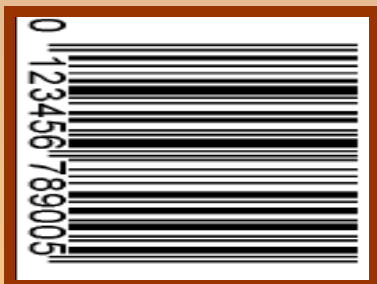




ISSN 1945-1342

DREGS FROM THE KEG

May 2010



Lake Casitas Memories

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Foam at the Top

Chris Voisey, SBC President

WOW! That's my response from just getting back from my first experience attending the California Homebrewers Festival! For those that are interested, here is a link that you can use to get to some photos of the event:

<http://tinyurl.com/236w9sw>. If you are on Facebook, just go to the Strand Brewers Club group page and you will see I posted them there.

April was definitely a crazy month within the club. We had a couple of Club Brews, our usual meeting and of course the CHA Festival, not to mention the build out of our booth that was right down to the last minute. I would like to say a big thanks to everyone that came through in the end, including Jason "I'm into the plumbing" Rosenfeld, Matt "I have no temperature gauge" Thomas, Devin "I'm the gas man" Knowles, Jeff "left in the 80's" Sanders, Ester "I know how to use tools!" Tung and Brian "I know beer lines when I see them" McGovney. Thank you to Dave Peterson for transporting the kegs, amongst other things and Graham Hebson for the great Strand Brewers T-Shirts. My apologies to anyone I left off of this, and I am sure I did. But thank you too!

For those of you that didn't attend the festival, we will have a write-up on the experience in next month's Dregs. For now I will just share a few things that I saw at the festival:

- Home Brewers are not necessarily used to "roughing it." Not only do we show up with extremely well made and tasty beer, but we have electric blankets, use a cordless drill to get our tent pegs in the ground and also are prepared to watch the Lakers game in our trailers vs. roughing it.
- Wifi in the campground!
- There are some great beers to be shared out there. This you just have to experience yourself. I

was stunned, but not amazed at possibly some of the best beer I have ever tasted, both from our own club and fellow Homebrewers throughout the state.

- The names of beers are definitely not for the faint at heart! .. and just so I don't offend anyone, I won't retype them here. But feel free to ask at our next meeting. One of my favorites was the "It hurts when IPA."

- The festival is both a learning occasion as well as a time to show off our clubs and brews. Vinnie from Russian River did a full session on brewing under the big tent.

- Apparently the "quite hours begin at 10pm" is only a suggestion. Only to be reinforced when someone plays Techno Hip Hop at 3:30am.

- There are a ton of clubs that participate... it was impossible to try all the beers. Although some people did try.

- Did I mention we are not used to rough it? ... Electric Coffee makers!?

As you can tell, I was very happy with the festival. The only mistake I made was not getting up there earlier on Friday and then staying around Sunday. I'll be changing that next year!

Regarding next year, there were some rumors going around that the festival might change venues last year. I have confirmed that they were just that, rumors. Due to many factors, including a site that can have the number of people we do AND of course let us server our beers, we will be returning to Lake Casitas next year. I'll have more details and information on all of this in June, including the final numbers and feedback from the event organizers. I'll pass this all along late June, early July.

On other news, we are still planning out our next events. Bryan will be announcing plans for a summer party soon, as well as the annual BBBBBBBBBB..... However many "B's" that is these days. We'll also be continuing the club brews and of course monthly meetings during the summer. Keep checking back to the site for our latest news on the location. We do have a few places that we will try out over the summer. Those include the Strand Brewing Co. and our new South Bay Brewing Supply shop, both located in Torrance.

For our next meeting, don't forget we are going to be at Boogaloo in Hermosa Beach. Hopefully it won't be too busy in there, but we want to try some other venues to give them all a chance for our meetings. If nothing else, we will have a change of atmosphere. See you on the 12th!

Meeting Place for May
This month's meeting will be at



Cafe Boogaloo
1238 Hermosa Ave
Hermosa Beach, CA 90254

What's on Tap

Bryan K(urmudgeon) Willis, SBC Activities Director

Bryan K. Willis, here.

