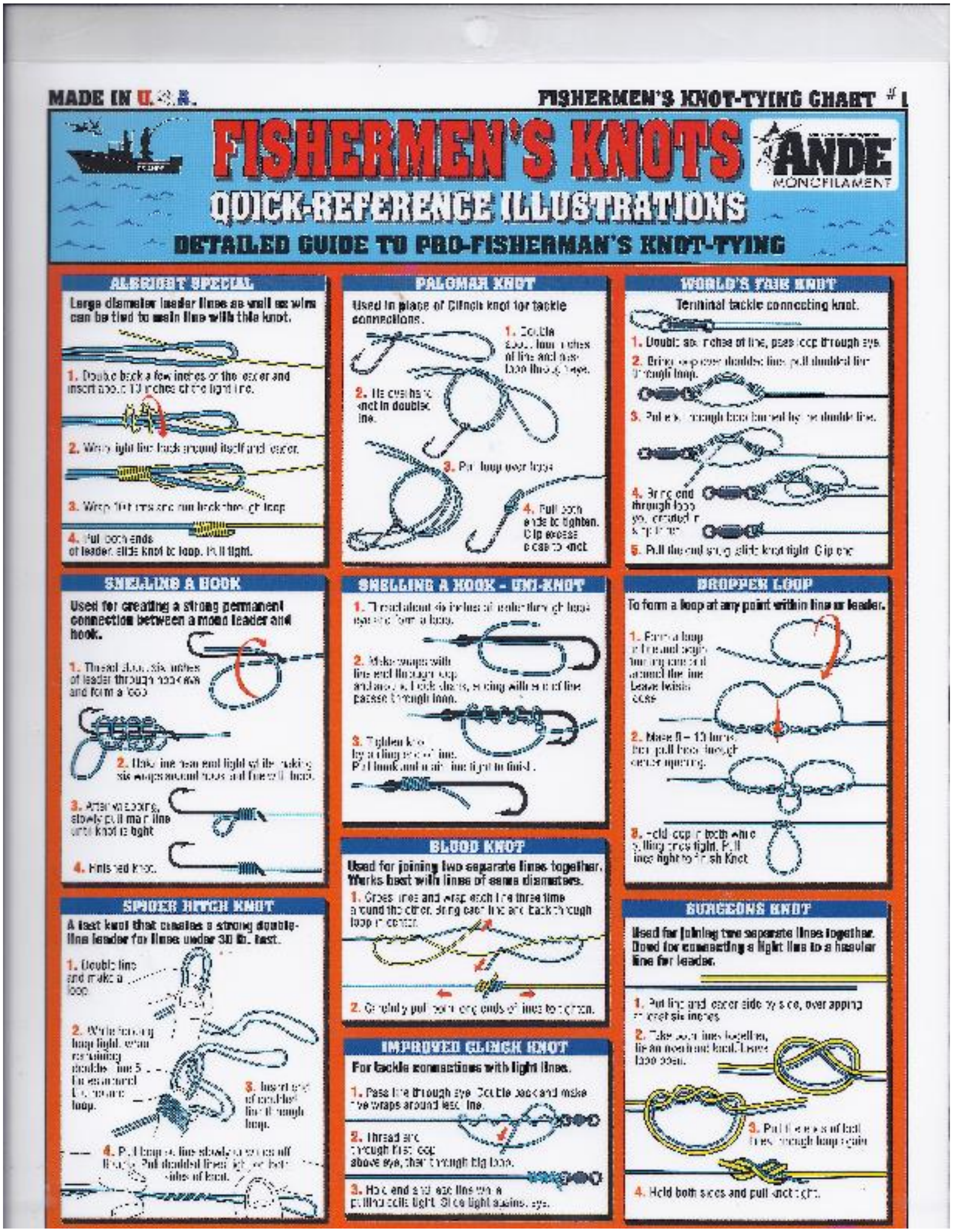
PCBs may adversely impact the neurological development of children, the reproductive system, the immune system, and may cause cancer. Mercury presents an increased risk of adverse effects to the developing brain of unborn babies of pregnant women who eat fish contaminated with mercury. Young children may also be at risk of adverse neurological effects from eating fish contaminated with mercury. The PCB and mercury contamination in fish does not present a known health risk for persons engaging in other recreational activities such as touching the water, wading, swimming, boating or handling the fish.

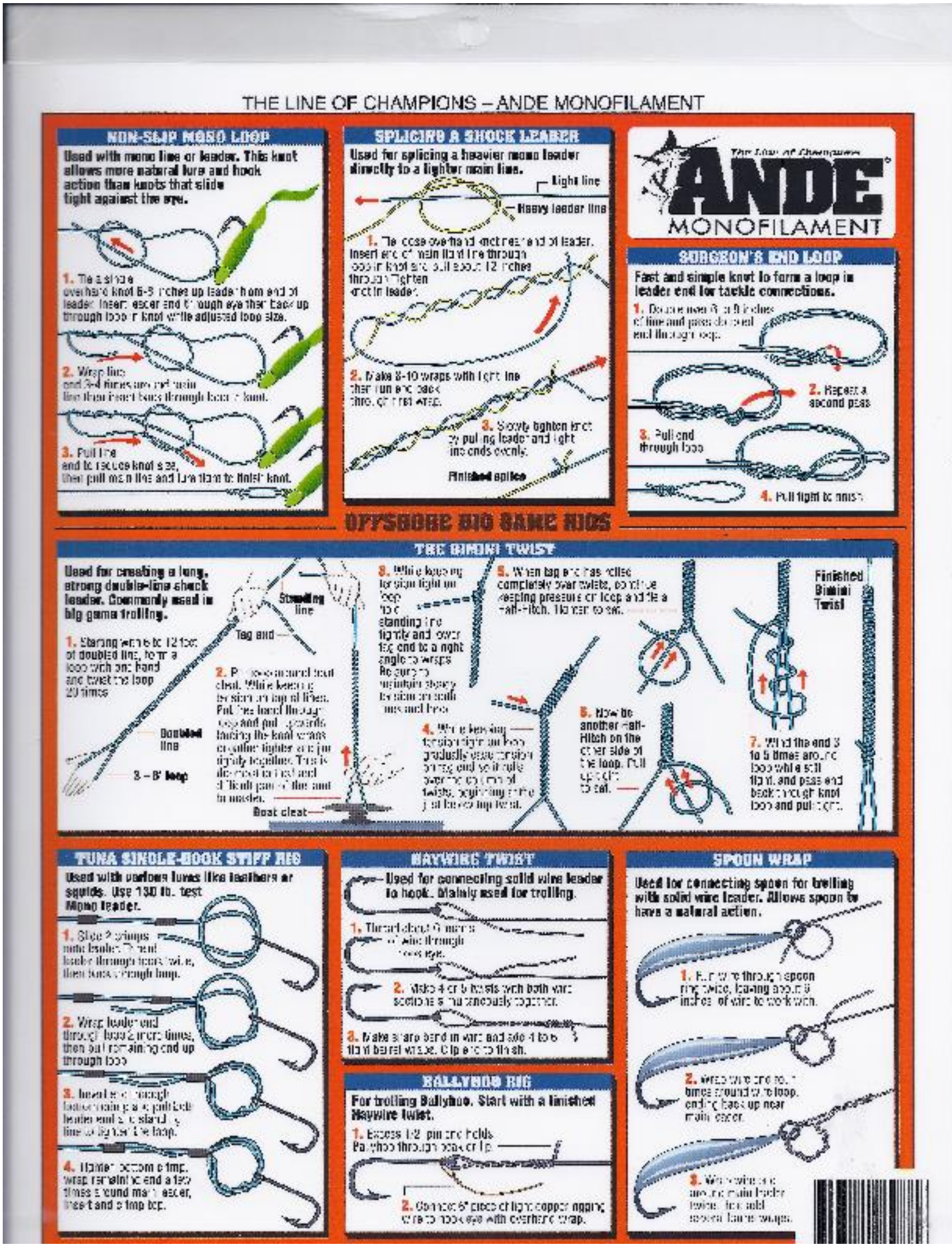
The Division of Public Health reiterates that the fish consumption advisory recommendation for Lake Norman is limited only to striped bass and largemouth bass.

More information on health issues related to fish contaminants is available on the DHHS Division of Public Health website."

Fishing Knots

I've met fisherman who contend that the type of knot has a profound impact on the action of the lure, drift of the hook and bait and as such makes a great difference in how many fish are likely to bite the presentation of your bait. Some knots are designed to perform specific functions, hold lines to attachments securely, some are simply old school, some new adaptations. Most fisherman have their favorites and some knots are designed for offshore trolling for larger fish, others for light tackle fly fishing. Most of us fisherman have several we use and the others are simply too difficult to learn. A good opportunity to learn a new knot is when you're cleaning your tackle box or anytime during the off season. Successful ability to tie a new knot carries a great sense of accomplishment. Remember to anchor the hook into a securely held piece of wood, cork or other material that prevents the hook from landing in one of your fingers.


MADE IN U.S.A.
FISHERMEN'S KNOT-TYING CHART #1
FISHERMEN'S KNOTS
ANDE
MONOFILAMENT
QUICK-REFERENCE ILLUSTRATIONS
DETAILED GUIDE TO PRO-FISHERMAN'S KNOT-TYING
ALBRIGHT SPECIAL
Large diameter leader lines as well as wire can be tied to main line with this knot.
PALOMAR KNOT
Used in place of Clinch knot for tackle connections.
WORLD'S FAIR KNOT
Terminal tackle connecting knot.
SNELLING A HOOK
Used for creating a strong permanent connection between a mono leader and hook.
4. Finished knot.
SNELLING A HOOK - UNI-KNOT
DROPPER LOOP
To form a loop at any point within line or leader.
BLOOD KNOT
Used for joining two separate lines together. Works best with lines of same diameters.
SPIDER HITCH KNOT
A fast knot that creates a strong double-line leader for lines under 30 lb. test.
SURGEONS KNOT
Used for joining two separate lines together. Used for connecting a light line to a heavier line for leader.
IMPROVED CLINCH KNOT
For tackle connections with light lines.
4. Hold both sides and pull knot tight.


THE LINE OF CHAMPIONS – ANDE MONOFILAMENT
NON-SLIP MONO LOOP
Used with mono line or leader. This knot allows more natural lure and hook action than knots that slide tight against the eye.
SPLICING A SHOCK LEADER
Used for splicing a heavier mono leader directly to a lighter main line.
Light line
Heavy leader line
Finished splice
ANDE
MONOFILAMENT
SURGEON'S END LOOP
Fast and simple knot to form a loop in leader end for tackle connections.
2. Repeat a second pass
3. Pull end through loop
4. Pull tight to finish.
OFFSHORE BIG GAME RIGS
THE BIMINI TWIST
Used for creating a long, strong double-line shock leader. Commonly used in big game trolling.
Standing line
Tag end
Doubled line
3 – 6' loop
Boat cleat
Finished Bimini Twist
TUNA SINGLE-HOOK STIFF RIG
Used with various lures like feathers or squids. Use 130 lb. test Mono leader.
HAYWIRE TWIST
Used for connecting solid wire leader to hook. Mainly used for trolling.
SPOON WRAP
Used for connecting spoon for trolling with solid wire leader. Allows spoon to have a natural action.
BALLYHOO RIG
For trolling Ballyhoo. Start with a finished Haywire twist.

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N.C. Angler Recognition Program

Anglers who catch trophy-sized fish that do not qualify for a state record can have their fishing feats officially recognized by the Commission through the N.C. Angler Recognition Program (NCARP). Minimum fish size requirements and details on how to apply are contained in this section.

Anglers who catch a fish that meets or exceeds either weight or length requirements can submit their catch information to the Commission's Division of Inland Fisheries in exchange for a certificate of recognition featuring a color reproduction of the fish species by renowned wildlife artist Duane Raver. Anglers who collect six NCARP certificates receive a Master Angler certificate and patch. Because either lengths or weights can be used to certify fish as NCARP-eligible trophy fish, anglers can practice catch-and-release with their fish.

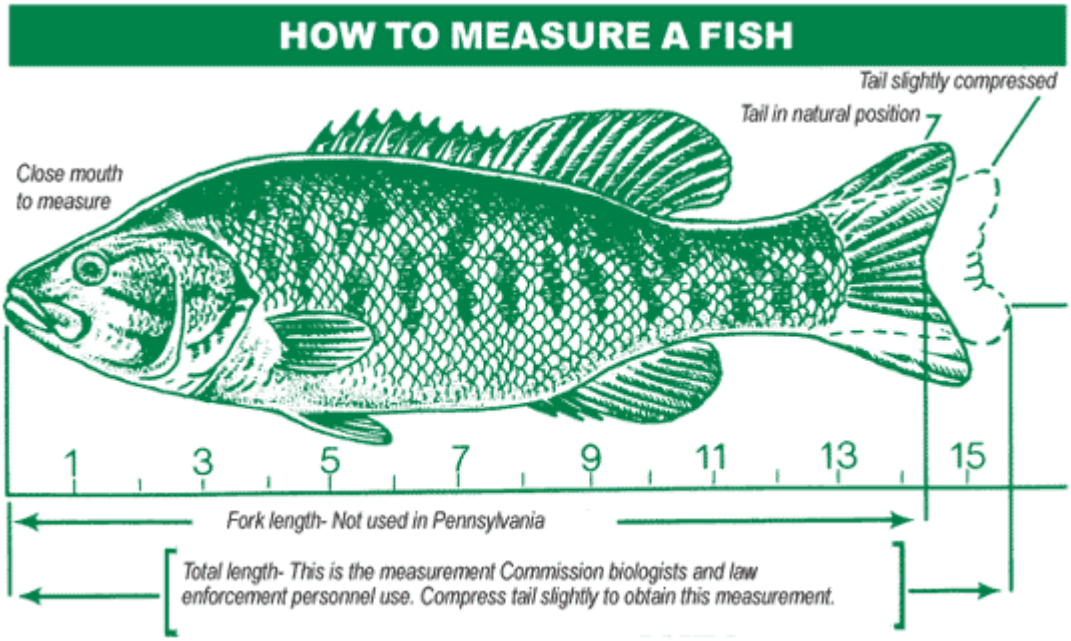
Apply for an NCARP certificate by completing an NCARP application. http://www.ncwildlife.org/Fishing/FishingRecords/NCAnglerRecognitionProgramNCARP.aspx

Applications are also available at many bait and tackle shops, sporting goods stores and other Wildlife Service Agent locations and in the North Carolina Inland Fishing, Hunting and Trapping Regulations Digest. A $5 fee with each application covers costs associated with the program. Youth age 15 and younger can apply for a Youth NCARP certificate for any of the fish species listed below. Minimum length and weight requirements are waived.

NCARP Minimum Trophy Fish Weight or Length Requirements

Species	Minimum Total Weight	Minimum Total Inches
Largemouth bass	8 pounds	24 inches
White perch	1 pound	12 inches
Catfish – blue	30 pounds	41 inches
Catfish – channel	10 pounds	30 inches
Catfish – flathead	30 pounds	41 inches
Catfish – white	4 pounds	21 inches
Catfish – bullhead (any species)*	2 pounds	15 inches
Crappie (black or white)	2 pounds	16 inches
Bluegill	1 pound	11 inches
Green sunfish	1 pound	9 inches
Pumpkinseed*	14 ounces	10 inches

Spotted Bass	2 pounds	15 inches
Striped Bass	10 pounds	27 inches
Bodie/Hybrid Bass	8 pounds	24 inches



CHAPTER 10 ----- SAILING

- **The Dynamics of Sailing**
- **The Five Essentials of Keeping the Boat in Trim**
- **One Design Boats**
- **Types, Designs and Classifications of Sailboats**
- **Sailboat Nomenclature**
- **Sailing Terms**
- **Recreational Sailing**
- **Ropes, Lines & Rigging**
- **Rules & Regulations**

The Dynamics of Sailing

The air interacting with the sails of a sailing vessel creates various forces, including reaction forces. If the sails are properly trimmed with respect to the wind, then the net force on the sails will move the vessel forward. However, boats propelled by sails cannot sail directly into the wind. They must tack (turn the boat through the eye of the wind) back and forth in order to progress directly upwind (see below "Beating").

Sails as airfoils

Sails are airfoils that work by using an airflow set up by the wind and the motion of the boat. Sails work in two "modes" to use the wind to generate force. When the boat is going in the same direction as the wind, the wind force simply pushes on the sail. The force on the sail is mostly aerodynamic drag, and sails acting in this way are aerodynamically stalled.

When the boat is traveling across the wind, the air coming in from the side is redirected toward the rear. According to Newton's Third law, the air is accelerated towards the rear of the boat and the sails experience a force in the opposite direction. This force manifests itself as pressure differences between the two sides of the sail - there is a region of low pressure on the front side of the sail and a region of high pressure on the back. Another way to say this is that sails generate lift using the air that flows around them in the same way as an aircraft wing. The wind flowing over the surface of the sail creates a force approximately perpendicular to the sail; the component of that force parallel to the boat's keel pulls the boat forward, the component perpendicular to the keel makes the boat heel and causes leeway.

Apparent wind

The wind that a boat experiences is the combination of the true wind (i.e. the wind relative to a stationary object) and the wind that occurs due to the forward motion of the boat. This combination is the apparent wind, which is the relative velocity of the wind relative to the boat.

When sailing upwind the apparent wind is greater than the true wind and the direction of the apparent wind will be forward of the true wind. Some high-performance boats are capable of traveling faster than the true wind speed on some points of sail. In this year's Americas Cup, the AC72 catamaran can travel almost three times the speed of the prevailing wind. On June 18th Emirates Team New Zealand recorded a speed of 50.8 mph (44.1 knots), with a wind speed of about 18 mph (15.6 knots). Another was when Oracle Team USA was clocked at 43 knots downwind and 25 knots upwind in a 15.3 knot breeze. Iceboats can typically sail at 5 times the speed of the wind. Note that this speed is not without a significant danger factor.

NauticEd, an online sailing education platform, created a fun, interactive animation so anyone can instantly "get" the difference between true and apparent wind. Broadcasts of this year's America's Cup races are also available online. Both links are below.

http://www.americascup.com/en/about/broadcast

http://www.nauticed.org/freesailingcourse-m1-2

The energy that drives a sailboat is harnessed by manipulating the relative movement of wind and water speed: if there is no difference in movement, such as on a calm day or when the wind and water current are moving in the same direction at the same speed, there is no energy to be extracted and the sailboat will not be able to do anything but drift. Where there is a difference in motion, then there is energy to be extracted at the interface. The sailboat does this by placing the sail(s) in the air and the hull(s) in the water.