Sorry I haven't been too involved with the club as of late, but I did try to give folks warning that the prior month or so was my crunch time, and work was riding my butt like it had a saddle on it.

Anyway, here's a bit of the goings on as of late that I know about:

The 20th anniversary California Homebrewers Association's fest up at Lake Casitas was definitely a hoot and a half. Not only did we have an abundance of homebrew from very, VERY talented clubs on Saturday from all over our great state, but Friday we were treated to a few beers from a few esteemed breweries. I won't rub it in about what breweries were there or what they were serving, lest you collapse into despair.

Needless to say, the event is highly recommended. I welcome you to join us for the 21st anniversary next year.

Now, onto events!

First up, our next meeting is at Cafe Boogaloo! Don't know where that is?

1238 Hermosa Avenue
Hermosa Beach, CA 90254-3529

There. Now you do. Leave your cars across the street in that big gray building that looks like a parking structure.

Alex has so graciously allowed us to invade his house for our July club brew on July 17, but we still need places to brew before that! If you're willing to let us come to your house to do the brew, please give us a holler. I'm pretty sure that at least one guy'll bring a bottle of beer or something, I guess.

We've been talking about doing Final Friday get togethers all year, and it's about time we got together on a Final Friday. Show up at Brew Co on Friday, May 28 around 5ish or 6ish or whenever off-workish is for you. I bet someone else will be there, too.

Brew Co.
124 Manhattan Beach Blvd
Manhattan Beach, CA 90266

Speaking of getting out on the highway, our BBBBBBBBBBBBBBBBBBBBBBBB (sorry, key stuck) is underway. I've got Simmzy's, Brew Co, and a couple of others decided on the trip, but please give me a holler if you think a delightful little South Bay bar should be included on our bike trip (or cars for some of our more legless/lazy members).

Also, be aware that American Craft Brewing week is May 15 through May 23! I contacted the Brewers Association to see what kind of shenanigans are going on four our county and surrounding areas. When I got some goodies, I'll send out mass emails.

Now that that's done, join me in a beer! L'chaim, baby!

Spent Grains

Rob Proffitt, SBC Treasurer

We entered April with \$4,232.94 in the bank account. We received \$75 in income, which was dues from 3 members. Expenses totaled \$600, leaving us with an ending balance for March of \$3707.94.

Major upgrades to the bar were completed this month, so I'll be writing some more checks in May. We still have 9 taps available for sponsorship. For \$75, you can get your name engraved on a plate assigned to a tap. Your donation goes to cover hardware for that tap and the general construction of the bar. You can mail your check to me or see me at the May meeting.

We currently have 47 paid members, including 11 new members this year. If you haven't renewed your membership for 2010 yet, please send me a check or bring your dues to the May meeting.

Dues are \$25, plus another \$10 for each additional family member. Also, if you would like a paper copy of the Dregs mailed to you each month, add an additional \$5 for postage. If you'd like to renew by mail, please mail a check made out to "Strand Brewers Club" to me at 1008 Teri Ave, Torrance, CA 90503.

The Peak Experience

Andrew Jang, SBC Civilian

In the world of beverages, we hear it everywhere. It has "peaked." As in, "Le Chateau Derriere '62 has peaked." Or, "Old Jim Bob's Bourbon has been aged in American oak barrels until it has reached its peak." Even beer geeks talk about whether their lovingly aged brews have peaked. But what does it mean to have peaked, and how can we use this knowledge to design better brews?

Recently, I realized that I had 8 consecutive years of Sierra Nevada's Bigfoot ale stored in my home. I've been buying cases since 2007 expressly to be stored, and was lucky enough to win a 6-pack of years 2003 through 2006 in a SBC raffle. Wondering to myself what kind of occasion would fit the opening of these treasures, I realized that I didn't even know if any of the older bottles were still good. Knowing that Sierra Nevada employs very strict quality control measures, I figured I could assume the contents had not spoiled. Then I asked myself which ones are the good ones? Is older better? Is fresher better? Is there an optimum balance between age and freshness? If so, does that mean that there really is a peak year?