A sailing vessel is not maneuverable due to sails alone—the forces caused by the wind on the sails would cause the vessel to rotate and travel sideways instead of moving forward. In the same manner that an aircraft requires stabilizers, such as elevators as well as wings, a boat requires a keel and rudder. The forces on the sails as well as those from below the water line on the keel or centerboard, and other underwater foils including the hull itself, especially for multihulls combine and partially cancel each other to produce the motive force for the vessel. Thus,

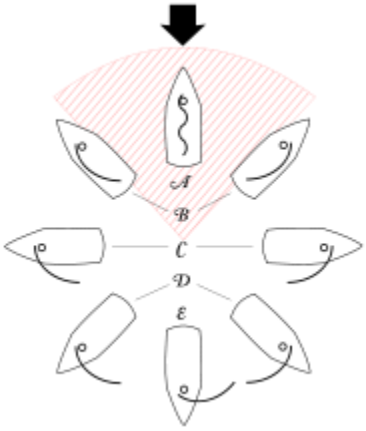
the physical portion of the boat that is below water can be regarded as functioning as a "second sail." The flow of water over the underwater hull portions creates hydrodynamic forces, which combine with the aerodynamic forces from the sails to allow motion in almost any direction except straight into the wind. When sailing close to the wind (aka beating, sailing upwind) the force generated by the sail acts at 90° to the sail. This force can be considered as split into a small force acting in the direction of travel, as well as a large sideways force that heels (tips) the boat. To enable maximum forward speed, the force needs to be cancelled out, perhaps using human ballast, leaving only a smaller forward resultant force. Depending on the efficiency of the rig and hull, the angle of travel relative to the true wind can be as little as 35° or may need to be 80° or greater. This angle is half of the tacking angle and defines one side of a 'no-go zone' into the wind, in which a vessel cannot sail directly.

Tacking is essential when sailing upwind. Tacking or coming about is a sailing maneuver by which a sailing vessel (which is sailing approximately into the wind) turns its bow through the wind so that the direction from which the wind blows changes from one side to the other the sails, when correctly adjusted, will generate aerodynamic lift. When sailing downwind, the sails no longer generate aerodynamic lift and airflow is stalled, with the wind push on the sails giving drag only. As the boat is going downwind, the apparent wind is less than the true wind and this, allied to the fact that the sails are not producing aerodynamic lift, serves to limit the downwind speed.

Effects of wind shear

Wind shear affects sailboats in motion by presenting a different wind speed and direction at different heights along the mast. Wind shear, sometimes referred to as windshear or wind gradient, is a difference in wind speed and direction over a relatively short distance in the atmosphere and occurs because of friction above a water surface slowing the flow of air. Thus, a difference in true wind creates a different apparent wind at different heights. Sailmakers may introduce sail twist in the design of the sail, where the head of the sail is set at a different angle of attack from the foot of the sail in order to change the lift distribution with height. The effect of wind shear can be factored into the selection of twist in the sail design, but this can be difficult to predict since wind shear may vary widely in different weather conditions. Sailors may also adjust the trim of the sail to account for wind gradient using a boom vang, a boom vang is a line or piston system on a sailboat used to exert downward force on the boom and thus control the shape of the sail.

Points of sail



The points of sail. A. in Irons (into the wind) B. Close Hauled C. Beam Reach D. Broad Reach E. Running

The point of sail describes a sailing boat's course in relation to the wind direction.

As discussed earlier in this chapter, no sailboat can sail directly into the wind. This is known as being "in irons", the "trapped" condition a sailboat finds itself in when the bow of the ship is headed into the wind and the ship has stalled and is unable to maneuver. This "no-go zone" (shown shaded in the illustration below) is about 45° either side of the true wind for a modern sloop.

There are 5 main points of sail. In order from the edge of the no-go zone (or "irons") to directly downwind they are:

Close haul (the minimum angle to the wind that the boat and its rig can manage - typically about 45°)

Close reach (between close hauled and a beam reach

Beam reach (approximately 90° to the wind)

Broad reach (between a beam reach and running)

Running (close to directly downwind)

The sail trim on a boat is relative to the point of sail one is on: on a beam reach sails are mostly let out, on a run sails are all the way out, and close hauled sails are pulled in very tightly. Two main skills of sailing are trimming the sails correctly for the direction and strength of the wind, and maintaining a course relative to the wind that suits the sails once trimmed.

Close Hauled or "Beating"

Using a series of close-hauled legs to beat a course upwind. A boat can be 'worked to windward', to arrive at an upwind destination, by sailing close-hauled with the wind coming from one side, then tacking and sailing with the wind coming from the other side. By this method of zig-zagging into the wind, known as beating, it is possible to reach any upwind destination. A yacht beating to a mark directly upwind one mile away will cover a distance through the water of at least 1.4 miles, if it can tack through an angle of 90 degrees including leeway. An old adage describes beating as sailing for twice the distance at half the speed and three times the discomfort.

An estimate of the correct tacking distance can be obtained (and thereby the time taken to travel it at various boat speeds) by using Pythagoras' theorem with equal tacks (assume a value of 1). This also assumes a tacking angle of 90°. The straight line distance is the hypotenuse value of √2. Most sailors are not going to take time to calculate this while on the water but sophisticated on board, computer driven electronics, especially those found on grand prix sailing yachts, offer endless menus of data.

When beating to windward one tack may be more favorable than the other - more in the desired direction. The best strategy is to stay on the favorable tack as much as possible. If the wind shifts in the sailor's favor, called a lift, so much the better, then this tack is even more favorable. But if it shifts against the sailor's, called a header, then the opposite tack may become the more favorable course. So when the destination is directly into the wind the best strategy is given by the racing adage "tack on a header." This is true because a header on one tack is a lift on the other.

How closely a boat can sail into the wind depends on the boat's design, sail shape and trim, the sea state, and the wind speed.

Typical minimum pointing angles to the true wind are as follows. Actual course over the ground will be worse due to leeway.

About 35° for modern racing yachts which have been optimized for upwind performance

About 40 to 45° for modern cruiser-racer yachts (fast cruising yachts)

About 50 to 60° for cruisers and workboats with inefficient keels, inefficient hull shapes, or low draught, when compared to craft designed for sailing performance, and for boats carrying two or more masts (since the forward sails adversely affect the windward ability of sails further aft when sailing upwind)

Close to 90° for square riggers and similar vessels due to the sail shape which is very ineffective when sailing upwind

Sailing close-hauled under a large amount of sail, and heeling a great deal, can induce weather helm, or a tendency for the boat to turn into the wind. This requires pulling the tiller to windward (i.e. 'to weather'), or turning the wheel leeward, in order to counteract the effect and maintain the required course. The lee (leeward) side of the hull is more under water than the weather side and the resulting shape of the submerged parts of the hull usually creates a force that pushes the bow to weather. Driving both the asymmetric heeling hull form and the angled rudder through the water produces drag that slows the boat down. If weather helm builds further, it can limit the ability of the helmsman to steer the boat, which can be turned towards but not effectively away from the wind. At more extreme angles of heel, the boat will spontaneously 'round up' into the wind during gusts, i.e. it will turn into the wind regardless of any corrective action taken on the helm.

Any action that reduces the angle of heel of a boat that is reaching or beating to windward will help reduce excessive weather helm. Racing sailors use their body weight to bring the boat to a more upright position, but are not allowed to use “movable ballast” during a race. Reducing or reefing the total sail area will have the same effect and many boats will sail faster with less sail in a stiff breeze due to the reduction in underwater drag. Easing the sheets on aft-most sails, such as the mainsail in a sloop or cutter can have an immediate effect, especially to help with maneuvering. Moving or increasing sail area forward can also help, for example by raising the jib (and maybe lowering the staysail) on a cutter.

In sailing, hiking out is the action of moving the crew's body weight as far to windward (upwind) as possible, in order to decrease the extent the boat heels (leans away from the wind). By moving the crew's weight to windward, the moment of that force around the boat's center of buoyancy is increased. This opposes the heeling moment of the wind pushing sideways against the boat's sails. It is usually done by leaning over the edge of the boat as it heels. Some boats are fitted with equipment such as hiking straps (or toe straps) and trapezes to make hiking more effective.

Hiking is most integral to catamaran and dinghy sailing, where the lightweight boat can be easily capsized or turtled by the wind unless the sailor counteracts the wind's pressure by hiking, or eases the sails to reduce it. The heavy keel on larger keelboats means that it is rare to capsize them due to wind alone, but keelboat racers will still hike to prevent unnecessary heeling, or leaning sideways to leeward, because the more vertical in the water the keel is, the more effective it is at keeping the boat moving in a forward direction and preventing it from drifting to leeward, slowing the boat due to drag, and potentially increasing the distance the boat must sail when beating. Improper heel creates a tendency for the boat to turn off course, necessitating a correction with the rudder, which also increases drag. Sails use wind most efficiently when they are at a proper heel, another reason for controlling heel.

Hiking equipment

Many boats, especially dinghies, have equipment that facilitates effective hiking. Hiking straps (toe straps) made from rope or webbing hold the sailor's feet down, allowing them to lean back over the gunwale of the boat while sitting facing in. These simple devices are almost universal on dinghies that do not have more complex hiking systems. Some sailors wear special shorts fitted with pads or stiff battens to help them hike more effectively and without tiring.

Some dinghies and catamarans, such as the 505, 420, International 14, or Hobie 16, have a trapeze (see photo in “Close hauling” section) to allow the crew to increase their righting moment on the boat. These are wires attached high up on the mast, and fitted with a bracket that fits into a hook on a harness worn by the crew. This wire and harness then supports the crew as they stand and lean back over the water, pulling against the mast. On some boats, such as the Laser 2, the skipper uses hiking straps, and the crew uses a trapeze. On high-performance skiffs, such as the International 14, both the skipper and the crew use trapezes.

Hiking boards are long boards fitted perpendicular to the boat's hull, stretching several feet over the water. These allow the crew to move their weight far out to windward. They are commonly designed to slide from side to side, so they are moved to the windward side whenever the boat tacks. They

began most often used on sailing canoes, but can be installed on many kinds of dinghies.

Some racing keelboats are fitted with elastic lifelines running down the sides of the boat. These allow the crew to lean into the lifeline to get further out on the windward rail. Many kinds of racing keelboat are raced with more crew aboard than is strictly necessary to operate the boat in order to increase the amount of weight on the upwind side of the boat, keeping the boat flatter.

To enable the skipper to steer the boat while hiking out, the tiller is fitted with a tiller extension or hiking stick.

Reaching

When the boat is traveling approximately perpendicular to the wind, this is called reaching. A beam reach is with the wind at right angles to the boat, a close reach is anywhere between beating and a beam reach, and a broad reach is between a beam reach and running.

For most modern sailboats, that is boats with fore-and-aft sails, reaching is the fastest way to travel. The direction of the wind is ideal when reaching because it can maximize the lift generated on the sails in the forward direction of the boat, giving the best boat speed. Also when reaching, the boat can be steered exactly in the direction that is most desirable, and the sails can be trimmed for that direction.

Reaching may, however, put the boat on a course parallel with the crests of the waves. When the waves are steep, it may be necessary to sail closer to the wind to avoid waves directly on the beam.

Running

Sailing the boat within roughly 30 degrees either side of dead downwind is called a run. This can be the most comfortable point of sail, but requires constant attention. Loss of attention by the helmsman can lead to an accidental jibe,[2] causing injury to the boat or crew. All on deck must be aware of, and if possible avoid, the potential arc of the boom, mainsheet and

[2] A jibe or gybe is a sailing maneuver whereby a sailing vessel reaching downwind turns its stern through the wind, such that the wind direction changes from one side of the boat to the other.

other gear in case an accidental jibe occurs during a run. A preventer 3can be rigged to reduce danger and damage from accidental jibes.

Running Wing and Wing

This is generally the most unstable point of sail, but the easiest for a novice to grasp conceptually, making it a common downfall for beginners. In stronger winds, rolling increases as there is less rolling resistance provided by the sails, as they are eased out. Also, having the sails and boom(s) perpendicular to the boat throws weight and some wind force to that side, making the boat harder to balance. In smaller boats, death rolls4 can build up and lead to capsize.

Also on a run an inexperienced or inattentive sailor can easily misjudge the real wind strength since the boat speed subtracts directly from the true wind speed and makes the apparent wind less. In addition sea conditions can also falsely seem milder than they are as the waves ahead are being viewed from behind making white caps less apparent. When changing course from this point of sail to a reach or a beat, a sailboat that seemed under control can instantly become over-canvassed5 and in danger. Any boat over-canvassed on a run can round up, heel excessively and stop suddenly in

[3]A preventer, also known as a jibe-guard is a mechanical device on a sailing vessel which limits the boom's ability to swing unexpectedly across the boat due to an unplanned accidental jibe.

[4] In a keel boat, a death roll is the act of broaching to windward, putting the spinnaker pole into the water and causing a crash-gybe of the boom and mainsail, which sweep across the deck and plunge down into the water. The Death Roll often results in destruction of the spinnaker pole and sometimes even demasting of the boat. Serious injury to crew is possible due to the swift and uncontrolled action of the boom and associated gear sweeping across the boat and crashing to the (now) leeward side.

For dinghy sailors, a death roll is a common type of oscillation while running downwind. It may, and often will, result in capsizing and even a turtle if the skipper does not take quick action to prevent one.

[5] A sailing boat that is carrying too much sail for the current wind conditions is said to be over-canvassed. An over-canvassed boat, whether a dinghy, a yacht or a sailing ship, is difficult to steer and control and tends to heel or roll too much

the water. This is called broaching and it can lead to capsize, possible crew injury and loss of crew into the water.

Options for maneuvering are also reduced. On other points of sail, it is easy to stop or slow the boat by heading into the wind; there may be no such easy way out when running, especially in close quarters or when a spinnaker, whisker pole or preventer are set.

The Five Essentials of Keeping the Boat in Trim

An important aspect of sailing is keeping the boat in "trim".

Course made good - The turning or steering of the boat vessel using the wheel or tiller to the desired course or buoy. See different points of sail. This may be a definite bearing (e.g. steer 270 degrees), or along a transit, or at a desired angle to the apparent wind direction.

Trim - This is the fore and aft balance of the boat. The aim is to adjust the moveable ballast (the crew) forwards or backwards to achieve an 'even keel'. On an upwind course in a small boat, the crew typically sit forward to reduce drag. When 'running', it is more efficient for the crew to sit to the rear of the boat. The position of the crew matters less as the size (and weight) of the boat increases. *Note – you now know the origin of the expression "Even Keel".*

Balance - This is the port and starboard balance. The aim, once again, is to adjust weight 'windward' or 'leeward' to prevent excessive heeling. The boat moves at a faster velocity if it is flat to the water.

Sail trim - Trimming sails is a large topic. Simply put, however, a sail should be pulled in until it fills with wind, but no further than the point where the front edge of the sail (the luff) is exactly in line with the wind. Let it out until it starts to flap, and then pull it in until it stops.

Centerboard (Daggerboard) - If a moveable centerboard is fitted, then it should be lowered when sailing "close to the wind" but can be raised up on downwind courses to reduce drag. The centerboard prevents lateral motion and allows the boat to sail upwind. A boat with no centerboard will instead have a permanent keel, some other form of underwater foil, or even the hull itself which serves the same purpose. On a close haul the daggerboard should be fully down, and while running, over half way up.

Tacking and Jibing

There are two ways to change from port tack to starboard tack (or vice versa): either by turning the bow through the eye of the wind, "tacking" or the stern, "gybing". In general sailing, tacking is the safer method and preferred especially when sailing upwind; in windsurfing, jibing is preferred as this involves much less maneuvering for the sailor.

For general sailing, during such course changes, there is work that needs to be done. Just before tacking the command "Ready about" is given, at which point the crew must man the sheet lines which need to be changed over to the other tack and the helmsman gets ready. Many commands are appropriate to execute the tack the command. "Hard-a-lee" is the most common and that is a direct order to the helmsman to push the tiller hard to the leeward side of the boat making the bow of the boat come up and quickly turn through the eye of the wind to prevent the boat being caught in irons. As the boat turns through the eye of the wind, some sails such as those with a boom and a single sheet may self-tack and need only small adjustments of sheeting points, but for jibs and other sails +with separate sheets on either side, the original sheet must be loosened and the opposite sheet lines hauled in and set quickly and properly for the new point of sail.

Jibing is often necessary to change course when sailing off the wind or downwind. It is a more dangerous maneuver because booms must be controlled as the sails catch the new wind direction from astern. An uncontrolled jibe can happen suddenly by itself when sailing downwind if the helmsman is not paying attention to the wind direction and can be very dangerous as the main boom will sweep across the cockpit very quickly and with great force. Before gybing the command "Ready to jibe" is given. The crew gets ready at their positions. If any sails are constrained with preventers or whisker poles these are taken down. The command "Jibe-ho" is given to execute the turn. The boomed sails must be hauled in and made fast before the stern reaches the eye of the wind, so that they are amidships and controlled as the stern passes through the eye of the wind, and then let out quickly under control and adjusted to the new point of sail.

The choice of which strategy to use (coming-about or jibing) depends on the conditions, sail configuration, and the craft. For multihull sailboats coming into the wind should only be attempted when moving very quickly as the boat needs greater momentum to turn than a monohull. The timing of the crew shift is also critical when coming into the wind. If in light wind, a jibe is the better choice as there's less danger of the wind tipping the boat. A phrase to help remember this is: "light jibe, hard tack" (light/hard referring to wind strength) Of course being caught in irons near shore/structures in strong wind can be catastrophic.

Reducing sail

An important safety aspect of sailing is to adjust the amount of sail to suit the wind conditions. As the wind speed increases the crew should progressively reduce the amount of sail. On a small boat with only jib and mainsail this is done by furling the jib and by partially lowering the mainsail, a process called 'reefing the main'.

Reefing means reducing the area of a sail without actually changing it for a smaller sail. Ideally reefing does not only result in a reduced sail area but also in a lower center of effort from the sails, reducing the heeling moment and keeping the boat more upright.

There are three common methods of reefing the mainsail:

Slab reefing, which involves lowering the sail by about one-quarter to one-third of its full length and tightening the lower part of the sail using an outhaul or a pre-loaded reef line through a cringle at the new clew, and hook through a cringle at the new tack.

In-mast (or on-mast) roller-reefing. This method rolls the sail up around a vertical foil either inside a slot in the mast, or affixed to the outside of the mast. It requires a mainsail with either no battens, or newly-developed vertical battens.

In-boom roller-reefing, with a horizontal foil inside the boom. This method allows for standard- or full-length horizontal battens.

Mainsail furling systems have become increasingly popular on cruising yachts, as they can be operated shorthanded and from the cockpit, in most cases. However, the sail can become jammed in the mast or boom slot if not operated correctly. Mainsail furling is almost never used while racing because it results in a less efficient sail profile. The classical slab-reefing method is the most widely used. Mainsail furling has an additional disadvantage in that its complicated gear may somewhat increase weight aloft. However, as the size of the boat increases, the benefits of mainsail roller furling increase dramatically.

An old saying goes, "The first time you think of reducing sail you should, and correspondingly, "When you think you are ready to take out a reef, have a cup of tea first."

Sail trim

The most basic control of the sail consists of setting its angle relative to the wind. The control line that accomplishes this is called a "sheet." If the sheet is too loose the sail will flap in the wind, an occurrence that is called "luffing." Optimum sail angle can be approximated by pulling the sheet in just so far as to make the luffing stop, or by using of tell-tales - small ribbons or yarn attached each side of the sail that both stream horizontally to indicate a properly trimmed sail. Finer controls adjust the overall shape of the sail.

Two or more sails are frequently combined to maximize the smooth flow of air. The sails are adjusted to create a smooth, streamlined flow over the sail surfaces. This is called the "slot effect". The combined sails fit into an imaginary aerofoil outline, so that the most forward sails are more in line with the wind, whereas the more aft sails are more in line with the course followed. The combined efficiency of this sail plan is greater than the sum of each sail used in isolation.

More detailed aspects include specific control of the sail's shape, e.g.:

Reefing, or reducing the sail area in stronger wind

Altering sail shape to make it flatter in high winds

Raking the mast when going upwind (to tilt the sail towards the rear, this being more stable)

Providing sail twist to account for wind speed differential and to spill excess wind in gusty conditions

Gibing or lowering a sail

Hull trim

Hull trim is the adjustment of a boat's loading so as to change its fore-and-aft attitude in the water. In small boats, it is done by positioning the crew. In larger boats the weight of a person has less effect on the hull trim, but it can be adjusted by shifting gear, fuel, water, or supplies. Different hull trim efforts are required for different kinds of boats and different conditions. Here are just a few examples: In a lightweight racing dinghy's, the hull should be kept level, on its designed water line for best performance in all conditions. In many small boats, weight too far aft can cause drag by submerging the transom, especially in light to moderate winds. Weight too far forward can cause the bow to dig into the waves. In heavy winds, a boat with its bow too low may capsize by pitching forward over its bow (pitch-pole) or dive under the waves (submarine). On a run in heavy winds, the forces on the sails tend to drive a boat's bow down, so the crew weight is moved far aft.

Heeling

When a ship or boat leans over to one side, from the action of waves or from the centrifugal force of a turn or under wind pressure or from amount of exposed topsides, it is said to 'heel'. A sailing boat that is over-canvassed and therefore heeling, may sail less efficiently depending on fundamental or opportunistic factors such as temporary nature of the feature (e.g. wind gust), use (e.g. racing), crew ability, point of sail, hull size & design.

When a vessel is subject to a heeling force (such as wind pressure), vessel buoyancy & beam of the hull will counter-act the heeling force. A weighted keel provides additional means to right the boat. In some high-performance racing yachts, water ballast or the angle of a canting keel[6] can be changed to provide additional righting force to counteract heeling. The crew may move their personal weight to the high (upwind) side of the boat, this is called *hiking*, which also changes the center of gravity & produces a righting lever to reduce the degree of heeling. Incidental benefits include faster vessel speed caused by more efficient action of the hull & sails. Other options to reduce heeling include reducing exposed sail area & efficiency of the sail setting & a variant of hiking called "trapezing". This can only be done if the vessel is designed for this, as in dinghy sailing. A sailor can (usually involuntarily) try turning upwind in gusts (it is known as *rounding up*). This can lead to difficulties in controlling the vessel if over-canvassed. Wind can be spilled from the sails by 'sheeting out', or loosening them. The number of sails, their size and shape can be altered. Raising the dinghy centerboard can reduce heeling by allowing more leeway.

The increasingly asymmetric underwater shape of the hull matching the increasing angle of heel may generate an increasing directional turning force into the wind. The sails' center of effort will also increase this turning effect or force on the vessel's motion due to increasing lever effect with increased heeling which shows itself as increased human effort required to steer a straight course. Increased heeling reduces exposed sail area relative to the wind direction, so leading to an equilibrium state. As more heeling force causes more heel, weather helm may be experienced. This condition has a braking effect on the vessel but has the safety effect in that an excessively hard pressed boat will try and turn into the wind therefore reducing the forces on the sail. Small amounts (≤5 degrees) of weather helm are generally considered desirable because of the consequent aerofoil lift effect from the rudder. This aerofoil lift produces helpful motion to windward & the corollary of the reason why lee helm is dangerous. Lee helm, the opposite of weather helm, is generally considered to be dangerous because the vessel turns away from the wind when the helm is released, thus increasing forces on the sail at a time when the helmsman is not in control.

[6] A canting keel is a form of sailing ballast, suspended from a rigid canting strut beneath the boat, which can be swung to windward of a boat under sail, in order to counteract the heeling force of the sail. The canting keel must be able to pivot to either port or starboard, depending on the current tack.

Sailing boats with one hull are "monohulls", those with two are "catamarans "and those with three are "trimarans". A boat is turned by a rudder, which itself is controlled by a tiller or a wheel, while at the same time adjusting the sheeting angle of the sails. Smaller sailing boats often have a stabilizing, adjustable, underwater fin called a centerboard, daggerboard, or leeboard; larger sailing boats have a fixed (or sometimes canting) keel. As a general rule, the former are called dinghies, the latter keelboats. However, up until the adoption of the Racing Rules of Sailing[7], any vessel racing under sail was considered a yacht, be it a multi-masted ship-rigged vessel (such as a sailing frigate), a sailboard (more commonly referred to as a windsurfer) or remote-controlled boat, or anything in between. (See Dinghy sailing.)

Multihulls use flotation and/or weight positioned away from the center line of the sailboat to counter the force of the wind. This is in contrast to heavy ballast that can account for up to 90% (in extreme cases like Americas Cup boats) of the weight of a monohull sailboat. In the case of a standard catamaran there are two similarly-sized and -shaped slender hulls connected by beams, which are sometimes overlaid by a deck superstructure. In the case of trimarans, which have an unballasted center hull similar to a monohull, two smaller arms are situated parallel to the center hull to resist the sideways force of the wind. The advantage of multihulled sailboats is that they do not suffer the performance penalty of having to carry heavy ballast, and their relatively lesser draft reduces the amount of drag, caused by friction and inertia, when moving through the water.

One of the most common dinghy hulls in the world is the Laser hull. It was designed by Bruce Kirby in 1971 and unveiled at the New York boat show (1971). The Laser is 13 feet 10.5 inches long and a 12.5 foot water line and 76 square feet (7.1 m^2) of sail. The Laser is one of "One Design" class boats.

One Design Boats

As manufacturing technologies became more efficient and effective over the course of the 20th century, racers realized that there was an important need to equalize the design of the vehicles that they were competing in. The important factors being measured in One-Design racing help to equalize the vehicles and put more emphasis on the skill of the competitors.

One-Design is a racing method where all boats have identical or very similar designs or models. All competitors in a race are then judged based on a single start time. One-Design can be contrasted with the Development class, the classic example being the America's Cup 12-metre class. Similarly, many yacht clubs prefer one design racing or club fleets as the standardization greatly simplifies ratings issues and one designs ratings are so much simpler for youth programs.

Under one-design, the boats are virtually identical except in details. As a result the identifier "One-Design" has been used more and more exclusively to denote a class that races only identical boats.

A full listing of one-design class associations corresponding points of contact and web addresses can be found at: http://www.ussailing.org/racing/small-boat-racing/one-design/list-of-one-design-classes

Sailboat Types (Hulls, Designs, Categories)

Sloop

The most common type of small to midsize sailboat is the sloop. The rig is one mast and two sails. The mainsail is a tall, triangular sail mounted to the mast at its leading edge, with the foot of the sail along the boom, which extends aft from the mast. The sail in front, called the jib or sometimes the head sail, mounts on the forestay between the bow and the masthead, with its trailing corner controlled by the jib sheet.

These tall triangular sails are called the Bermuda rig[8], or sometimes the Marconi rig, named for their development more than two centuries ago in Bermudan boats. Because of the physics of how force is generated by wind blowing past a sail, tall thin sails generally have more power when the boat is sailing into the wind. This is why most sailboats today have that rig.

Racing Sloop

A racing sloop is another example of a sloop with a Bermuda rig. This is the sailboat Puma in the 2009 Volvo Ocean Race, one of the fastest monohull sailboats. The sails are much bigger than found on most cruising sailboats, but the general rig is the same. Note that in both of the sloops shown so far, the jib reaches to the top of the masthead. This is known as a masthead rigged sloop.

FRACTIONAL RIG SLOOP

Here's a small racing dinghy with a sloop rig. This is still a Bermuda rig, but the mainsail is proportionally larger and the jib smaller, for ease of handling and maximum power. Note that the top of the jib rises only a fraction of the distance to the masthead. Such a rig is called a fractional rigged sloop.

[8] The term Bermuda rig refers to a configuration of mast and rigging for a type of sailboat and is also known as a Marconi rig; this is the typical configuration for most modern sailboats. This configuration was developed in Bermuda in the 17th century; the term *Marconi* was a much later reference to the inventor Guglielmo Marconi, whose wireless radio masts resembled Bermuda rigs. (Wikipedia)

CAT RIG

While a sloop always has two sails, a cat-rigged boat generally has only one. Note that the mast is positioned very far forward, almost at the bow, making room for a very long-footed mainsail.

The mainsail of a cat rig may have a traditional boom or, as in this boat, a loose-footed mainsail attached at the aft corner to what is called a wishbone boom.

A primary advantage of a cat rig is the ease of sail handling, such as not having to deal with jib sheets when tacking. Generally a cat rig is not considered as powerful as a Bermuda rig.

Cat-Rigged Racing Dinghy

Here's another cat rig, which works well on small racing dinghies like this Laser. With a small boat and one sailor, a cat rig has the advantages of being simple to trim and very maneuverable when racing.

KETCH

A popular rig for midsize cruising boats is the ketch, which is like a sloop with a second, smaller mast set aft, called the mizzenmast. The mizzen sail functions much like a second mainsail. In all, a ketch carries about the same total square footage of sail area as a sloop of the equivalent size.

The primary advantages of a ketch are that each of the sails is usually somewhat smaller than on a sloop of equivalent size, making sail handling easier. Smaller sails are lighter, easier to hoist and trim, and smaller to stow. Having three sails also allows for more flexible sail combinations. For example, with the wind at an intensity that a sloop might have to double-reef the main to reduce sail area, a ketch may sail very well under just jib and mizzen. This is popularly called sailing under "jib and jigger"—the jigger being an old square-rigger term for the aft-most mast flying a triangular sail.

While a ketch offers these advantages to cruisers, they may also be more expensive because of the added mast and sail. The sloop rig is also considered faster and is therefore used almost exclusively in racing sailboats.

YAWL

A yawl is very similar to a ketch. The mizzenmast is usually smaller and set farther aft, behind the rudder post, while in a ketch the mizzenmast is forward of the rudder post. Aside from this technical difference, the yawl and ketch rigs are similar and have similar advantages and disadvantages.

SCHOONER

A typical schooner also has two masts (sometimes more), but the masts are positioned more forward in the boat. Unlike in a ketch or yawl, the forward mast is smaller than the aft mast (or sometimes the same size). One or more jibs may fly forward of the foremast.

While some modern schooners may use triangular, Bermuda-like sails on one of both masts, traditional schooners like the one shown here have gaff-rigged sails. At the top of the sail is a short spar called the gaff, which allows the sail to extend back along a fourth side, gaining size over a triangular sail of the same height.

Gaff-rigged schooners are still seen in many areas and are well loved for their historic appearance and sweeping lines, but they are seldom used anymore for private cruising. The gaff rig is not as efficient as the Bermuda rig, and the rig is more complicated and requires more crew for sail handling.

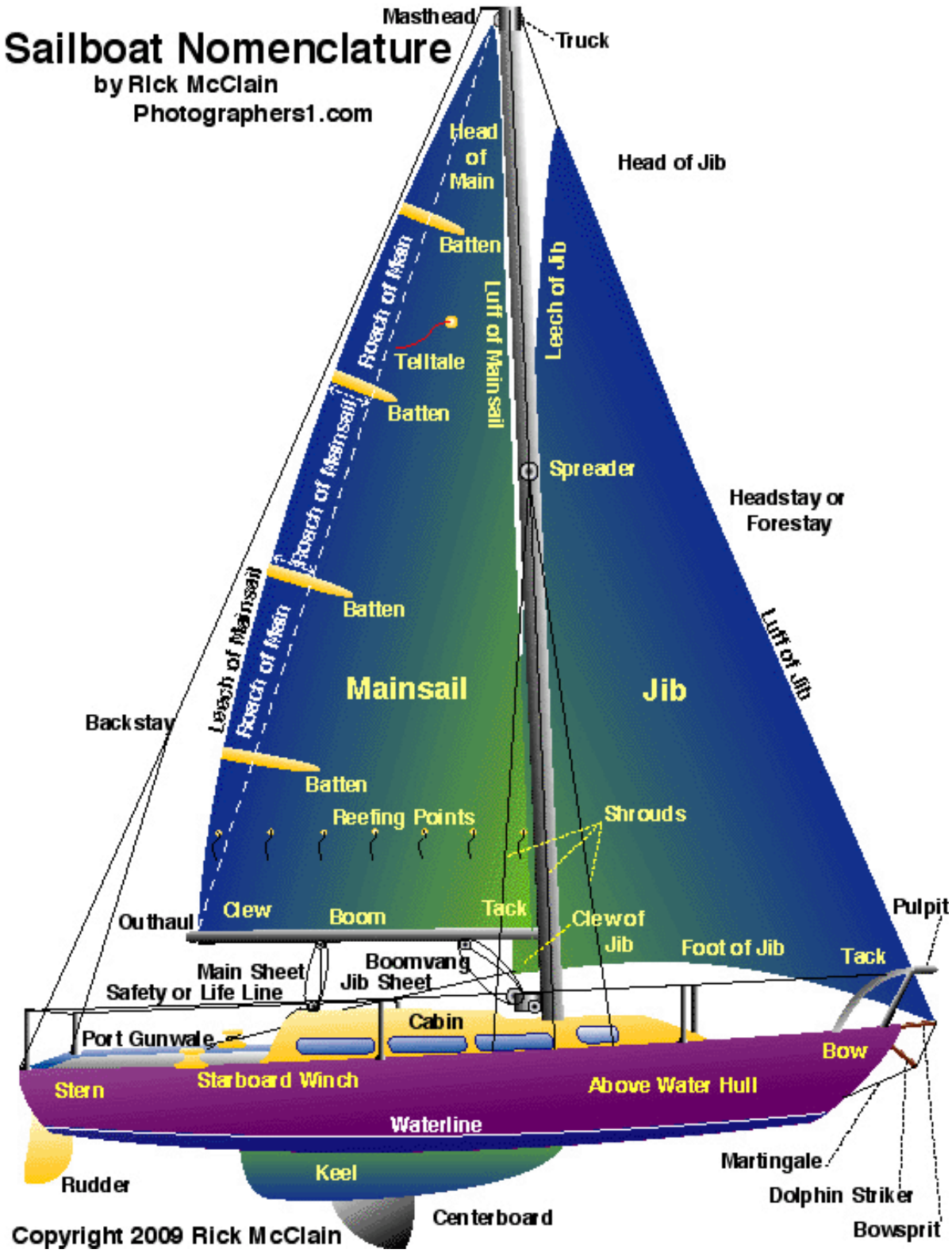
Schooner with Topsail and Flying Jibs

Here's another gaff-rigged schooner that is using a topsail and several flying jibs. Tacking or gybing a complicated sail plan like this takes a lot of crew and expertise!

Square-Rigged Tall Ship

Finally, here's a large three-masted square-rigger flying five tiers of square sails and several head sails as well as a mizzen sail. Although this is a modern ship, one of many still used around the world for sail training and passenger cruise ships, the rig is essentially unchanged from centuries ago. Columbus, Magellan and other early sea explorers sailed in square-riggers.

Remarkably efficient sailing downwind or well off the wind, square sails do not generate power from their leading edge as in the Bermuda rig, which has become predominant in modern times, and square-riggers therefore generally do not sail upwind. It was due to this limitation that the great trade wind sailing routes around the world were developed centuries ago.


Sailboat Nomenclature
by Rick McClain
Photographers1.com
Masthead
Truck
Head of Main
Head of Jib
Batten
Leech of Jib
Luff of Main Sail
Foreach of Main
Telltale
Batten
Foreach of Mainsail
Spreader
Headstay or Forestay
Leech of Mainsail
Batten
Luff of Jib
Backstay
Leech of Main
Foreach of Main
Mainsail
Jib
Batten
Reefing Points
Shrouds
Outhaul
Clew
Boom
Tack
Clew of Jib
Foot of Jib
Tack
Pulpit
Main Sheet
Boomvang
Jib Sheet
Safety or Life Line
Cabin
Port Gunwale
Bow
Stern
Starboard Winch
Above Water Hull
Waterline
Martingale
Keel
Rudder
Dolphin Striker
Centerboard
Bowsprit
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Sailing Terms

Following are terms related to sailboats and their equipment.

Auxiliary - A sailboat's engine, or a sailboat with an engine

Backstay - The (usually wire) cable from the stern to the masthead, helping support the mast

Ballast - The weight in a sailboat's keel (sometimes in a centerboard) that helps keep the boat from heeling too much

Batten - A (usually plastic) slat placed in a pocket in the mainsail to help it maintain good shape

Beam - The width of the boat at its widest point

Bitter end - The free end of a line

Block - A pulley-like device used on a boat, with a sheave around which a line runs.

Boom - The (usually horizontal) spar back from the mast to which the foot of a sail is attached.

Boom vang - A device that prevents the boom from rising (and in some types, from lowering

Bow - The front section of the boat

Cat rig - A sailboat designed for using a mainsail only, with the mast usually located more forward than in a sloop.

Centerboard - A thin keel-like structure that can be raised (usually rotated on a hinge up into a centerboard trunk in the hull); present on many sailboats without a fixed keel to prevent the boat from being blown sideways.

Chock - A type of fairlead fitting through which an anchor rode or dock line passes, to reduce chafing

Cleat - A fitting around which a line is secured

Companionway - The entrance area and steps from the cockpit into a sailboat's cabin

Clew - The lower rear corner of a sail

Daggerboard - Like a centerboard, but raised and lowered vertically instead of rotating on a hinge

Daysailer - A (usually) small sailboat without a cabin larger enough for comfortable overnight cruising

Dinghy - A type of small sailboat; a small row or powered craft typically taken along when cruising in a larger sailboat

Displacement - The weight of a boat (equal to the weight of water the boat displaces)

Dodger - A spray shield (often of fabric, foldable or removable) at the front of the cockpit

Draft - The distance from a boat's waterline to the lowest part of its keel

Fender - A (usually rubber) bumper hung alongside to prevent the hull from rubbing against a dock or other structure

Foot - The bottom edge of a sail (compare to leach and luff)

Forestay - The (usually wire) cable from the bow to the masthead, helping support the mast

Forward - Toward the bow

Freeboard - The height of the deck above the water (the topsides section of the hull)

Gate - An opening in the lifelines for boarding the boat; also called gangway

Genoa - A large jib sail (the clew extends aft of the mast)

Gooseneck - The fitting that attaches the boom to the mast

Ground tackle - Collective term for a boat's anchor and anchor rode

Gunwale (sometimes gunnel) - the outer edge of the boat's deck and cockpit; also called the rail

Halyard - Line or wire used to hoist a sail

Hank on - To attach a jib sail to the forestay with small snap hooks (called hanks)

Head - The bathroom of a boat; also the top corner of a sail

Helm - The means by which the sailboat is steered: the tiller or wheel

Jackline - A line, strap, or wire secured over the deck as an attachment point for the tether of a safety harness

Jib - The triangular sail attached to the forestay

Keel - The (usually permanent) lower section of a sailboat's hull that counteracts sideways movement and typically contains ballast

Ketch - A type of sailboat with two masts

Lanyard - A short cord or line, often used to secure a piece of gear (knife, whistle, etc.) that might be dropped

Leech - The back edge of a jib or mainsail (compare to luff and foot)

Lifeline - A line or wire (often vinyl coated) all around the boat, held up with stanchions, to prevent falling overboard

Line - Any piece of rope used on a boat

Luff - The leading edge of a jib or mainsail (compare to leach and foot)

Mainmast - The mast, or the tallest mast of a sailboat with multiple masts

Mainsail - The sail affixed to and behind the mainmast

Mast - A tall vertical pole on a sailboat to support sails and rigging

Mast step - The support structure for the bottom of the mast

Mizzen - The smaller aft mast on a ketch or yawl; the mizzensail is affixed to and behind the mizzenmast

Multihull - A catamaran (two hulls) or trimaran (three hulls)

Outhaul - A fitting to adjust the tension of the foot of the mainsail on the boom

Padeye - A (usually metal) fitting with a loop or hoop to which other gear is attached

Pendant (sometimes pennant) - A short line attaching the bow of a boat to a mooring, or a short wire attached to a sail or halyard as an extension

PFD - Personal flotation device (such as a lifejacket or inflatable PFD)

Port - The left side of the boat (when facing forward); opposite of starboard

Preventer - A Line or other device used to prevent the boom from accidentally gybing from one side to the other

Pulpit - A (usually stainless steel) rail around the bow or stern typically at the height of the lifelines

Rail - the outer edge of the boat's deck and cockpit; also called the gunwale

Rig (or rigging) - The mast, boom, and associated equipment including stays, shrouds, sheets, and halyards

Rode - The line or chain between an anchor and the boat

Roller furler - A device by which a sail is rolled up, such as the jib rolling around a rotating forestay fitting

Rudder - An appendage below or on the boat's stern that is rotated (by moving the tiller or wheel) to steer the boat

Safety harness - Personal gear (a separate harness or may be built into a PFD) that attaches to a tether to keep the person on board; see Tether

Sail ties - Short straps or pieces of line used to tie a lowered mainsail to the boom or secure a sail on deck

Schooner - A type of sailboat with two or more masts, the forward one being shorter than the main mast

Seacock - A valve fitting for closing an opening through the boat's hull (drains, water pipes, etc.)