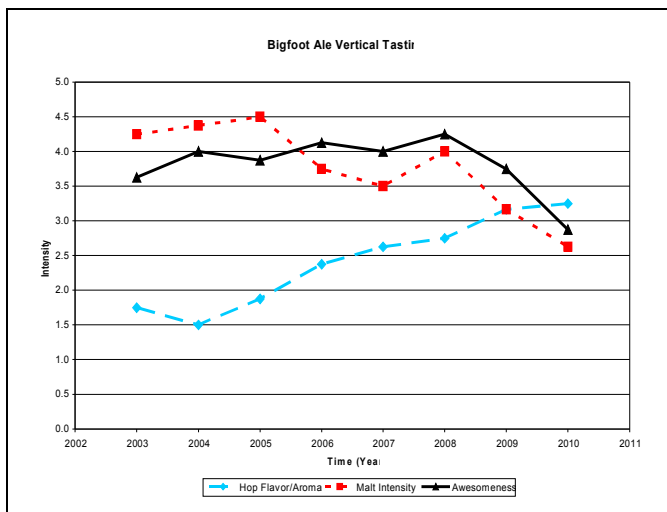
Concluding that I really should find answers to these questions, I decided to assemble a 4-member tasting panel.¹ The goal was to taste each year, then fill out a BJCP score sheet and answer a 6-question survey for each sample. The survey's purpose was to quantify six aspects of the tasting experience on a scale of 1 (low) to 5 (high):

1. Hop flavor and aroma.
2. Hop bitterness
3. Malt intensity
4. "Good" oxidation (sherry-like flavors)
5. "Bad" oxidation (cardboard)
6. Awesomeness (overall experience)

Before presenting the results of this survey, I'd like to present some facts about Bigfoot Ale, in case any readers are not familiar with this beverage. Bigfoot Ale is an American Style Barleywine (BJCP style 19C) which is brewed to 9.6% ABV, 90 IBU, uses Cascade, Chinook, and Centennial hops, and uses only pale and caramel malts.² As I understand it, the brewer uses the same recipe every year, so the variations between years are due to variations in ingredients and age. The high-alcohol content and the brewer's reputation for good quality control make this beer a good candidate for aging.

Now, on to our results. In the first chart, one can see that the year which scored highest in the Awesomeness category was 2008 with a score of 4.3. Second best score was 2006 with a score of 4.1. Since our tasting panel's favorites lie within that three years span, we have identified the peak. In other words, the best time to drink your Bigfoot Ale is three to five years after you bought it!

Since we located the peak, let's look at some of the flavor components and see if we can begin to understand why those examples seem to be preferred. In the first chart, Hop Aroma/Flavor and Malt Intensity are plotted against Awesomeness. The general trend indicates that over time, the hop character decreases in intensity. Interestingly, Malt Intensity varies within a 1 point range for years 2008 and later.

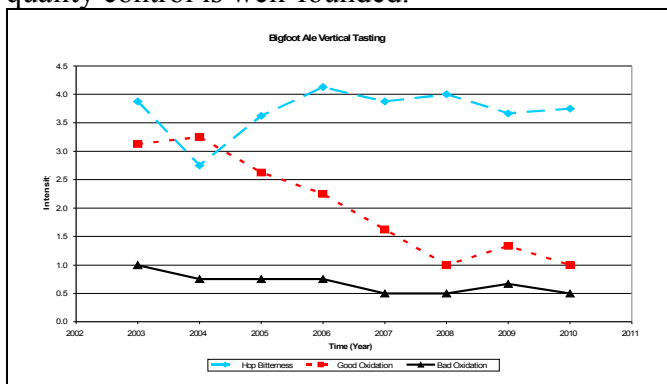


while malt intensity remains constant. At higher levels of hop intensity, the malt character is masked by the hops. I believe that by the third year, the hops have decreased enough for a palate-pleasing balance between malt and hops to have occurred. This balance is enjoyable while still providing the hoppy flavors that the tasters expect from an American Barleywine. I suspect that if this beer were evaluated as an English Barleywine, we would have identified a peak after the five-year mark, as hop character has largely dissipated.

These results suggest that the brewer should formulate his grain bill knowing that the recipe's malt intensity will remain over time. Then the brewer should hop the recipe with the intended drinking age in mind. For a beer that is intended to be drunk young, it should be hopped in a balanced fashion. For a beer that may be left to age for several years, an over-hopped (even unpleasantly so) strategy should be used. Of course, some trial and error will be required to formulate your favorite recipe, but that's what makes homebrewing so fun. Cheers!