Shackle - A (usually metal) fitting that secures two things together, such as a halyard shackle connecting to a sail

Sheet - The line used to let out or trim in a sail; on a sloop, a mainsheet and two jib sheets

Shroud - Wire or line stay from the deck or hull supporting the mast on each side

Sloop - A type of sailboat with one mast and two triangular sails (main and jib

Sole - The floor of the cockpit or cabin

Spinnaker - A lightweight sail used downwind, often ballooning in front of the boat

Spreaders - Metal struts on the mast that hold the shrouds out from the mast for a better support angle

Stanchions - Short metal poles around the boat's perimeter that support the lifelines

Starboard - The right side of the boat (when facing forward); opposite of port

Stay - Wire or line from the deck or hull to support the mast; stays include the forestay, backstay, and shrouds (on the sides)

Tack - The bottom front corner of a sail

Telltales - Pieces of yarn or ribbons on the luff of a sail to help with trimming, or fastened to shrouds to show the wind direction

Tether - A short line or strap that runs between a safety harness and a point of attachment on the boat, to prevent going overboard Tiller - A long handle connected to the rudder or rudder post on many sailboats for steering

Topping lift - A wire or line from the masthead that holds up the boom when the sail is lowered

Topsides - The area of outer hull above the waterline

Traveler - A fitting allowing the mainsheet attachment to the boat to be adjusted side to side

Whisker pole - A pole used to hold out the jib when sailing off the wind

Winch - A drum-like device used to pull in lines under strain (halyards, sheets)

Windless - A heavy winch used with the anchor rode

Yawl - A type of sailboat with two masts, the aft one (mizzen) being behind the rudder post

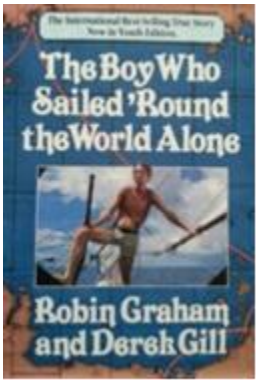
Recreational sailing

Sailing is not only about gathering a crew that can help trim the boat to gain 1/10 of a knot of speed in a race, it is for pleasure that can involve short trips across a bay, day sailing, coastal cruising, and more extended offshore or 'blue-water' cruising. These trips can be singlehanded or the vessel may be crewed by families or groups of friends. Sailing vessels may proceed on their own, or be part of a flotilla with other like-minded voyagers. Sailing boats may be operated by their owners, who often also gain pleasure from maintaining and modifying their craft to suit their needs and taste, or may be rented for the specific trip or cruise. A professional skipper and even crew may be hired along with the boat in some cases. People take cruises in which they crew and 'learn the ropes' aboard craft such as tall ships, classic sailing vessels and restored working boats.

Cruising trips of several days or longer can involve a deep immersion in logistics, navigation, meteorology, local geography and history, fishing lore, sailing knowledge, general psychological coping, and serendipity. Once the boat is acquired it is not all that expensive an endeavor, often much less expensive than a normal vacation on land. It naturally develops self-reliance, responsibility, economy, and many other useful skills. Besides improving sailing skills, all the other normal needs of everyday living must also be addressed. There are work roles that can be done by everyone in the family to help contribute to an enjoyable outdoor adventure for all.

A style of casual coastal cruising called gunkholing is a popular summertime family recreational activity. It consists of taking a series of day sails to out of the way places and anchoring overnight while enjoying such activities as exploring isolated islands, swimming, fishing, etc. Many nearby local waters on rivers, bays, sounds, and coastlines can become great natural cruising grounds for this type of recreational sailing. Casual sailing trips with friends and family can become lifetime bonding experiences.

Passagemaking



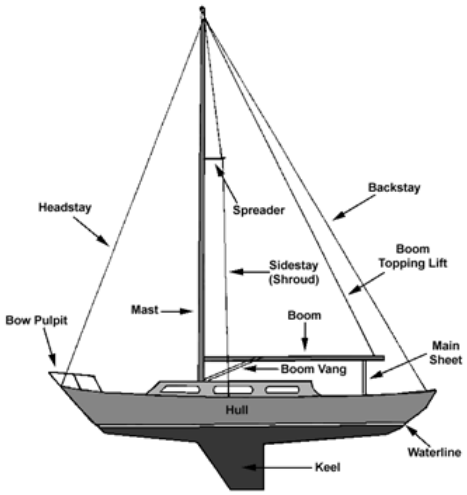
Long-distance voyaging, such as that across oceans and between far-flung ports, can be considered the near-absolute province of the cruising sailboat. Most modern yachts of 25–55 feet long, propelled solely by mechanical power plants, cannot carry the fuel sufficient for a point-to-point voyage of even 250–500 miles without needing to resupply; but a well-prepared sail-powered yacht of similar length is theoretically capable of sailing anywhere its crew is willing to guide it. Even considering that the cost benefits are offset by a much reduced cruising speed, many people traveling distances in small boats come to appreciate the more leisurely pace and increased time spent on the water. Since the solo circumnavigation of Joshua Slocum in the 1890s, long-distance cruising under sail has inspired thousands of otherwise normal people to explore distant seas and horizons. The important voyage of Robin Lee Graham and others have shown that, while not strictly racing, ocean voyaging carries with it an inherent sense of competition, especially that between man and the elements. Such a challenging enterprise requires keen knowledge of sailing in general as well as maintenance, navigation (especially celestial navigation), and often even international diplomacy (for which an entire set of protocols should be learned and practiced). But one of the great benefits to sailboat ownership is that one may at least imagine the type of adventure that the average affordable powerboat could never accomplish.

Rope, Lines & Rigging

Lines (generally steel cables) that support masts are stationary and are collectively known as a vessel's standing rigging, and individually as *shrouds* or *stays*. The stay running forward from a mast to the bow is called the *forestay* or *headstay*. Stays running aft are backstays.

Moveable lines that control sails or other equipment are known collectively as a vessel's running rigging. Lines that raise sails are called halyards while those that strike them are called downhauls. Lines that adjust (trim) the sails are called sheets. These are often referred to using the name of the sail they control (such as main sheet, or jib sheet). Sail trim may also be controlled with smaller lines attached to the forward section of a boom such as a cunningham; a line used to hold the boom down is

called a vang. A topping lift is used to hold a boom up in the absence of sail tension. *Guys* are used to control the ends of other spars such as spinnaker poles.



Lines used to tie a boat up when alongside are called docking lines. In dinghies the single line from the bow is referred to as the painter. A rode is what attaches an anchored boat to its anchor. It may be made of chain, rope, or a combination of the two.

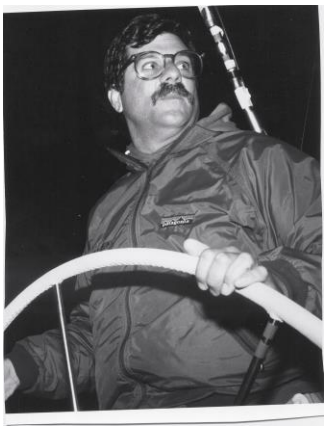
Some lines are referred to as ropes:

Bell rope (to ring the bell),

Bolt rope (attached to the edge of a sail for extra strength),

Foot rope (for sailors on square riggers to stand on while reefing or furling the sails), and

Tiller rope (to temporarily hold the tiller and keep the boat on course).



Walls are called bulkheads, while the surfaces referred to as ceilings on land are called 'overheads'. Floors are called 'soles' or decks. The toilet is traditionally called the 'head', the kitchen is the galley. When lines are tied off, this may be referred to as 'made fast' or 'belayed.' Sails in different sail plans have unchanging names, however.

Knots and line handling

The tying and untying of knots and hitches as well as the general handling of ropes and lines are fundamental to the art of sailing and are further discussed individually in another section of this book. The basic sailing knots are:

Figure-eight knot — stopper knot

Round turn and two half hitches — secure the end of a rope to a fixed object

Bowline — used to form a fixed loop at the end of a rope

Clove hitch — securing lines running along a series of posts

Rolling hitch — rigging a stopper to relax the tension on a sheet

Reef knot — joining two ends of a single line to bind around an object

Single and double sheet bend — joining two ropes of different diameters

In addition it requires competent crewmembers to understand 'taking a turn' around a cleat and to be able to make cleated lines secure. Lines and halyards need to be coiled neatly for stowage and reuse. Dock lines need to be thrown and handled safely and correctly when coming alongside, up to a buoy, and when anchoring, as well as when casting off and getting under way.

Rules and regulations

Every vessel in coastal and offshore waters is subject to the International Regulations for Preventing Collisions at Sea (the COLREGS). On inland waterways and lakes other similar regulations, boaters should consult the individual body of water, state, country and local regulations. Lake Norman regulations are found in a different chapter of this book.

In general, regardless of the activity, every sailor must maintain a proper lookout at all time, adjust speed to suit the conditions and know whether to 'stand on' or 'give way' in any close-quarters situation. The stand-on vessel must hold a steady course and speed but be prepared to take action to prevent an actual collision if the other vessel does not do so in time. The give-way vessel must take early, positive and obvious avoiding action, without crossing ahead of the other vessel.

If an approaching vessel remains on a steady bearing, and the range is decreasing, then a collision is likely.

The sailing vessel on port tack gives way to the sailing vessel on starboard tack.

If both sailing vessels are on the same tack, the windward boat gives way to the leeward one.

If a vessel on port tack is unable to determine the tack of the other boat, she should be prepared to give way.

An overtaking vessel must keep clear of the vessel being overtaken.

Sailing vessels must give way to vessels engaged in fishing, those not under command, those restricted in their ability to maneuver and should avoid impeding the safe passage of a vessel constrained by her draft.

The COLREGS go on to describe the lights to be shown by vessels under way at night or in restricted visibility. Specifically, for sailing boats, red and green sidelights and a white sternlight are required, although for vessels under 23 feet LOA.

Sailors are required to be aware not only of the requirements for their own boat, but of all the other lights, shapes and flags that may be shown by other vessels, such as those fishing, towing, dredging, diving etc., as well as sound signals that may be made in restricted visibility and at close quarters, so that they can make decisions in good time, should the need arise.

CHAPTER 11 ----- SAILBOAT RACING – WHAT IS IT ALL ABOUT?

- **Types of Racing – One Design & Handicapped**
- **Lake Norman Racing Information**
- **Top 10 Races in The World – A Commentary**
- **Yacht Club Sailing Races**
- **Racing Rules – A Brief Introduction**
- **Race Signals**

There are two primary methods of competition in sailboat racing: One-Design and handicap. One design refers to a racing class that consists of just one model or design of sailboat. In one-design racing, the first boat to finish wins the race. This is contrasted with handicap racing, where time is added or subtracted from the finishing times based on design factors and mathematical formulas to determine the winner. Having a rigid one-design specification keeps design experimentation to a minimum and reduces cost of ownership. The popularity of one-design increased in the 1970s with the introduction of laminate construction using fiber-reinforced plastic and mold building technology. This process allowed the mass production of identical hulls of virtually any size at a lower price.

The one-design design idea was created by Thomas Middleton of the Shankill Corinthian Club located 10 miles (16 km) south of Dublin, Ireland in the year 1887. The Solent One Design Class was one of the earliest O.D. classes formed, became popular and was patronized by some of the most energetic and best known yacht owners in the Solent, Portsmouth and Southampton waters.

As a general rule, the tolerances are strictest in smaller boats like dinghy classes and small keelboats. In some cases the tolerances are specified in a confidential Building Specification and often everything is designed and produced at the same factory or a very few factories. Examples are the Laser, Opti, 420, many of the J-boats, Lightning, Flying Dutchman and Hobie Cats. In others the specification is published but the boats may only be produced by licensed manufacturers with usually only one builder in any country or region. Examples are the Olympic Finn and 470 but in both these classes a single manufacturer has succeeded in building faster boats than all other manufacturers. In yet others, for example the Optimist anyone may manufacture but tight controls of measurement result in strict one design.

In medium- to large-sized boat classes, One-Design would refer to conformance to a standard specification, with the possibility of alterations being allowed as long as they remained within certain tolerances. Prime examples of this are the J-Boats but after the hull length overall (LOA) exceeds 27 feet, people generally refer to the boat as an offshore one-design boat or yacht.

The Scows are among the most interesting and unique one design classes. The class may have organized around an existing fleet of similar boats that traditionally existed together often for commercial purposes such as sailing canoes boats that developed a common hull form over the years. Contrary to the connotations of the old definition of "scow" (large and slow), the inland lake scows are extremely fast—the wide, flat bottom hull allows them to plane easily. As a consequence of this, the A scow is the highest rated centerboard boat.

Sailing scows have significant advantages over the traditional deep keel sailing vessels. Keelboats, while very stable and capable in open water, were incapable of sailing into shallow bays and rivers. The squared off shape and simple lines of a scow made it a popular choice for simple home-built boats made from plywood. Generally these designs are created to minimize waste when using standard 4-foot by 8-foot sheets of plywood.

The Inland Racing Scows


AMERICA³

17th Crew Member

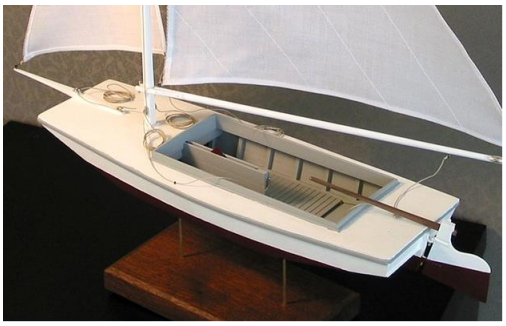
Let it be known to all that this Certificate of Registry is awarded in recognition and gratitude for the generous support given by

David Michael Goodman

for the yacht America³ in its campaign to defend the America's Cup, 1992.

AMERICA'S CUP 1992

In the early 20th century, smaller sloop and cat rigged scows became popular sailboats on inland lakes throughout the Midwestern United States. These boats were distinguished by their larger sail plans, retractable bilge boards, and in some classes, twin rudders. There are many active racing classes throughout the Midwest, Western New York, and the New Jersey Shore and are beginning to populate the inland racing in parts of the South. Johnson Boat Works was the developer and builder of racing scow design sailboats in White Bear Lake, Minnesota. In 1900. This sailboat was the beginning of the group of Scow classes.



Through the years, Johnson built Opti's and 420's. In 1998, two years after JBW turned 100 years old, the family sold the company to their competitor Melges Boat Works (now called Melges Performance Sailboats) in Wisconsin.

It is noteworthy that when discussing scow class boats, “Buddy” Melges is the immediate associated name. Johnson remains the unrecognized pioneer. But Melges brought the scow classes into an entirely new level of respect and demand and somewhat like Johnson, Buddy’s father, who also pioneered this design, remained in the background of notoriety. I chose to include a profile on “Buddy” as his broad spectrum of racing successes is part of what enabled this unique boat design to achieve popularity. I had the good fortune of visiting the Melges operation and crew on one of his E-Scows for several

races and was the 19th crewmember to the 1992 America^3 , successful defense of the America's Cup, which was Buddy's capstone to his intensely charismatic and competitive career, as he helped Bill Koch steer the boat to victory. One of the many sailors who changed the landscape of the sport.

YACHT HANDICAPPING

During the early part of the 19th century, interest in yacht racing had achieved sufficient momentum to need an agreed handicapping system to allow different types of yacht to race on an equitable basis. The method of measuring merchant sailing ships carried over into the world of yacht racing so that a yacht also now had a measured tonnage which allowed size comparisons and hence performance comparisons to be made between yachts on the basis that a properly designed big yacht will sail faster than a properly designed small yacht.

Each yacht fell within a Class based upon its measured tonnage. In the early 19th century four ranges of tonnage and hence four Classes were defined. Based on experience gained from the results of numerous races each Class was allocated a distance allowance that the Class had to give away to the next lower Class. This was equivalent to a Class 1 having to sail more distance than a Class 4 yacht during a race.

In 1834 handicapping by distance was changed to handicapping by time.

As yacht racing in particular became more and more popular designers started to look for and found loopholes in the measurement rules to enable a design to get a better rating. Whilst this encouraged designers it discouraged owners from participating in handicap racing because designs were being outdated almost before the yacht was launched.

Yacht Racing Handicapping has seen many formulas. Below is a snapshot of the most significant formulas and brief information.

Thames Formula – the first formula designed for yachts was created in 1855 by the Royal Thames Yacht Club and originally used for calculating the port dues for yachts;

The adoption of the British Thames Measurement by the Yacht Club of France in 1870 may mark the beginning of international rating rules. In 1893, the Germano-Scandinavian Union was formed and it developed its "Union Rule".

Starting in 1902, under the leadership of the New York Yacht Club, U.S. yacht clubs agreed to a "Universal Rule" in 1905 which was based on a formula developed by Nathanael Herreshoff.

By the early 20th Century yacht racing had spread across Europe but each country had its own different rating rules. What was needed was a common rating or an agreed International Rule, which would enable yachts from one country to race competitively in

a different country. The leading yacht racing countries came together and laid down a system that calculated the rating of yachts, measurement rules, construction regulations (scantlings) and rules for racing. In 1906, a conference was held in London with representatives from eleven countries attended, together with an observer from the United States. The conference delegates met finally again in Paris in October 1907 and ratified the first International Rule which defined not only the rating of yachts and measurement rules but also construction regulations (scantlings) and racing rules. Delegates from this meeting went on to form the International Yacht Racing Union (IYRU); the precursor to the present International Sailing Federation (ISAF). Note - The USA sent observers to the meetings but did not initially adopt the first International Rule and continued with the Universal Rule based on the formula developed by Nathanael Herreshoff.

The International Rule, with many modifications invoked, eventually became the backbone of yacht racing. The Rule created a formula that took into account most problematic areas that had previously caused dissent among the racing nations. It does not restrict size—many individual classes were created. It allowed designers a degree of latitude—yet controlled unsafe extremes. It laid down construction rules and governed the use of materials—yet understood that the Rule must develop.

Why "Meter" is in the names International Rule yachts?

It is commonly believed that the term Meter refers to the units of measurement used for the input values entered into the formula. This has led to the idea that the use of metric units for the formula represented a major concession on the part of the British whose preeminence in yachting at the time could have justified using Imperial units. In fact, the formula works equally well with Imperial Units. The relation between the length and area components of the formula are preserved whether in metric or Imperial Units.

Why doesn't the "number" correspond to a yacht's length?

For the International Rule, the rating number is approximately equal to the sailing length of the hull. These boats have long overhangs which allow the waterline length to increase as the boat heels over. A displacement hull's maximum speed (the hull speed) is directly proportional to the square root of its waterline length.

The first rating rules were first expressed as the weighted sum of various speed factors such as length and sail area. Later rules included resistance factors, such as draught or

freeboard. These resistance factors could either be subtracted from the speed factors or used as divisors of the speed factors. Some rules thus took the form of fractions—some "trivial", where the divisor was merely a constant, and others "non-trivial", where the divisor was a resistance factor. The Union Rule was a trivial fraction (the divisor being "150") and the Universal Rule non-trivial (the divisor being 5 times the cube root of the draught).

Meter Classes

While many different Meter Class yachts were constructed during those first heady years, three sizes have maintained their popularity; the 6, 8 and 12 Meter Classes. The year after the ratification, the 12 Meter Class were chosen for the Olympics—the 6 Meter and the 8 meters were also used in different years. The 5.5 Meter was also used in the Olympics. The 12 Meter Class was used for the America's Cup events from 1958 through 1987.

After reading all of this “Meter/Meter” information, I’m hoping it begs the question about why it was included in this book. In 2016, The 2016 Vintage Yachting Games will be the 3rd post-Olympic multi-class sailing event for discontinued Olympic classes. The event will be held on 17–25 June 2016 at Weymouth Bay in Dorset, Great Britain. This will be the first Vintage not held on the 'The Continent'. The organization of this event will be in the hands of the Weymouth and Portland National Sailing Academy. The Vintage Yachting Games Organization (VYGO) will govern the organization. For those of us who cherish the term “vintage yachting” this is an opportunity to watch, read about or participate in a turning back of time of the water. For the rest of us, it provides information about a relatively unknown part of sailboat racing. Much more can be found at: http://www.yachtsandyachting.com/news/167128/WPNSA-wins-bid

Portsmouth Yardstick Handicap

The Portsmouth Yardstick (PY) or Portsmouth handicap scheme is a system of handicapping used primarily in small-boat yacht racing. The handicap is applied to the time taken to sail any course, and the corrected time can be used to compare widely different sailboats on even terms. Portsmouth Numbers are continually updated with empirical data from race results worldwide. Numbers are provided for differing wind speeds (when the data are available), plus a composite number that can be used when the wind speed is variable or unknown. The Portsmouth numbers are administered in the United States by the Portsmouth Numbers Committee, based on annual input from a large number of affiliated sailing clubs all over the world.

There are hundreds of boats that have a Portsmouth Number, or D-PN[9]. An official table of D-PNs is published on the US Sailing website[10]. The classes included below are those used at the 2012 Olympics, the 2012 Paralympic Games, and the 2012 ISAF Youth Worlds.

In the United States, the Thistle was chosen as primary yardstick in 1961 with a value of 83.0, which corresponded to its RYA PN rating at the time. Other boats were compared using their DIYRA (Dixie Inland Yacht Racing Association) rating to produce the D-PN number. This proved successful and in 1973 the responsibility was passed from the DIYRA to the North American Yacht Racing Union.

Wind Handicap Factors (HC) are an extension conceived by the DIYRA Portsmouth Numbers Committee to take a more realistic account of wind and wave conditions for different classes. This produces a factor based on F=100 for each point of the Beaufort Scale from 0 to 9. Further extensions are being evaluated for offshore classes to take account of sail inventories, excess weight, etc.

Application

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[9] There is a linear correlation between the D-PN and PHRF, allowing the following conversion formulae.

- D-PN = (PHRF / 6) + 55
- PHRF = (D-PN − 55) × 6

[10] http://home.ussailing.org

Fast rating boats having low numbers and slow ones high numbers. In a race involving a mixed fleet, finishing times can be adjusted using the formula:

Corrected Time = Elapsed Time × Scale / Handicap where Handicap is the applicable Portsmouth Number for the given class of boat. Each boat's time is adjusted with the formula, and then the adjusted scores are compared to determine the outcome of the race.

For example, a custom HB2 Racer (a semi-open homebuilt class, and the slowest listed boat) has a D-PN of 140, and an A-Scow (the fastest listed centerboard boat) has a D-PN of 61.3. If an A Scow takes 1 hour to finish a given course, and a PD Racer takes 2 hours, the handicapped times are:

A Scow: 1 hour × 100 / 61.3 = 1.63 hours

HB2 Racer: 2 hours × 100 / 140 = 1.43 hours

So the HB2 Racer, although it took twice as long to finish the course, would be declared the winner.

Lake Norman

Lake Norman racing enthusiasts can find lakewide sailing instructions, the Performance Handicap Racing Fleet ("PHRF") information plus other vital documents at http://www.lnkc.com. The Lake Norman Keelboat Council (LNKC) is a federation of the racing efforts of The Peninsula Yacht Club, The Lake Norman Yacht Club and Outrigger Yacht Club, located on Lake Norman, North Carolina. All three clubs field keelboats for both serious and casual PHRF racing.

Lake Norman Keelboat Council
Performance Handicap Racing Fleet (PHRF) Rating Program

Introduction. Rating by performance handicap is a method of providing equitable time allowances for sailboats of different designs racing against each other. Numerous systems have been employed. Some were methods of handicapping boats, some handicapped skippers, and some combined both systems. The increased interest in the racing of cruiser/racer type sailboats has produced the Performance Handicap Racing Fleet. Measurement-based rating formulas with the attending rapid changes in boat design have turned many skippers to the performance based handicap system. Performance handicap emerges as the best assurance of continued opportunity to compete fairly against all designs, both new and old. In 1981, USYRU (now US Sailing) recognized PHRF as a full committee under its Offshore Racing Council. PHRF programs are locally administered by rating organizations throughout the United States and elsewhere. At Lake Norman the program is administered by the Lake Norman Keelboat Council ("LNKC") Board of Handicappers under policies approved by the Board of Directors of the LNKC.

PHRF Handicaps. PHRF ratings are boat performance handicaps based on the speed potential of the boat, and are determined to the extent possible by observation of previous boat performance. However, because of the number of boats in PHRF, it is not practical to operate on statistics related to individual boats alone. A broader statistical base is obtained by treating production boats of consistent design and construction as a class. Where a class has several boats racing actively, the performance data accumulate rapidly and it is possible to arrive at a fair handicap in a short time. It is the intent of PHRF handicapping that any well equipped, well maintained, and well sailed boat will have an equal opportunity to win. PHRF ratings are not intended to reflect skipper and crew capability. Intensity of competition and the influx of new and aggressive sailors require each skipper to maintain consistently high performance in order to place well. The PHRF rating of an individual boat, expressed in increments of 3 sec/mile, is deducted from elapsed time to produce a corrected time. The higher rating indicates the slower boat. Observations of numerous races show that it is impossible to gauge a boat's potential performance more accurately than this because of the multiple factors involved. Differences in skipper and crew skill represent a much larger factor than 3 sec/mi.

Boat Design. The PHRF is an open rule. There are no limitations on ingenuity other than those listed herein. A boat must be a monohull of self righting design. Well designed and constructed boats are expected not to be made obsolete by newer designs under PHRF. PHRF does not use formulas to determine handicaps, because any formula once established can be beaten by a clever designer. As faster designs appear, they are handicapped accordingly. Therefore, one of the major attractions of the PHRF system is that older boats can race competitively with the latest designs. PHRF discourages rule beating. If a skipper modifies his boat, PHRF will attempt to compensate for the new potential speed. The use of taller masts, longer spinnaker poles, extra ballast, gutted interiors, or other modifications intended to increase speed is compensated for by the rating assigned.

Top 10 yachting races in the world

My last two years of high school were in Connecticut and I was on the Sailing Team. Stop and think how few secondary schools had sailing teams in the late 1960's. A fellow team member, "Ruggles", actually the best sailor of the team, wondered if he'd like to sail in any of the top 10 yachting races after he graduated college. Quite an aspiration for a 17 year old! I thought about that for a minute and decided I was happy racing the school's one designs and completing with neighboring schools on Long Island Sound. After college, he *'sailed'* into years as Sales Manager for North Sails, then as National Sales Manager for Pearson Yachts, on to General Manager at Newport, RI's Yachting Center, a decade and a half as Yacht Club Chairman of Rhode Island's Marine Trades Association, another decade running US Sailing's Commercial Sailing School and 2 years as Director of The Storm Trysail Club (sponsoring club of Block Island Race Week, LI Sound Race Week, Ft. Lauderdale – Key West Regatta, Montego Bay Race Week, Annapolis Big Boat Regatta, Intercollegiate Offshore Regatta and many more). He certainly known the terrain of yacht racing, has sailed in many during his tenures with North Sails and his associations with many of the famous boats that have rounded the buoys to enter Newport, RI's harbor.

In my college sailing team years, I sailed against two cousins who were both Philadelphians and grew up sailing in Ocean City. NJ. Coincidentally, after one of the intercollegiate regattas, we got to talking and I shared my high school friend's dream and asked if he had similar aspirations. His eyes grew bigger and before he could say yes, he began rattling off those grand prix races he'd like to sail. His cousin Charlie, who appeared to be more of a ladies man than a sailor, graduated a year before me and went on to win the 1971 pre-Olympic Dragon Class regatta in Kiel, was the Atlantic Coast champion in 1970 and 1971 and the Pacific Coast champion in 1972 and he won a bronze medal in the Dragon class at the 1972 Summer Olympics in Munich, together with Donald Cohan and John Marshall. In all of my college racing against either of them, I never saw anything but the stern of their boats! The other cousin went on be a 4 time member of Dennis Connor's Courageous then Stars and Stripes Americas Cup crew, sailed in most of the grand prix offshore races and today oversees the quality and safety of all US Naval Academy sailing vessels and programs. Of all the sailors I knew, this guy sailed with an innumerous number of "A-List" racers.

Charlie's victories have a deeper depth than his on the water achievements. Don Cohan was the first and only Jew to win an Olympic medal in yachting and the oldest competitor to win bronze in sailing at the age of 42. Years later, he twice defeated Hodgkin's disease and came back to win a U.S. sailing championship at the age of 72. John Marshall, after returning home from the Olympics, gets a phone call from Lowell North (North Sails) asking him if he wanted to become a sailmaker. Marshall who has a chemistry degree from Harvard and plans for a doctorate in biochemistry at the time, won a North American Championship during a summer vacation. Lowell North believed that successful

sailboat racers make good sailmakers and good businessmen. North, himself, won two Olympic medals: a Gold in the Star class in 1968 and a Bronze in the Dragon class in 1964, and five Star-boat World Championships. North notables, what Lowell liked to call his "Tigers" could well serve as members of the Who's Who of modern sailing and sailmaking.

During my post college racing, mostly on the Long Island Sound, Block Island, Martha's Vineyard and Newport circuits, I tacked and jibed with and against many of the best of the best. In the late 70's, I was sailing on a C&C 40 that Ulmer Sails had outfitted and as part of that, provided two of his "experts" to sail on the boat for the season. I became good friends with Ken who went on to sail on many famous offshore boats of that decade and introduced me to many, still to this day, of the most genuine and notable yachtsmen I'll ever know. Ken had his top 10 list and sailed in all of them.

Ulmer recruited John Kolius, who learned his sailmaking skills working for Buddy Melges. He is one of the few racing sailors who just had it all in his blood. Reminds us of the student who hardly studied and got all A's. Kolius's list of victories, in addition to being known as one of the stewards that helped change the sailboat racing landscape, includes America's Cup skipper on Courageous against Tom Blackhaller, and eventual cup defender Dennis Connor, and again as skipper in 1987 of America II. Kolius was the 1992 and 1995 America3. Americas Cup coach. His sailing curriculum-vitae includes a list of the following 'significant' accomplishments: Sears Cup Winner, Mallory Cup Winner, Soling North American Winner, Olympic Silver Medal, J24 World Champion, Championship of Champions Winner, 50 ft. World Cup Champion, Transpac first to finish, Admiral's Cup 1st Place Team, One-design 48 World Champion, J80 North American Champion, ACC Melges 24 Winner. Oh, John Kolius began his sailing days in an Optimist.

Back to my youth. I grew up in Manchester, NH. A close friend had a brother who worked for Ted Hood's sail loft in Marblehead, Ma. He invited me to go sailing in Marblehead, a beautiful harbor located north of Boston that houses a group of beautifully maintained and prestigious yacht clubs. I had no idea what we'd sail. I got into his car for the drive down like I was going into the abyss of sailing for the day. We arrive at Marblehead's Boston Yacht Club, get into the launch and arrive at a light blue, wooden Lightning emblazed with the name Robin Too Too on the transom. Meant nothing to me until we left the mooring and sailed out of the harbor to find another Lightning sailing towards us, we luffed up, that normally 3 man crew boat was being sailed solo, one man, and no other crew. He asked if we cared to 'drag race around a few buoys'? We said okay, waved off, he blew an air horn signifying the 5 minute start sequence, followed by a few more and crossed the starting line first. Bruce (my friend) and I gave it all we had, rounded the

buoys with dangerously close proximity and finished the short, triangular course well behind Mr. Solo Sailor (whatever his name was). He then challenged us to a windward-leeward course 'drag race' which we accepted and the margin between us grew even wider. He invited us to have a beer at the club, we went back to the mooring, he was on a similar one nearby, and we secured the boat and got on the same launch. He knew Bruce and after speaking to him for a few minutes, looked over at me, I offered me hand and introduced myself to which he replied "Ted Hood, nice to meet you." I almost lost my balance. We spent an hour at the club visiting, he was so unassuming, (he needed to buy some better khakis) and we left with an invitation to return for a tour of the loft anytime. I got to know Ted a bit better going forward, saw many of his Robin's, the loft, then lost touch but got to reunite in Annapolis around 2005 at the Sailboat Show where his wife Susan was making his lunch while people were touring his line of boats.

Among the hundreds of Ted's accolades is winning the 1974 America's Cup on Courageous. After the victory, he designed and built a faster yacht and sold Courageous to Ted Turner who beat him in it on his way to winning the 1977 America's Cup. Turner earned two nicknames during his sailing days: "Mouth of The South" and "Captain Courageous". In 1981, both "Ted's" would be at Block Island Race Week and having a chance to be in the presence of both of them, watch them sail and hear Turner 10 boats away was a permanently etched experience.

Hood passed away in July 2103 at the age of 86, leaving a wake of miraculous accomplishments in sailmaking, spar and innovative rigging designs, boatbuilding, built a series of racing yachts, which he skippered to myriad victories in top-flight competition. In the 1980s, Hood sold his sailmaking business to concentrate on boat design and building and moved to Portsmouth, R.I., where he began building power boats and created a line of water-jet-powered yachts. His later projects included a line of power catamarans. He continued to live in Portsmouth until his death.

He assuredly completed his Top 10 list!

I recently re-connected with one of my sailing friends who asked if I'd ever made a list of my Top 10 and how did I do? It took me a few months to get back to him with an answer. After my first pass, I decided to look back through my racing photos and got mesmerized at how different I looked, how much less agile I've become, and how I have outgrown being splashed by water all day and night and not showering for a length of time it takes to race from Newport, RI to Bermuda.

I'm glad I waited to make my list. Nothing like making it after you've got a few scratched off! And I realized that having crewed on 10 offshore regattas didn't represent my most

sought after on the water experiences. If you have done any of this type of sailing, or thinking, please share your thoughts. Even if you've only read articles in magazines and names sound familiar, and we have a common goal, share your views with me.

My Top 10.

To do:

- Share my abilities in making our yacht club a source of sound boating information
- Be a good steward of boating – including watersports, powerboating, sailing and having manners on the water.
- Never lose my appreciation for the serenity of sailing offshore on a moonlit, star-studded night.

Done:

- Block Island Race Week
- Martha's Vineyard Race Week
- Intercollegiate Offshore Regatta
- Bermuda Race
- Sail in the glistening waters off St. Barth's
- Sail on several former America's Cup, 12 meter boats
- Troll fishing lines while racing a boat, catch and cook the fish

There is a broad variety of kinds of races and sailboats used for racing from large yacht to dinghy racing. Much racing is done around buoys or similar marks in protected waters, while some longer offshore races cross open water. All kinds of boats are used for racing, including small dinghies, catamarans, boats designed primarily for cruising, and purpose-built raceboats. The Racing Rules of Sailing govern the conduct of yacht racing, windsurfing, kitesurfing, model boat racing, dinghy racing and virtually any other form of racing around a course with more than one vessel while powered by the wind.

Yacht Club Sailing

Many yacht clubs maintain their own racing teams or group of enthusiasts. Lake Norman's governing body for keelboats is The Lake Norman Keelboat Council (LNKC)[11], comprised of The Peninsula Yacht Club, Lake Norman Yacht Club and Outrigger Yacht Club. There are numerous regattas throughout the year and Lake Norman is fortunate to not freeze, allowing sailing all year. This year, In addition to PYC being the annual host of the largest sailing regatta on the lake The Peninsula Cup, PYC is also hosting this year's 4 race Icicle Series[12]. A full listing of the lakewide regattas is always available at The Ships Store or on the LNKC website.

Types of races

Fleet Racing

Fleet races can have anywhere from four to an infinite number of boats. A regatta must have at least three races to be counted. Each boat's place in each race is added to compile a final score. The lowest scorer wins.

Match Racing

In match racing only two boats compete against each other. The best known competition of this type is the America's Cup. The tactics involved in match racing are different from those of other races, because the objective is merely to arrive at the finish line before the opponent, which is not necessarily as fast as possible. The tactics involved at the start are also special.

Team Racing

Team racing is most often between two teams of three boats each. It involves similar technique to match racing but has the added dimension that it is the overall scoring of the race that matters. For this reason, many tactics are used to advance teammates to make stable combinations for winning. The stable combinations most commonly sought are "Play one", which is 1-2-anything, "Play two"or2-3-4, and "Play 4", a 1-4-5 combination. These are generally regarded as the best setups to win and the hardest for the opposing team to play offense against.

[11] Lake Norman Keelboat Council www.lnkc.com
[12] See Notice of Race and schedule attached in this section

Race Format

Short Course Racing

"Buoy races" are conducted in protected waters, and are quite short, usually taking anywhere from a few minutes to a few hours. All sorts of sailing craft are used for these races, including keel-boats of all sizes, as well as dinghies, trailer sailors, catamarans, skiffs, sailboards, and other small craft. A sailing competition is known as a regatta, usually consists of multiple individual races, where the boat that performs best in each race is the overall winner.