1. Thanks to Jim Wilson, Brian McGovney, and Scott Rentschler
2. <http://www.sierranevada.com/beers/bigfoot.html>

In the second chart, we see plots of Good and Bad Oxidation and Hop Bitterness. Aside from the year 2004 example, hop bitterness is fairly constant over time. Good Oxidation (sherry-like flavors) increases essentially linearly with time, and Bad Oxidation (papery, cardboard-like flavors) is very low, even in the oldest examples. At no time did anyone detect any bad flavors that would indicate spoilage or less than adequate sanitation. These results indicate that Sierra Nevada's reputation for quality control is well-founded.



Here are a few general observations gleaned from the tasting notes. Color is generally a deep, coppery brown, but can vary from year to year. Newer examples were a bit lighter in color than earlier examples. In the year 2008 and later, the bottles came with crimp caps that homebrewers can reuse. In prior years, they came with twist-off caps. Head retention disappears after the third year in bottle. Handwriting quality decreases exponentially as the flight progresses.

Although this article is based on small data pool, we can conclude that the intensity of hop flavor and aroma decreases more or less linearly over time,

“New” Strand Brewers Booth 1.0

Chris Voisey, President



As most of you know by now, we finished rebuilding the new Strand Brewers Club booth just on time to pour the first beers at Lake Casitas last weekend. And I mean JUST ON TIME!

Our new booth, or bar if you prefer, replaces our former one that has been in service for approximately the last 15 years. It definitely has some stories to tell and was sad to see retired. That said, it was time to start with something fresh. We did manage to use some of the existing hardware, but the rest was replaced in favor of starting fresh and new.

Over the past few months (and years) we have been tossing around various ideas on the design. I'd have to say they were all viable, but in the end we built what we could with the resources on hand and the requirement of being able to easily break it down and transport it. Sure, there are things we could have done differently, but we had to finally make a



decision on a design for now. I am sure it will evolve over the next few months and even years as well.

The bar design consisted of a 8' by 3.5' base that can hold all 22 kegs beneath it that will serve each of the 22 tap handles on top. Those handles are supported by two different “boxes” that each are held up by two risers that hold the beer lines.

Personally, I think the most time consuming and difficult part of the bar construction was putting together all the gas and beer lines. Remember, there are 22 kegs that this bar serves. We do this through a single CO₂ tank that also sits beneath the bar. From the CO₂ tank, we go through a couple of manifolds that help individually control the various keg requirements. Some beers will require more or less pressure.

From the kegs, we are able to swap in and out the pin or ball lock connectors. These feed into one of three cold plates that chill the beer for serving. These cold plates work by circulating the beer through an aluminum plate that is covered with ice that rapidly chills the beer. They are immersed in an ice filled cooler where the lines exit the plate and go straight to the tap handles.



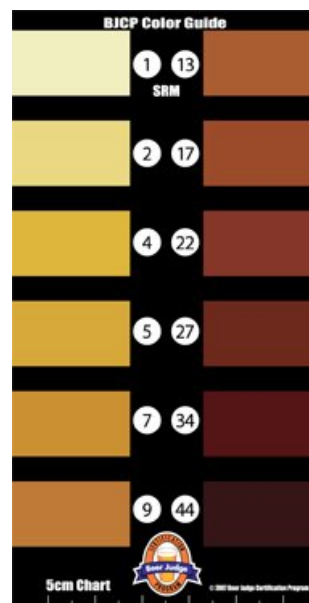
Once we set-up each of the lines we had to pressure test each and every one, not to mention eventually tweak them a bit to get rid of some leaks. In the end we had a complete, portable! bar that can simultaneously serve 22 kegs of our finest beer.

As mentioned, the bar is a bit of a work in progress. And to steal the term “Strand Brewers Bar 1.0” is absolutely accurate! We plan on a few modifications to it even before our summer party. I know there will be many more over the coming years. For now, we have a working bar with a crazy amount of tap handles ready for all of our home brews. Or as I like to call it, Naja's Jr.