This kind of race is most commonly run over one or more laps of a triangular or oval shaped course marked by a number of buoys. The course starts from an imaginary line drawn from a 'committee boat' to the designated 'starting' buoy or 'pin'. A number of warning signals are given telling the crews exactly how long until the race starts. The aim of each crew is to cross the start line at full speed exactly as the race starts. A course generally involves tacking upwind to a 'windward' marker or buoy. Then bearing away onto a downwind leg to a second jibe marker. Next another jibe on a second downwind leg to the last mark which is called the 'downwind mark' (or 'leeward mark'). At this mark the boats turn into wind once again to tack to the finish line. A race may entail going more than once around the race course. The most well-known triangular course events are: The Olympics and The Americas Cup.

Coastal/Inshore racing

Inshore racing is yacht racing not in protected waters but along and generally within sight of land or from land to nearby islands, as distinct from offshore racing across open water and oceans. The duration of races maybe daylight only, overnight or passage races of several days. Some races, such as Block Island Race Week, are actually a group of inshore races of various distances along overlapping courses to allow for different classes and skills. Depending on location, stability and safety equipment requirements will be more extensive than for harbor racing, but less so

than for offshore racing. Different levels of requirement for navigation, sleeping cooking and water storage also apply.

Offshore racing

Offshore yacht races are held over long distances and in open water, last a number of days to months. The first solo record was set by Joshua Slocum in the Spray (1898).

The yachting calendar counts a multitude of different events. I have attempted to list the top 10 yachting events in the world and this list includes different formats of racing, such as single handed, around the world, ocean and coastal. Clearly the list and rankings are arbitrary but they should give an indication on which events deliver the best spectacle and value. The Americas Cup is not included as it has become more of a spectacle than a representation of yachting.

Antigua Sailing Week. The Antigua Sailing Week is the biggest regatta in the Caribbean and over the last two decades, Antigua Sailing Week has developed into one of the biggest events in the World Sailing calendar. It is a week of races where some of the biggest, fastest and most impressive sailing yachts in the world packed with Olympic, America's Cup and round the world sailors are competing. Adding the variety in races, the big boats and the great party atmosphere and here we have an event that should not be lacking on anyone's list!

Cowes Week; the Cowes week is tradition all the way. Since 1826 it is one of the UK's longest running and most successful sporting events. With 40 daily races for over 1,000 boats, 8,500 competitors (amateurs and professionals) and 100,000 spectators, it is without a doubt the largest sailing regatta of its kind in the world. With these numbers and this longstanding tradition, it belongs without a doubt within our top 10 of sailing race events in the world.

Louis Vuitton Trophy. Putting together the exciting format of match racing, Americas Cup Class yachts, some of the best monohull sailors in the world and a large crowd, makes for a great event. Adding large TV screens on site and side events in places such as Auckland, La Maddalena in Sardinia, Nice, Dubai and Hong Kong and you have a great experience that you do not want to miss. As stated before match racing has great potential for the future and that's why we have included the trophy.

Fastnet Race. Every sailor has heard of the Fastnet Race. It is one of the most famous offshore yachting races counting 608 nautical miles and taking place along the southern coasts of the UK and Ireland. Weather conditions always play a key role here; either big storms or relatively quiet weather determine a fast and furious or a tactical race. Similar

to Sydney Hobart, the Fastnet has had its share of casualties, underlining the fact the race is not without danger and a race that is not for the inexperienced or faint of heart. Many big names participate in this race which has a long history.

Sydney Hobart; say Christmas, Bass Strait, Tasmania, new year and spectacular racing and sailing fanatics filled with passion immediately will answer: Sydney-Hobart!! Without a doubt the Race is one of the most well-known iconic brand names in sailing. With the exception of the Volvo Ocean Race and the Americas Cup there is no yachting event attracting such huge media coverage. The "Bluewater Classic" has grown over the last 64 years to become one of the top three offshore yacht races in the world and now attracts maxi yachts from all around the globe. One of the reasons for the popularity of the race are the unpredictable and sometimes grueling conditions with high winds and difficult seas, sadly having also led to tragedies. Many seasoned offshore sailboat racers would claim this to be the race of races.

Vendee Globe The Vendée Globe is a round the world single handed yacht race, sailed non-stop and without assistance. The race was founded by in 1989, and since 1992 has taken place every four years. As the only single-handed **non-stop** round-the-world race, one can say it is probably the most extreme form of ocean racing, being a serious test of individual endurance. Not surprisingly a significant portion of the entrants usually retire, but the one succeeding waits eternal fame.

Volvo Ocean Race. The Formula One of sailing! For sailors it is one of the ultimate sailing experiences, tough and asking enormous endurance capabilities. Subsequently it attracts together with the Americas Cup the best sailors of the world. Similar to Formula One team budgets have increased tremendously, limiting the number of campaigns. The Race is attracting huge gatherings in the ports where the fleet makes a stop-over. In these ports a variety of side events combined with in-port races guarantee a great experience and a great boost to economic activity. The combination of the best sailors and boats in the world, endurance, round the world, experience, economic and media impact makes the Volvo Ocean Race the new grand prix of yacht racing.

Clipper Round The World Race. This is one of the biggest challenges of the natural world and an endurance test like no other. With no previous sailing experience necessary[13], it's a record breaking 40,000 nautical mile race around the world on a 70-foot ocean racing yacht. Divided into eight legs and 16 individual races, participants choose to complete the full circumnavigation or select individual legs. It is the only race in the world where the organizers supply a fleet of twelve identical racing yachts, each with a fully qualified skipper to safely guide the crew. (The sea does not distinguish between Olympians or novices.) The next race begins in the summer of 2015.

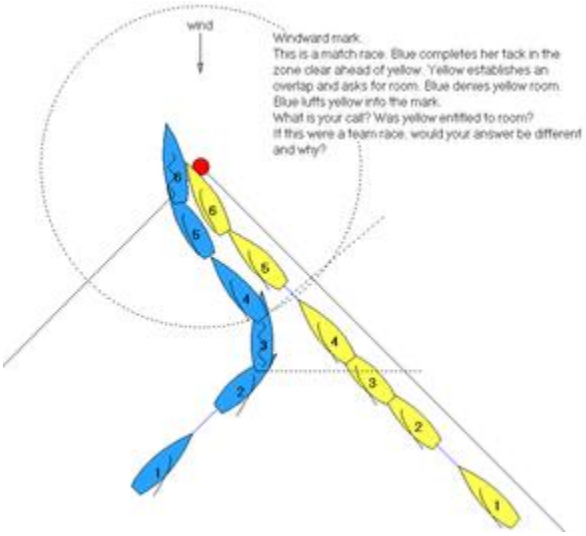
[13] Requires the successful completion of 4 training programs, of 6 days each, on either The Solent in the UK or Australia.

Newport to Bermuda Race. The Newport Bermuda Race is a 635-mile ocean race, much of it out of sight of land, usually lasting three to six days. It crosses a stretch of the Atlantic Ocean known for challenging weather, especially in the Gulf Stream, where there are strong currents. Every two years in mid-June, more than 150 boats start from the historic seaport of Newport, Rhode Island. The fleet has five divisions to allow seaworthy boats of many sizes and types to be raced fairly and aggressively for an array of trophies awarded in Bermuda at an elegant ceremony at Government House, the residence of the governor of this tropical island. In keeping with the 100-year traditions of amateur sailors and strong family spirit, most of the boats tend to have amateur crews comprised of friends and family members. The race maintains its international prestige through competitive fairness, an exemplary safety record, and a responsive race organization handled by the volunteer members of the Cruising Club of America and the Royal Bermuda Yacht Club.

Velux 5. VELUX 5 OCEANS is recognized as the longest and toughest sporting event in the world – a single-handed race over five oceans in a Formula 1 racing yacht through the most extreme weather conditions on the planet. In 2010, the race became more challenging with fewer stops and greater distances. It starts on in October, in La Rochelle, France and is run in five stages, with stopovers in South Africa, New Zealand, South America and North America. The race will take the participants across five oceans, including the fearsome, ice-cold and treacherous Southern Ocean. When they cross the finishing line in La Rochelle, the participants will have sailed more than 30,000 nautical miles. One of the stops is Charleston, South Carolina.

There is some controversy about the legality of sailing single-handed over long distances, as the navigation rules require "that every vessel shall at all times maintain a proper lookout..."; single-handed sailors can only keep a sporadic lookout, due to the need to sleep, tend to navigation, etc.

Racing Rules of Sailing – A Brief Introduction



Have you been on the water, watched a sailing race (regatta) and thought "I'd like to try that but I've heard it's difficult, complicated, you need to know so many rules and you can't just steer the boat in the direction you want to travel"? We're here to help. First, the Sail Fleet of The PYC Yacht Club's Fleet Committee offers any inexperienced racer, who wants to enter their boat in a race, to position an experienced racer as crew for a race(s) on your boat. Arrangements should be made through the Sail Fleet Committee or Captain Harry. This is a wonderful member benefit and is offered to allow sailors to test out racing their boat.

This section is included to provide an introduction and synopsis of the Racing Rules of Sailing but does not act as a substitute or replacement for the book which is the official set of rules governing sail racing. Our Sail Fleet is always available to assist you with understanding these rules and conduct the execution of them on the water, on your or another sailboat. It is empirically not the intent to confuse or overwhelm you! Please know that most racing sailors do not ever have all of the rules fully committed to memory and the book is traditionally a permanent fixture of any racing boat.

The **Racing Rules of Sailing** (*Rules can get complicated*) govern the conduct of yacht racing, windsurfing, kitesurfing, model boat racing, dinghy racing and virtually any other form of racing around a course with more than one vessel while powered by the wind. A new revision is published every four years (after the Olympic Games) by the International Sailing Federation[14] (ISAF), the sport's world governing body. The previous edition (2009–2012) came into effect on 1 January 2009, and can be downloaded at the International Sailing Federation. 1997 saw the most dramatic simplification to the Racing Rules of Sailing since the 1940s. They are based on four main right of way rules: [Part 2, Section A]

Boats on a port tack shall keep clear of boats on starboard tack (Rule 10).

When boats are on the same tack and overlapped, the boat to windward (the boat closest to the wind) shall keep clear of a leeward boat (Rule 11).

When boats are on the same tack and not overlapped, the boat that is astern shall keep clear of the boat ahead. (Rule 12).

When a boat is tacking (changing tack) it shall keep clear of boats that are not tacking (Rule 13).

Four rules with general limitations: [Part 2, Section B]

Even if you have right-of-way, it is your duty to avoid a collision, once it becomes apparent that the other boat is not keeping clear (Rule 14).

If you acquire right of way, you must initially give the other boat room to keep clear, unless you get right of way because of the other boat's actions. (Rule 15)

A boat that changes course, even if it has the right-of-way, shall do so in a manner that gives the burdened boat a chance to "keep clear" (Rule 16).

If you catch up with another boat and you want to pass it to leeward, you may not sail above your proper course *i.e.* you shall not luff higher than you would have done if that boat wasn't there (Rule 17)

Three rules about marks and obstructions [Part 2, Section C] and Three other rules about starting errors, taking penalties, moving astern and when you are capsized or anchored or run aground and finally about interfering with another boat.

[14] The International Sailing Federation is recognized by the International Olympic Committee as the world governing body for the sport of sailing yacht racing.

In total there are 90 rules but (since the major simplification in 1997) only 14 rules govern what boats do when they meet on the water (part 2 rules). It is not necessary to know all of the rules to successfully compete in a dinghy race, but a knowledge of the basics is recommended.

Sailboat racing is a self-regulated sport. As stated by the Racing Rules of Sailing, "Competitors in the sport of sailing are governed by a body of rules that they are expected to follow and enforce. A fundamental principle of sportsmanship is that when competitors break a rule they will promptly take a penalty, which may be to retire."

Depending on the nature of the infraction, the penalty may be either: (1) performing a turn consisting of one tack and one gybe or (2) performing two turns consisting of two tacks and two gibes (except for windsurfing).

For most rules infractions, a competitor may be absolved from disqualification from the race by taking such a penalty. However, if the infraction caused injury or serious damage, or produced a significant advantage in the race or series, the penalty shall be to retire. If a competitor fails to take penalty turn(s) they may be disqualified after a hearing by the Protest Committee. The aforementioned principles do not apply to match racing (like the America's Cup) where on-the-water umpires impose penalties immediately after an infraction occurs.

True Wind from Apparent Wind –– Revisited.

Here's one for the sailors. In the Sailing chapter, we identified and defined True Wind and Apparent Wind. We revisit the topic here with a deeper look at the definitions and a more scientific calculation method.

There are several ways to define the wind. For weather work at sea we care only about the true wind. This true wind is the speed and the direction of the wind relative to the fixed earth under the ocean. Tied up at the dock, we feel the true wind. Once we get underway, our own motion changes the wind we feel, and then it is called the apparent wind. Many sailors argue that the apparent wind is all they care about, and that can be well argued when it comes to setting sails and judging performance. But to know about the weather patterns causing the wind, we need to know the true wind. Furthermore, we often need to know this as accurately as possible. Shifts in the true wind direction are usually the first sign of changing patterns. If we do not figure this properly, we can miss an important shift. This is not a simple observation––which is more or less the point of this article. Slight changes in true wind speed, for example, affect boat speed, and in turn the apparent wind speed and direction, which can easily mask a small but important shift in the true wind direction.

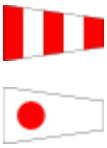
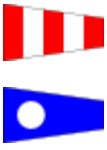
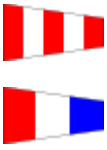
Race signals

Sail races are governed with flags and sound signals to indicate flag changes. The flags used are taken from the International maritime signal flag set. During a race and for any signal concerning the race, these flags are defined in the ISAF Racing Rules of Sailing but the signal can be modified by the Sailing Instructions.

The raising (hoisting) or removing of a visual signal is accompanied by the emission of a sound signal to draw attention to the new signal. The type of the sound signal (one short sound, two short sounds, one long sound, etc.) is described by the rule according to the type of signal. The usual meanings of these flags are as follows:

Postponement signal

The Answering Pennant (**AP**) with or without a numerical pennant is used to indicate a postponed race. A numerical pennant below the AP denotes the time, in hours, of the race postponement.

Flag signal	Number of sound signals when raised	Number of sound signals when lowered	Description
 **AP**			Races not yet started are postponed.
 **AP 1**			Races not yet started are postponed 1 hour.
 **AP 2**			Races not yet started are postponed 2 hours.
 **AP 3**			Races not yet started are postponed 3 hours.
 **AP A**			Races not yet started are postponed. No more racing today.

AP
H

Races not yet started are postponed. More information ashore.

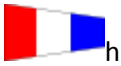
Preparatory signal

These signal flags are used before a race start and most commonly as part of a start sequence/procedure.

Flag signal	Number of sound signals when raised	Number of sound signals when lowered	Description
 **P**			Normal preparatory signal - no starting penalties are in effect. A boat over the line at the start can return through the line or round an ends but must keep clear of boats not returning. If they fail to return through the line however they will be scored OCS
 **I**			The Round-an-End Rule 30.1 will be in effect. A boat over the line during the minute before the start must sail to the pre-start side of the line around either end before starting. If they fail to do this they will be scored OCS
 **Z**			The 20% Penalty Rule 30.2 will be in effect. A boat within the triangle formed by the ends of the line and the first mark during the minute before the start will receive a 20% scoring penalty
 **I**  **Z**			Both the I flag rule and the Z flag Rule will be in effect during the minute before the start. If they fail to round and end then they will be scored OCS

The Black Flag Rule 30.3 will be in effect. A boat within the triangle formed by the ends of the line and the first mark during the minute before the start will be disqualified without a hearing

Start signal

These signal flags are used in the pre-start procedure. Class flags can be numeral pennants 1  , 2  , and 3  however they can be substituted to avoid confusion with the postponement signals relating to a particular class.

Flag signal	Number of sound signals when raised	Number of sound signals when lowered	Description
 ,	1 ↑		Warning Signal. 5 minutes to race start when class flag raised.
 	1 P ↑		Preparatory signal. 4 minutes to start when P flag raised. Flag P used or if a starting penalty applies I, Z, Black flag or I over Z is used in place of P.
 	1 P ↓	Long sound	Preparatory signal. P flag removed 1 minute before start. Flag P used or if a starting penalty applies I, Z, Black flag or I over Z is used in place of P.
	1 ↓		Start Signal. Race start when class flag removed.

Recall signal

Flag signal	Number of sound signals when raised	Number of sound signals when lowered	Description

Individual recall.

X

One or more boats did not start correctly and must return back and do a proper start. The X flag is displayed until the earliest of the following: all boats over the line early have returned correctly, 4 minutes from the start or until one minute before the next start. (The sound signal is in addition to the start sound signal)

General recall.

1st Sub

All boats are to return and then a new start sequence will begin. Signaled when there are unidentified boats over the line or subject to one of the starting penalties, or there has been an error in the starting procedure. The new warning signal for the recalled class will be made 1 minute after the 1st substitute is removed. (The two sound signals when the first substitute is displayed are in addition to the start sound signal)

Course change signal

Flag signal	Number of sound signals when raised	Number of sound signals when lowered	Description
			Shortened Course.
 **S**			When displayed at a rounding mark the finish is between the nearby mark and the mast displaying the S flag. When displayed at a line that boats are required to cross at the end of each lap the finish is that line. When displayed at a gate the finish is between the gate marks.
			Course Change.
 **C**	**...**		When displayed at a rounding mark, the position of the next mark has been changed. If the direction to the mark has changed it shall be indicated by displaying the new compass bearing or a green triangular flag (or board) for a change to starboard or a red rectangular flag (or board) for a change to port. If the length of the leg has changed then this shall be signaled by displaying a "-" if the leg will shorter or a "+" if the leg will be longer. Repeated sound signals should be made to draw attention to the signal.

Abandonment signal

Flag signal	Number of sound signals when raised	Number of sound signals when lowered	Description
 **N**			All races that have started are abandoned. Return to starting area for a new start. The first warning signal will be made 1 minute after N is removed.
 **N A**			All races are abandoned. No more racing today.
 **N H**			All races are abandoned. More information ashore.

Other signals

Flag signal	Number of sound signals when raised	Number of sound signals when lowered	Description
 **L**			When displayed afloat means: Come within hail or follow this boat. When displayed ashore means: A notice to competitors has been posted.
 **M**	**...**		Indicates a boat or an object displaying this signal replaces a missing mark. Repeated sound signals should be made to draw attention to the signal.
 **Y**			All people on board should wear a personal life jacket or personal buoyancy.
 **BLUE**			When displayed the race committee boat is in position at the finishing line.

CHAPTER 12 ----- "PRAWNS"

- **The Tablet and Smartphone Epidemic**
- **Interesting and Noteworthy PRAWNS**
- **Helpful Lake Norman Information**

We're taking you inside a revolution. A look at how mobile computers - laptops, tablets and smartphones have changed access to information on powerboating, racing, weather, navigation and sailing. I have developed the maybe first ever PYC acronym PRAWNS, standing for Powerboating, Racing, Apps, Weather, Navigation and Sailing, to encompass these categories.

Tablets have grabbed our attention second only to the cutest girl in middle school. In 2014, Apple sold 169 million IPhones and 68 million IPads. In September 2010, just 4 percent of American adults owned tablets. In fall 2011, it was 10 percent. That number hit 18 percent in October of 2012 and the Pew Research Center estimates over 50% of American adults ages 18 and older now own a tablet computer like an iPad, Samsung Galaxy Tab, Google Nexus, or Kindle Fire—almost twice as many as the 18% who owned a tablet several years ago.