The three Pale Ale groups, English, American and India, are easily the most popular contest beers. Modern recipes use a pale malt base with more or less 15% specialty malt and all have significant bitterness. Commercial brewers sometimes use rice, corn or sugar adjuncts that effect cost more than flavor. English versions have biscuity, nutty and caramel notes while American ones tend to have grainy, bready or toasty ones with restrained caramel. Color ranges from dark gold to bronze, which is 5-18 SRM. The picture above is on the high end of the range.

Here's a guide to the SRM color scale which is calibrated for a 5cm thick sample.



Way back in history, before the 1400s, Ale was an unhopped beer. By the 1600s, Ale came to mean a strong beer (70-140 OG) that was hopped.

Pale Ale was a product of the Industrial Revolution in England, although the “pale” tag wasn’t regularly used for more than 100 years after its birth. Its name and flavor have been pushed and pulled by market forces, culture and government policies. Where did this beer come from? Who brewed it first? What was it like in the beginning? How did the style evolve?

While I occasionally thought about these questions, a jump start was needed to track down answers. That happened when Jim Hilbing brought Pale Ale

Some interesting facts about the booth:

- The “risers” are actually wine chillers purchased at Target
- Our drip tray is a rain gutter
- The entire bar can be split up into two individual bars consisting of 11 tap handles each
- The bar was essentially built over a single weekend by a bunch of hard working club members
- There are 66 individual hoses (22 each of the gas lines to each keg, a line from the keg to the cold plate, and then the cold plate to the tap handle)... not to mention the hoses that connect the manifolds and gas tanks.
- 1 CO₂ tank can run the whole booth or a second nitrogen tank can be added
- The bar can fit into any pick-up, SUV or minivan, minus the kegs of course.
- Set-up and tear down of the bar should take approximately 2 hours with about 2 people

Judge's Corner

Jim Wilson, BJCP Grand Master



Pale Ale Color and Malt Flavor

to a club meeting and asked for opinions. Jim's excellent beer used Munich malt, but no caramel, for color and toasty flavor. Great minds think alike as that's my favorite interpretation. With that intro, here's a brief discussion on how Pale Ale gradually morphed into what it is today. Brief is the operative word here. Entire books have been written on the subject and I don't have the patience for a project like that.

Before 1650, English beers were scorched, brown, murky and smoky because malt was kilned over open wood or straw fires. Ales had become "keeping beers", which mellowed and usually soured during prolonged storage before they were served.

Brewing technology, if you want to call it that, was still in the trial and error phase. Record keeping was optional, the guild system limited knowledge transfer, units of measurement were inconsistent, the thermometer and hydrometer hadn't been invented and microbiology hadn't been discovered yet. Other than that, those were the good old days. But big game changers were just over the horizon.

After 1650, Northern English maltsters slowly began to adopt coke, a refined coal, which the local iron industry used in its process. As a fuel for kilning, coke improved temperature control and allowed pale malt to be produced in quantity. Reduced taxes allowed mass produced glasses to replace pewter and earthenware tankards and ale's appearance could be appreciated. Indirectly heated kilns eliminated smoky flavors. Beer souring was controlled first by recipe adjustments and then with science based sanitation practices. All the while, a greedy government claimed big portions of beer revenue for themselves and brewers had to constantly adjust their products to deal with increasing taxes and market conditions. This story would have been an excellent episode for James Burke's Connections series.

Pale malt was twice as expensive as other malts and was initially limited to home brewing for the Northern gentry. Pale Ale grist was 100% pale malt. Three hour boils in copper kettles accelerated the formation of melanoiden flavors and dark color because copper catalyzes Maillard reactions. The level of melanoiden in these early examples is

anybody's guess but the appearance was generally reported at the time to be clear in the amber to bronze color range.

Pale Ale slowly trickled down, literally and figuratively, to Southern England where most of the people lived. It began to compete with Porter, the first mass market beer, about 1780 when the hydrometer was invented. This instrument quantitatively proved to brewers the value of pale malt's high extract yield. The Industrial Revolution had struck again and brewers eventually changed their dark beer recipes to stay competitive but that's another story. Brewers experimented with up to 10% amber, brown or wheat malts and adjuncts like rice or flaked maize for flavor variation. The use of sugar was restricted, for now, by a tax law that was England's version of the Reinheitsgebot.