The overarching question is "Can Marine Apps and a Smartphone Make You a Better Boater?" According to Lenny Rudow, Boat US Magazine Electronics Editor, "*Every day, new applications are developed that can help you run your boat more efficiently and effectively."*[15]

Like it or not, in our modern world cell phones have become as essential to life as clothing, food, and fuel. Unless you're incarcerated, chances are there's a smart phone within your reach. Current models come GPS-equipped, offer waterproof cases, more

[15] April 2011 Boat US Magazine Article

sturdy than early versions, and are convenient to carry. Every day new apps are developed for the communicating multi-tasking generation. Research of how many PRAWNS exist concluded at a mere 29,000,000 and I'm sure there's many more.

To take some poetic liberty from the famous Tom Cruise line in A Few Good Men, let's be clear, no crystal clear that The PYC Educational Committee does not recommend, support, promote or endorse becoming dependent on a cell phone for onboard navigation, communications, or managing your ship's systems. Despite their superior reliability, cell phones distract your focus from the waters around you, similar to what texting does when driving a motor vehicle. We will someday witness a law which prohibits "texting while operating a watercraft".

PRAWNS have their place. Enjoy all of the information that can be found within them, they make great conversation topics, they allow for remote programming to selected navigation units by most manufacturers, monitoring boat systems and even allow such basics as looking at the weather, fishing reports and- calling your family. Sea Tow, BoatUS and the US Coast Guard all offer Apps that include the ability to know your precise location and make contact quickly. You can have a video on tying knots, the Yellow Pages of Boating and an endless collection of related games. Use them and have fun searching out PRAWNS on your own. Share them with us.

In this world of ever increasing technology advances, should PYC have a "PRAWN" member of The Educational Committee who keeps the members current on new apps? Should we have a quarterly PRAWNS update column in The Watch? Anyone want to be PYC's Pioneer of PRAWNS? Give it some thought and send an e-mail or talk to anyone on The Fleet Committee or Captain Harry.

I sifted through or downloaded and just shy of 200 "Apps" before I realized that this world no longer needs a "Good 5 cent cigar" (am I dating myself?) but does need an independent council to evaluate Apps. My goal in evaluating Apps was to down select the best of the best and format them in a table. Without a team of dedicated souls that require no sleep, we'd never get done. Below are a few of the search parameters I used to lead me to the actual App names on ITunes. I never got as far as doing the same for other data phone operating systems.

Boating apps for IPhone	IPhone apps for boaters	IPhone apps for sailors
Sailor apps for iPhone	Marine weather	Sailing weather
Boating navigation	Sailing racing	Sailing instruments
Lake Norman, NC	Fish time	Fishing forecast
Marine navigation	Boaters checklist	USCG Safety
Boat US	Sea Tow	Boat Load

Boat Ramps	Clinometer for Sailboats	Boating Knots & Hitches
NC Boating Regulations	Speed	Wind Guru

Note there are hundreds of website links to reports or articles on "The xx Best Boating, or Sailing, or On the Water, or Weather, or Boat Handling, etc. apps. Suggestion to the person who accepts the challenge of serving as The PYC Pioneer of PRAWNS, publish an annual list of PYC's 10 Best PRAWNS every year! Or a section in another volume on Boating software?

Have fun researching and trying new apps, but keep your focus on boating and safety when on the water. And no PRAWNing while driving on the road either!

Useful Lake Norman Information

Lake Norman, the largest body of fresh water in North Carolina, was created by the establishment of the Cowan's Ford Dam on the Catawba River in the 1960s. The lake takes its name from Norman Atwater Cocke, former president of Duke Power, the company that created the lake. The result of this monumental project was the scenic inland body of water that now makes up Lake Norman.

These numbers help communicate the scale of the lake:
- 32,500 surface acres of water
- 34 miles long and 8 miles across at its widest point (twice the size of the Sea of Galilee)
- 520 miles of shoreline (more than the coasts of both North and South Carolina)
- 130 feet deep at its deepest point

The most relevant information is that about your "home body of water". The Helpful Phone numbers was prepared by our Captain Harry Smith, the Notice to Lake Norman Boaters is copied with permission from Captain Gus. Updates to this information can be found on the "Boating Notice" section of his website www.fishingwithgus.com. It is continually updated as conditions warrant.

The Lake Norman Marine Commission (LNMC) consists of 5 members appointed by the Counties bordering Lake Norman—Catawba, Iredell, Lincoln and Mecklenburg and is responsible for taking appropriate responsibility for Lake Norman and its shoreline area for all matters relating to or affecting public recreation and water safety. As part of these duties the LNMC maintains a Navigational Marker System, works with Duke Power on lake development, developed and manages a long range Aquatic Plant Management Plan for Hydrilla and works with county, town and state government agencies as well as other organizations and the public in addressing important lake issues.

The Marine Commissioners are easily reachable by the general public and welcome your comments and suggestions. The current Commissioners and Staff members with contact information is below.

COMMISSIONERS	CONTACT INFO	
John Marino Chairman	704-478-2507 jmarino@lnmc.org	PO Box 2454 Cornelius, NC 28031
Bill Young Commissioner Mecklenburg County	704-962-8631 byoung@lnmc.org	18020 Kings Point Drive Cornelius, NC 28031
John Gerke Commissioner Catawba County	828-478-2836 jgerke@lnmc.org	1331 Knebworth Lane Catawba, NC 28609
Mark Lancaster Commissioner Iredell County	704-528-7400 mlancaster@lnmc.org	1516 Perth Road Troutman, NC 28116
Morris Sample Commissioner Lincoln County	704-483-2916 msample@lnmc.org	8822 Graham Point Lane Denver, NC 28037

STAFF	CONTACT INFO	
Ron Shoultz Executive Director	704-564-6333 rshoultz@lnmc.org	
Bob Elliott Assistant Director	(704) 650-1091 belliott@lnmc.org	Post Office Box 2454 Cornelius NC 28031
Bill Johnson Administrator	(704) 677-3357 bjohnson@lnmc.org	

The Lake Norman Wildlife Conservationists is a chapter of the North Carolina Wildlife Federation, a community based organization established for the purposes of environmental education, appreciation of wildlife and natural history, and conservation of wildlife habitat and natural resources. A link to the fall 2014 newsletter, The Inland Sea Chronicle, is below. PYC is a sponsoring contributor to LNWC. Their website is www.lakenormanwildlife.org

The North Carolina Wildlife Resources Commission is the state government agency created to conserve and sustain the state's fish and wildlife resources through research, scientific management, wise use, and public input. The Commission is the regulatory agency responsible for the enforcement of N.C. fishing, hunting, trapping and boating laws. Licensing, Permits and Regulations for boating, fishing, hunting, learning, trapping and conserving are found on their website www.ncwildlife.org

Visit Lake Norman, the Official Visitors Guide, includes listings of area hotels, restaurants and attractions, as well as locator maps, annual events, and group services offered to those visiting Cornelius, Davidson and Huntersville. The guide is available online, at the Visit Lake Norman Visitor Center, located at 19900 West Catawba Ave., Suite 102, Cornelius, NC 28031; (exit 28 off I-77 North) or by ordering a hard copy on their website www.visitlakenorman.org.

Lake Norman State Park

(704) 528-6350
lake.norman@ncparks.gov

759 State Park Road, Troutman, NC 28166
GPS: 35.6725480, -80.9325523

Lake Norman State Park is the only public swimming area on the lake, has 13 miles of shoreline and an abundant amount of activities. There is a private 33 acre lake attached to the park where fishing and much protected boating can be enjoyed. Hiking trails, biking trails, picnic areas, campgrounds and a community building create a very friendly and enjoyable family atmosphere. The NC State Parks website is http://www.ncparks.gov/Visit/parks/lano/main.php

Best of Lake Norman is a website that provides a plethora of area information. Website is: http://www.bestoflakenorman.com/

Helpful Phone Numbers

Emergency 911: Be sure to tell operator which county you are calling from.
Note: County Lake patrol and coast Guard Auxiliary monitor marine channel 16 VHF.

Poison Control..... 1-800-848-6946

Federal Bureau of Investigation (FBI)……704-377-9200

US Marshals Service……704-344-6234

Patrols:

- Cornelius Police……..…..704-892-1363
- Catawba/Lincoln County Lake Patrol……...704-464-3112
- Iredell County Lake Patrol……..…..…704-878-3100
- Charlotte Mecklenburg Police lake Patrol……704-896-2185
- U.S. Coast Guard Auxiliary ……....704-663-3333
- N.C. Wildlife Resources Commission, Enforcement Division..1-800-662-7137

Fire/Medic Department:

- Cornelius Fire Department, Station 2……704-892-8307

Towing Services

- Sea Tow (VHF-16)……704-895-8699

Dive Services:

- Dive Masters……..……704-552-1369

Other:

- Duke Energy Corporation Lake Management……...……1-800-834-1738
- Lake Level……...…1-800-829-LAKE (5253)
- Lift Station……704-399-1506
- Plumbing Emergency……...….704-400-5705
- Electrical emergency ……704-320-5716
- HVAC Emergency……704-799-3665
- Google 411……1-800-466-4411

Please report damage to markers as soon as possible to the Lake Norman Marine Commission in Charlotte at (704)375-2006 or (704)372-2416, or Toll Free at (888)THE LMNC (843-5662)

Lake Norman water levels that causes access ramps to closed because they are not safe or unusable.

- Long Island Access Area - 91.0 or 9.0' below full pond
- Stumpy Creek Access Area - 91.0 or 9.0' below full pond
- Pinnacle Access Area - 91.5 or 8.5' below full pond
- McCrary Creek Access Area - 91.5 or 8.5' below full pond
- Hagars Creek Access Area - 91.5 or 8.5' below full pond
- Little Creek Access Area - 93.0 or 7.0' below full pond
- Beatties Ford Access Area - 91.0 or 9.0' below full pond
- Blythe Landing - 95.0 or 5.0' below full pond
- Ramsey Creek Park - 96.0 or 4.0' below full pond

Lake Norman Safety

Each year the winter draw down of Lake Norman's water level exposes serious hazards to navigation, including rocks, stumps, humps, sandbars, etc. As the lake fills, shallow water covers many of these perilous areas during the summer. Danger spots are everywhere. Some are identified by channel/shoal markers and buoys, but many are not. "Boater beware" should always be on your mind when navigating in unfamiliar waters. A quality lake map, GPS, and a good depth finder are necessary for safe boating experiences. The following are specific locations and types of conditions that pose hazardous situations on Lake Norman.

Red Day Marker.

Green Day Marker.

Shoal Marker.

No Wake Buoy.
Photos courtesy of Capt. Gus Gustafson.

Channel Marker adjacent to Shoal Marker(s): Do NOT pass between the two markers. This is NOT the channel. The markers are identifying the area between as a hazard. On the main river channel there are several such areas. Shoals are located at markers 1A, 2A, 6, 10, and 15A. Shoals also are in proximity to creek channel markers R4, R5, D3, D4, D8, T1, T2, T4 and M1. These areas should be identified as danger zones on your area lake map.

Islands: Most of Lake Norman's beautiful islands are continuations of adjacent points of land. The water between the point and the island is often very shallow. Therefore, to avoid stumps, rocks and gravel just under the water, it is prudent to maneuver around the outside of the island. Few island passes afford adequate warning information. A good example is the chain of islands on the Denver side of the lake, beginning with Governor's Island and continuing south toward the point of land near the end of Unity Church Rd. These islands are surrounded by shallow water and numerous hazards.

Shoals: The dictionary defines a shoal as "a shallow place in a body of water". Lake Norman has too many of them to identify with markers and buoys. One of the lake's most dangerous shoal areas is south of marker R1. It is dotted with a line of shoal markers, indicating a flooded road bed that was once the northern portion of Beatties Ford Rd. Upriver, multiple shoal markers identify the low water adjacent to marker 15A. This area is particularly dangerous since the shoals are in a high traffic area in a turn on the river channel.

Rocks: Rocks are a boater's worst underwater enemy. They damage or destroy hundreds of boat propellers annually. Rocks and rock piles are scattered throughout Lake Norman. Most are not identified by signs or markers.

Congested Areas: No-wake areas near marinas, gas docks, yacht clubs and lakeside restaurants are particularly dangerous due to heavy boat traffic. When approaching such areas, all passengers should watch for dangerous passing situations.

Bridges: Pilings obstruct the view of oncoming boat traffic. For this reason, area bridges are considered to be no-wake zones. No wake means NO WAKE. If you can see a wake behind your boat, you are going too

fast. Also consider a boat's vertical clearance when passing beneath a bridge. Bridge clearances change with the water level and with wave and boat wake disturbances.

Catawba River: The river section of Lake Norman from Buffalo Shoals, north to Lookout Shoals Dam, is not marked. During periods of low water levels, portions of the river channel are un-navigable. It is unwise to venture north of Bill's Marina unless you are in a shallow draft boat and are with someone who is familiar with the channel.

Moving water: Water current poses another set of challenges for an unfamiliar boater. Boaters need to know that water runs almost continuously in the discharge canals at the Marshall and McGuire Power Stations. Strong currents also occur upriver during flood conditions and when water is being discharged from Lookout Shoals Dam.

Protruding Structures: Water intakes and long boat docks are particularly dangerous when navigating at night. These structures are not always lit and might lack reflective devices that make them visible. To avoid a hazardous collision, run at a considerable distance from shore.

Unlit Aids to Navigation and Boats: Not all markers, buoys and boats are properly lit during low light conditions. Navigating at night should be at reduced speeds and with additional people to watch.

Red Day Marker.

Green Day Marker.

Shoal Marker.

Ten Dangerous Places on Lake Norman

Lake Norman's topography lends itself to quick changes in water depths. There are numerous places where depths vary from deep to very shallow within a very short distance. Ten of Lake Norman's most dangerous high traffic shoal areas are identified below.

Photo courtesy of Capt. Gus Gustafson.
One of the many dangerous rocky points on Lake Norman.

MAIN CHANNEL:
Marker 1 - This is the first green marker on the left side of the river channel heading north from Cowans Ford Dam. The area immediately to the west of the marker is extremely shallow and is covered with large rocks.
Marker 1A - The second green marker as you travel away from the dam, identifies a large hard bottom shoal. It juts a considerable distance into the main body of the lake and is of particular concern when cruising south. The green light is often obscured by the brighter lights of the nuclear plant. In addition to the green marker, two shoal markers also identify the area.
Marker 2A - Rocks are just below the surface between Marker 2A and the shoal marker located a few hundred feet to the east. Be certain to keep both markers to the starboard side as you pass.
Marker 6 - A red marker positioned off a long point that protrudes into the lake. Shallow water is between the channel and the shoal markers. Do not attempt to pass between them or try to go inside the shoal markers and the adjacent point of land.
Marker 15A - This shoal is considered by many boaters to be the most treacherous spot on the lake. Four white shoal markers and a lighted green marker identify the vast area. The shallow area is a the turn in the river channel just north of the Marshall Steam Station's hot water discharge canal.

CREEK CHANNELS:
Marker R4 - This red marker identifies a large shallow point to the right when you leave Blythe Landing and head toward Ramsey Creek.
Marker D3 – A green marker and a companion shoal marker identify the shallow area north of the channel. The bottom is hard clay with rocks and large stumps. Many boats have run aground in this high traffic area.
Marker D4 - The shoal to the south of this marker is hit many times throughout the year by boats traveling from the Peninsular Yacht Club to Reed Creek.
Marker T4 - Some say this Davidson Creek marker is the most dangerous spot in Mecklenburg County.

Rocks cover portions of the shoal on the path to the I-77 Causeway and the North Harbor Club Restaurant. **Marker M1** - This marker is next to a sand bar in the middle of Mountain Creek. The bar is also marked by four danger buoys without lights. Pass the area on the north side to avoid hitting bottom.

Lake Norman Vertical Bridge Clearances

The Catawba River Channel that winds through Lake Norman is spanned by five major bridges. One of which is a picturesque railroad bridge that passes over the river near the town of Catawba, NC. Sixteen additional bridges cross creeks or connect exclusive island properties to the mainland. Listed below are the approximate vertical bridge clearances when the lake is at full pond (760 feet above sea level). Wave height must be factored in when boat clearances are tight. The bridge clearances shown have been gathered from lake observations and information provided by the Lake Norman Marine Commission.

- I-40 Bridge - Catawba River - over 10' 0"
- Highway 70 Bridge - Catawba River - over 10' 0"
- Railroad Bridge - Catawba River - over 10' 0"
- Railroad Bridge - Buffalo Creek - 3' 0"
- Buffalo Shoals Rd. Bridge - Catawba River - over 10' 0"
- State Rd. 1832 - Balls Creek - 5' 6"
- Windermere Island Bridge - Catawba River - over 10' 0"
- Mollys Backbone Rd. Bridge - Terrapin Creek - 2' 0"
- State Park Rd. Bridge - Hicks Creek - 3' 0"
- Perth Rd. Bridge - Rocky Creek - 3' 0"
- Perth Rd. Bridge - Cornelius Creek - 5 '3"
- Cornelius Rd. Bridge -Cornelius Creek - 4 '0"
- Highway 150 Bridge - Catawba River - 8' 5" & 11' 1"
- Highway 150 Bridge - Mountain Creek - 5' 9"
- Highway 150 Bridge - Reed Creek (LKN Marina) - 5' 9"
- Mount Pleasant Rd. Bridge - Mountain Creek - 5' 5"
- Railroad Bridge - Mountain Creek - 6' 3"
- Slanting Bridge Rd. - Mountain Creek - over 10' 0"
- Governors Island Rd. Bridge - East of Burton Creek - 7' 10"
- Williamson Rd. Bridge - Reeds Creek - 6' 0"
- I - 77 Bridge - Reeds Creek - 10' 3"

Boater Beware

The vastness of Lake Norman makes it difficult to navigate, especially at night. Hidden shoals take a huge toll on boat bottoms and propellers. Some hazards are covered by water, while others float or protrude well above the surface. At night, flotsam, boats without lights, bridges, water intakes and unlit buoys or markers, are a few of the perils that boaters should avoid.

Picture of The poorly lighted abandoned water intake in the mouth of Davidson Creek.
Photo courtesy of Capt. Gus Gustafson.

Arguably, the twenty or so odd bridges that span our lake are the most dangerous of all hazards. Bridges funnel boat traffic into very narrow spaces and create congestion and crisscrossing of traffic. Only one bridge, (Windermere Island Bridge) is a lighted bridge. The absence of lights makes bridges difficult to see at night, even in the moonlight.