Historians recognize IPA as the father of Pale Ale because it was the first to be brewed in large quantities. George Hodgson, a London brewer, started exporting his "India Ale" in the 1780s. He took advantage of the anti-bacterial properties of hops to brew a very bitter (twice the hopping rate of domestic Ale) product that resisted souring on the long sailing voyage. Pale or slightly lighter "White", aka East India, malt was the base for IPA which was the first refreshing beer exported to India. Hodgson's venture was a success and others followed him into the pool. Brewing in hot climates all over the Empire had to wait a while for the invention of refrigeration. In the meantime, IPA slaked colonist's thirst and later the home crowd's too. Hmm, meantime. That sounds like a catchy name for a brewery.

In the next 50 years, international trade increased and Continental European and North American malt supplemented English production. By 1847, tax laws were relaxed to allow sugar additions to the kettle along with other adjuncts in the mash.

In 1876, lessons learned from Pasteur's Studies on Fermentation allowed souring to be controlled without high bitterness or alcohol. Pasteur's work and another tax increase pushed brewers toward smaller, less bitter beers. A broad range of beers, now called "Pale Ales", with muted malt flavors resulted that would become the dominant English

style and traditional IPA was reduced to a historical footnote for 100 years.

To speed up their cash flow, brewers created “running beers” in the 1880s. Shortly after, up to 10% caramel malt was seen in recipes and within 20 years the practice was widely accepted. The new recipes developed flavor complexity and body with minimum conditioning time.

In the early 1900s, Vienna and Munich replaced Amber and Brown malts. With these substitutions, grist alternatives looked about like they do today. Stainless steel kettles and 60 to 90 minute boils produced less intense malt flavors and lighter colors than beer brewed in copper for much longer times.

Through the 1900s, oppressive English taxes continued to force OGs down to the session beer level. As bad as our system seems at times, it hasn’t been as horrid as England’s. This allowed American Pale Ale OGs to stay closer to traditional ranges. Especially for IPA, the US tax laws allowed Ballantine, Fritz Maytag and Bert Grant to brew historically accurate beers that kept the style alive. Boy, are we hoppy for their efforts!

As should be the case, there are many Pale Ale references in the literature. Opinions vary about flavor and color when different authors imagine what beer was like long ago. The most useful and consistent ones for this article were:

Pale Ale, 2nd edition, by Terry Foster

Old British Beers and How to Make Them, 3rd edition, by John Harrison

Beer Companion, 2nd edition, by the master, Michael Jackson

India Pale Ale, by Clive LaPensée and Roger Protz

Calendar of Homebrewing Events

Jake Filopovich, SBC Vice-President

Club-Only Competitions

Strand Brewers' Club Meeting

Location: Naja's Place

154 International Boardwalk

Redondo Beach, CA 90277

Time: 2nd Wednesday of every month 7:00pm

05/22/2010

[AHA Club-Only Competition, Mead](#) Denver, CO Contact: [Deborah Lee](#) Entry Fee: One entry per club, \$7 (check payable to AHA) Entry Deadline: 08/08/2010

For more information on club-only competitions, go to <http://www.homebrewersassociation.org/pages/competitions/club-only-competitions/schedule>

Other Competitions:

(In order of entry deadline)

05/22/2010

[16th Annual Eight Seconds of Froth](#) Cheyenne, WY Contact: [Brian Mertz](#) Phone: (307) 638-6754 Entry Deadline: 05/15/2010

05/22/2010

[1st Annual Hangar 24 Homebrew Competition](#) Redlands, CA Contact: [Kevin Wright](#) Phone: (909) 389-1400 Entry Fee: \$5 Entry Deadline: 05/15/2010

05/22/2010

Cal Poly Cup (no web site)
San Luis Obispo, CA Contact: [Christian Toran](#) Phone: (707) 321-3264 Entry Fee: \$5 per entry Entry Deadline: 05/15/2010

05/22/2010

[ABC Brews Crews Homebrew Competition](#) Ypsilanti, MI Contact: [Bob Barrett](#) Phone: (734) 395-6274 Entry Fee: \$7 first entry, 5\$ all others Entry Deadline: 05/15/2010