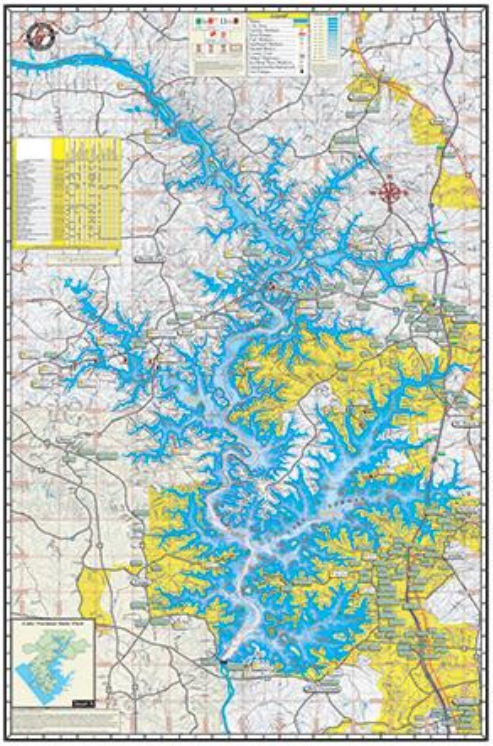
Vertical and horizontal clearances of all bridges should be considered. The slightest error could cause a

serious collision. To make matters worse, some bridge pilings have underwater footers for additional support. Depending on the lake level, a footer can be just below the surface and can cause damage to a passing vessel. When possible, pass between the spans with the highest and widest set of pilings. Bridge pilings also act as dams by trapping debris that moves with wind and water currents. As with other floating debris, such areas should be avoided.

Water intakes are large cement structures that protrude into the lake. The most obvious is the abandoned Mecklenburg County Water intake at the mouth of Davidson Creek - the one with the big Osprey nest on top. Not only does it stretch for several hundred feet into the lake, but it is very close to the highly traveled Davidson Creek channel. It is poorly lit and particularly dangerous at night. Be sure to waypoint the location on your GPS. If you should hit it, you will know it.

Boat docks also pose serious danger. Those of particular concern are the oversized docks that jut far into the lake. Much like the bridges, most are without lights or reflectors. Stay in open water and between the red and green channel markers. Don't hug the shoreline during the day or at night.

There are fifty or more unlit shoal and channel markers in the waters of Lake Norman. Some are adjacent to high-traffic creek or river channels and pose a serious threat to boaters at night. The Marine Commission is working on a program to light every marker on the lake. Currently, the Commission is underfunded and in search of additional funds.



LAKE NORMAN, NORTH CAROLINA

CHAPTER 13 ----- A Noted Yachtsman?

Captain Joshua Slocum, a Nova Scotia born, true example of an "old salt", departed Boston on April 24, 1895 in his tiny sloop Spray and, at the age of 51, sailed around the world single-handed, a passage of 46,000 miles, returning to Newport, Rhode Island on June 27, 1898. This historic achievement made him the patron saint of boating voyages as he was the first person to complete a solo circumnavigation. For the next decade Slocum sailed more epic voyages, published a book in 1900, "Sailing Around The World Alone", and in November of 1909, at the age of 65, he set out on another lone voyage to South America leaving from Vineyard Haven on Martha's Vineyard. He was never heard from again and never found. It took until 1924 for Slocum to be declared dead. It will never be known how he died at sea, and he had his share of problems in the years he lived on land, but it will forever be known that he was a Noted Yachtsman, perhaps the most noted yachtsman of all time. I envied those two little words of praise and I thought to myself: "What a deserving accolade!"

Kim Leighton's book "A Hard Chance", is a true and very chilling account of the 1998 Sydney-to-Hobart Ocean Classic where 115 yachts ran into a deadly storm that struck the fleet with 80 foot waves and washed 55 sailors overboard, killing six and spurring the largest sea rescue ever mounted by Australia. The group of World Class Sailors included Larry Ellison, CEO of Oracle. One of the interviewed crewmembers stated "I knew when I'd crossed that undeniably and unpredictable outcome zone between life and death." Unfortunately, that sailor, who is an irrefutably noted yachtsman, and I have something very much in common - Crossing that unpredictable outcome zone. In February, 2013, while at The Commodores Ball, I began to feel a wide band of discomfort in my back, chest and stomach. Reasoning it was dehydration, I stayed at the podium and presented Captain Harry with the Bright Beacon of Boating tribute. Barbara and I left the event at 9'ish, went home and soon thereafter Barbara was following me, she in her car, me in an ambulance, to Presbyterian Hospital. Soon thereafter Commodore and Mrs. Cawley came to the hospital and in the middle of the night accompanied Barbara to "Presby" Main in Charlotte as I was transferred there in a Critical Care Ambulance. I spent close to 3 weeks in the hospital, mostly in the Critical Care Unit, underwent 3 surgeries and confronted a very uncertain outcome to mend a full length aortic dissection. Having no prior familiarity of aorta dissections, I would later learn that 50% of people with the same condition don't survive long enough to make it to a hospital, and of those that do, many do not live or are living with permanent impairments.

From the onset and forever, my life became a cherished grant and that offering was bestowed by the coming together of an enormous compendium of intellectual, emotional and spiritual supporters who were in perfectly clocked synchronization. So many factors of my being able to survive necessitated the triumphant conclusion of surgeries, related medical procedures and healing. Figuratively, I made it through 80 foot waves, I fell overboard, and I met a storm that unleashed its power on me. (John Ritter died from the same type of aorta dissection.) In the eyes of the surgeon who exemplifies one very special gentleman, the epitome of experience with complicated thoracic situations and who raises the bar on personalized attention to detail treatment, I am a medical miracle. Past Commodore Amy Roberts' husband Bill, a cardiologist with patients in the same hospital, came to visit me almost every day. My surgeon (note the possessive tense) came in every day to see me, often twice.

Just as the 1998 race was the largest sea rescue ever mounted by Australia, my dissection was the most genuine answer to a call for help ever provided to a human being. Nobody wants to ever face a test of not knowing if they will survive but if anyone is as fortunate as me, they will understand the true value of a personal 'rescue team'. I could, and may someday author a book about my gratitude to my family, friends, associates, and a large collection of medical professionals, acquaintances and the strength of the universe.

I have over 60 years of on the water experience. I have cruised, fished and competitively sailed the Atlantic Ocean from the uppermost parts of George's Bank in Massachusetts to the southern tip of the Chesapeake Bay in Virginia and points beyond to Bermuda and throughout the Caribbean. I have wrestled storms and watched waterspouts and worried about lightning strikes much too close to the stern of our boat (Barbara thought they were beautiful). Huge waves have pushed my propellers out of the water and carried visible fear to my eyes.

I have been endangered by eight foot swells while helming to avoid interfering with a Coast Guard vessel on maneuvers with a group of seasick plebes while Barbara was only "slightly" uncomfortable (she has remarkable coping skills). I have been mesmerized by shooting star shows at night and I have been awed by the power and majesty of being out on those big and sometimes unpredictable ocean waters. This endless supply of waterborne memories has grown bigger and heavier with each adventure and, whenever I am landlocked, these treasures are re-lived and polished many times over.

My father, who accepted and expanded the family boating lineage to greater levels, boated in the days of wooden boats, varnish, bronze fasteners and electronics limited to the light in the binnacle compass and a VHF radio. His appreciation of boats covered the gamut; Lyman, Sheppard, the early generation of the mahogany speedboats, Thompson, Penn Yan, recoil start outboard motors to handmade downeast hull boats designed for lobster fishermen. He boated in bays, estuaries, rivers and the oceans from the offshore hinterlands of Maine to the fertile inshore fishing grounds of Florida. He fly-fished for salmon when you actually caught them, lead core line fly fished for lake trout, knew how to troll along a rock jetty and catch stripers using live eels for bait and guided my mother into becoming an impressive catcher of haddock. And he owned a handmade true "Downeast" boat built by the legendary Vinnie Cavanaugh.

We ate lots of fresh haddock and flounder, lobster and steamed clams. I can remember boating and fishing as far back as when I was 6 years old. Fishing derbies, watching hydroplanes race on the river and I was "hooked on the water" as far back as I remember. My father, who fished for more than ½ of a century, never owned a fish finder.

My father had great appreciation for the beauty of a vessel's design. I was very young when he and I were walking down a dock and he pointed out a particular boat, looked at me and said "isn't she absolutely magnificent, that's a Rybovich". Meant nothing to me at the time, I wondered how he knew as there is no distinguishing identity, no visible brand logo. I found enjoyment in the challenge of knowing when I saw a Rybovich. Given there's only 130 of them ever built, they're not common.

I researched them in libraries, scouted every marina and went to the Rybovich yard in the 1980's and had the good fortune to meet with Emil, one of the 3 Rybovich brothers. He gave me a tour and my eyes resembled Jackie Gleason in The Honeymooners, bulging out of their sockets. I was mesmerized at the beyond imagination of their attention to detail. I was ready to own one someday until I learned that whatever any other boat cost to buy, "Rybos", given they are fully custom boats, cost many times as much as comparible boats and most were brought back to their yard for annual service. I follow Rybovich boats to this day. I have the full lineage of almost all of them ever built. I've never owned one and likely never will.

Tommy Rybovich, the brother who is credited with being the leading edge of sportfishing boat design and unparalleled creativity, died prematurely in 1972. As it turned out, nobody else could build a Rybovich. Tommy's death left a vacuum that try as they may, his brothers could not fill. It became increasingly apparent that project time and costs would increase exponentially with his absence.

I never met Tommy but I did know his daughter Pat, who in honor of the yard's 90th birthday, spent 3 years tracking down information and photos of the original 79 Rybovich boats built. The book weighs 20 lbs. and only 900 were printed. I am honored to have been bestowed one of the 900 and to be in touch with Pat again. To anyone who is a Rybovich fanatic, this is a keepsake honor. I am happy to allow any member a chance to look through the 600+ page book. On to more current times.

In early December, Barbara and I were invited guests of Hall Marine to Sea Ray's 2014 Yacht Expo at South Seas Resort in Captiva, Florida. The planning and constant attention to detail to every facet of the weekend was extraordinary. This expo is Sea Ray's opportunity to integrate their executive, design, marketing, production and engineering groups, with potential customers who are strongly considering the purchase of a of the boats between 37' and 65'.

Rides on any of the boats was pre-scheduled and documented through the camera lens onboard a helicopter that was on the water for the entire event. Barbara was enrolled in a "Ladies on The Water" seminar where the "final exam" required her to put their new 47' Sundancer through it's on the water paces. I was able to capture this with my camera onboard their revolutionarily designed 37' Sundancer that is powered with 2 300hp. outboards (encased in a sound proof transom compartment.) Yes, we went on the 65' Express, their new and magnificent boat, available in both express and flybridge configurations. We rode on some magnificent boats.

Of particular uniqueness, a 42' Boston Whaler center console powered with 4 300 hp. outboards, their 37' version with 3 outboards, and many of Sea Ray's new designs between 41' and 54'.

It felt great to be back on the ocean and have a pair of torque enriched turbocharged diesel engines with me. The west coast of Florida waters are majestic and I am proud of Barbara for earning her Women on The Water Certification.

I am very grateful to have these opportunities and I share them as examples of how special boaters, sailors and yachtsmen and women are to each other. There is a very special camaraderie, a special strong sense of family between us on the water folk.

I have a very long list of people who gave of themselves to provide and share experiences, training, patience and understanding. To my parents, Russell and Mildred Goodman, both avid boaters who enjoyed fishing, my heartfelt appreciation for taking me boating while I was still in diapers and for supporting my experiencing so many types of boating and sailing over enough years for me to have turned 22 three times. I wish my and Barbara's fathers could be here to share my Lake Norman experiences.

To Barbara, boating is one of my waterways and without you, my channels of life would have never grown as wide, long or deep and the waterways never with the level of glisten you bring. You have earned my eternal respect and embrace for always encouraging me to enjoy projects I take on and for your devoted understanding, love and support.

Barbara, who had almost no boating experience when we met, instantly took to the travel by water life and makes boating sweeter. We are fortunate that all of our children, spouse and grandsons enjoy the family "boating" tradition and life is so enriched by each and all of them as a unit.

Everyone has family, friends, associates, acquaintances. None of us wants to test the level of commitment and love, but when you run aground like I did last February, you quickly learn more than any of us imagine. I'm one very lucky man.

I am thankful for the confidence from the entire Fleet Committee, the 2014 and 2015 crew, the PYC Management Group, and the feedback I have received from the membership. Researching, compiling, writing and editing this guide required many long days and a lot of work but, believe me, it was absolutely a labor of love! The Peninsula Yacht Club is one very special safe harbor and spectacular display of boating related opportunity. Being part of The National Sailing Hall of Fame is one of the club's most respected and cherished recognitions. I am privileged to have been the liaison for our application.

In closing, this book represents an invitation for you to accept the challenge associated with becoming "A Noted Yachtsman". Please take liberty to choose your own definitions.

The following resources represent the mainstream of the sources of research, data and information collecting.

American Boat and Yacht Council 613 Third Street, Suite 10 Annapolis, MD 21403Phone 410-990-4460 http://www.abycinc.org	Boat U.S. Foundation 880 South Pickett Street Alexandria, VA. 22304 800-245-2628 www.boatus.com/foundation
American Canoe, Kayak, SUP, P. Raft Association 108 Hanover Street Fredericksburg, VA. 22401 540-907-4460 https://aca.site-ym.com	Pilotmedia USA Piedmont Lakes Region http://www.pilotmedia.us
Annapolis Book of Seamanship, 4th Ed. Simon & Schuster Publishing, 2011	Practical Encyclopedia of Boating John Vigor International Marine Press, 2007
Chapman's School of Seamanship 4343 S.E. St. Lucie Blvd. Stuart, Florida 34997 772-283-8130 http://www.info@chapmans.org	Sea Tow Norman-Wylie Lakes PO Box 271 Cornelius, NC, 28031 704-895-8699 Email: lakenorman@seatow.com
Lake Norman Sail and Power Squadron http://www.usps.org/localusps/lakenorman	Towboat US Lake Norman Lake Response LLC. Cornelius, NC 704- 200-1930 www.boatus.com/lakenorman
Lake Norman Visitors Center 19000 W. Catawba Avenue Cornelius, NC 28031 704-987-3300 www.visitorscenter@lakenorman.com	North Carolina Wildlife Resources Commission www.ncwildlife.org/boating http://216.27.39.120/mapbook/boataccess.aspx
National Oceanic and Atmospheric Administration United States Department of Commerce Office of Outreach, Office of Communications, Office of Education 1401 Constitution Avenue, NW Room 5128 Washington, DC 20230 http://www.noaa.gov	Recreational Boating Statistics, 2013 US Department of Homeland Security United States Coast Guard Office of Boating Safety 2100 Second Street, NW Washington, DC 20593 202-372-1103 www.uscg.boating.org
U.S. Government Printing Office The Nautical Almanac for the Year, 2012, 2013 The American Practical Navigator – 2002 Ed. U.S. Coast Guard Light List – 1 to 7 U.S. C.G. Navigation Rules, Inland (Dept. of Transportation) Miscellaneous Publications published by NOAA and NIMA NIMA List of Lights, Radio and Fog Signal Aids 732 North Capitol St NW Washington, DC 20401 202- 512-1800 www.gpo.gov	US Coast Guard, Boating Resource Center Commandant (CG-BSX-2) U.S. Coast Guard Headquarters 2100 Second St. SW Stop 7581 Washington, DC 20593-7581 http://www.uscgboating.org US Coast Guard Auxiliary District 26-01-5SR Lake Norman, NC 704-663-3333 http://www.cgauxlkn.com
The Boating Book *A Practical Guide to Safe Pleasure Boating – Power and Sail* John Roberts W.W. Norton and Company, May 1991	Lake Norman Marine Commission P.O. Box 2454 Cornelius, North Carolina 28031 704-564-6333 lnmc@lnmc.org
First Boat Management Nautical Sites Media P.O. Box 310355 Newington, CT 06131 860-249-1166 info@nauticalsites.com	US Department of Commerce National Oceanic and Atmospheric Admin. NOAA Office of Coast Survey 1315 East West Highway Silver Spring, MD 20910 1-800-990-NOAA www.noaa.gov

U.S. Fish and Wildlife Service Division of Information Resources & Technology Management 4401 N. Fairfax Drive Suite 340 Arlington, VA 22203 1-800-344-WILD www.fws.gov	Historian's Office (CG-09224) U.S. Coast Guard Headquarters, Room B-717 2100 Second Street, SW, Mailstop 7362 Washington, DC 20593-7362 (202) 372-4651 www.uscg.mil/history
National Marine Manufacturers Association 231 S. LaSalle Street, Suite 2050 Chicago, IL 60604	Electric Shock Drowning Prevention Association http://www.electricshockdrowning.org
Sailing Fortuitous http://sailingfortuitous.com/	United States Power Squadron Flag & Etiquette Committee
Photographers 1 Rick McClain Photography Salt Lake City, Utah	Pew Research Center 1615 L Street, NW, Suite 700 Washington, DC 20036
The Boat Data Book, 6th Edition Ian Nicholson Adlard Coles Publishing, London, UK	The Boaters Handbook, 4th Ed. Elbert S. Maloney Hearst Communications, 2008
US Sailing Organization 15 Maritime Drive Portsmouth, RI 02871	International Sailing Federation ISAF (UK) Ltd Southampton, Hampshire, SO14 2AQ, United Kingdom
International Olympic Committee Lausanne, Switzerland	Blue Water Sailing School 3082 Greenbush Rd. Charlotte, VT 05445
International Sailing Federation www.isaf.com	Duke Energy, Lake Norman http://www.duke-energy.com/lakes/facts-and-maps/lake-norman.asp
Lake Norman Wildlife Conservationists PO Box 4296 Mooresville, NC 28117	Best of Lake Norman www.bestoflakenorman.com
North Carolina State Parks N.C. Division of Parks & Recreation • 1615 MSC • Raleigh N.C. 27699	Captain Harry Smith, USCG Peninsula Yacht Club Cornelius, NC
An Explanation of Sail Flow Analysis Stanford University, Stanford Yacht Research	The Physics Of Sailing — Using The Principle Of Lift To Sail Faster, Franco Norman, Ontario, Canada
National Sailing Hall of Fame 69 Prince George Street Annapolis, MD 21401	New to Sailing www.newtosailing.com
National Safe Boating Council 9500 Technology Drive Suite 104 Manassas, VA.	Grog's Index of Boating Knots www.animatedknots.com
Sailing World The State of The Sailing Industry 2014 55 Hammarlund Way Middletown, RI., 02842	Lake Norman Keelboat Council http://www.lnkc.com/
Lake Norman Visitors Center 19900 West Catawba Avenue #102, Cornelius, NC 28031	Smithsonian Institute 1000 Jefferson Rd. SW, Washington, DC 20004
North Carolina Wildlife Resources Commission Agency Services Department 1751 Varsity Drive Raleigh, NC 27606	Ande Monofilament 5409 North Australian Avenue, West Palm Beach, FL 33407
North American Cruiser Association http://www.predictedlog.org	National Association of State Boating Law Administrators 1648 McGrathiana Parkway, Ste. 360 Lexington, KY 40511
North Carolina General Assembly Legislative Building | 16 West Jones Street | Raleigh, NC 27601	NauticEd - Online Sailing Courses and Sailing Certifications 2800 Bartons Bluff Lane Austin, TX 78746

This document is for the exclusive intent of providing pleasure boating information to members of The Peninsula Yacht Club, Lake Norman, NC and to be used as a platform for the Boating Education Program. It is not a substitute for required or discretionary educational courses offered by the US Coast Guard, US Power Squadron or other municipal, county or local boating organizations.

While every effort is made to ensure that the information provided herein is accurate, the author, members and staff of The Peninsula Yacht Club, Morningstar Marina Management LLC, East West Management Partners Company are not responsible for any violations or mishaps which may occur as a result of using information found in this document. The majority of information contained was extracted or redacted from material found in the public domain. The sources of that information are found in the resources section.

Cover Design: Clair Knox, PYC

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