05/22/2010

[All Idaho HausBrau Challenge](#) Boise, ID Contact: [Matt Gelsthorpe](#) Phone: (208) 860-9356 Entry Fee: \$5/first entry, \$3/additional entry Entry Deadline: 05/15/2010

05/22/2010

[GEBL Hop Madness IPA Bracket Challenge](#) Everett, WA Contact: [William Fredin](#) Phone: (360) 691-1862 Entry Fee: \$6.00 for 1st entry / \$4.00 for each additional entry Entry Deadline: 05/18/2010

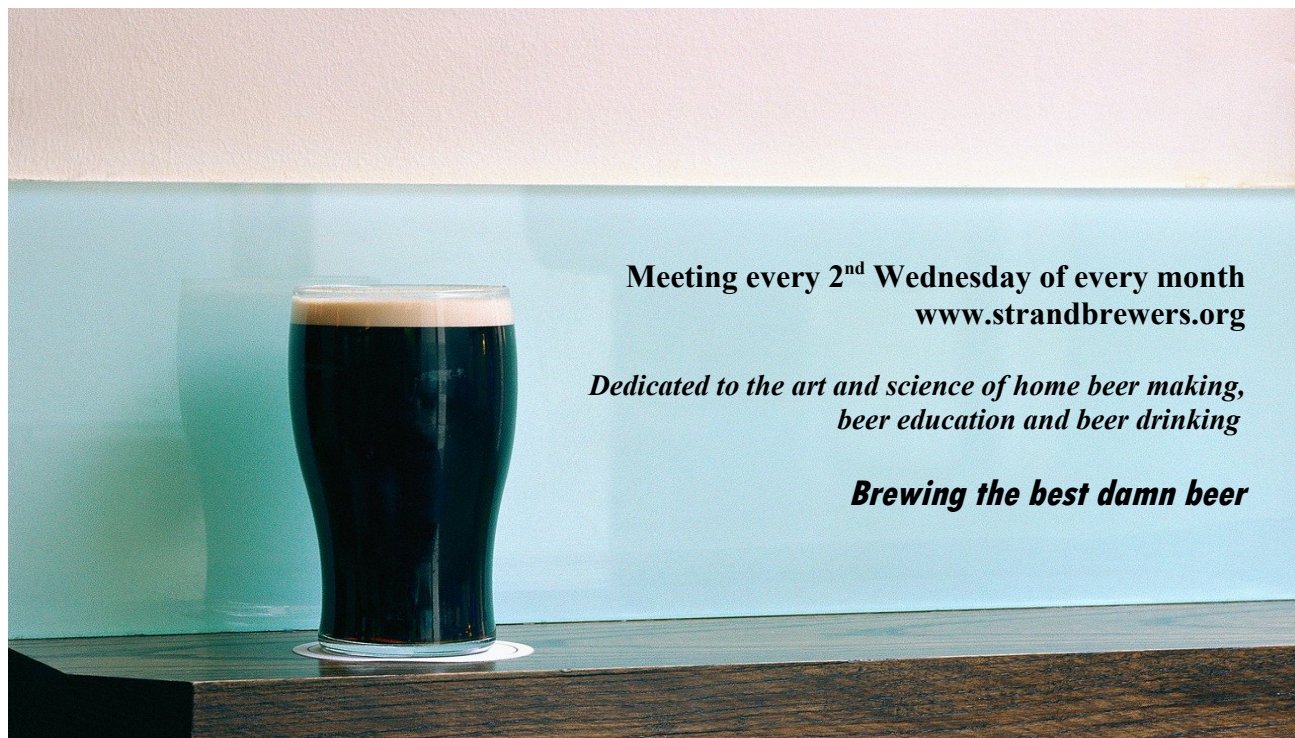
05/27/2010

[Sonoma Community Center Amateur Beer Competition](#) Sonoma, CA Contact: [David Daniel](#) Phone: (707) 327-9441 Entry Fee: \$15 Entry Deadline: 05/26/2010

05/28/2010

[18th annual Great Alaska Craftbeer and Homebrew Competition](#) Haines, AK Contact: [Rachael Juzeler](#) Phone: (907) 780-5932 Entry Fee: \$5. first entry / \$3. ea. additional entry Entry Deadline: 05/26/2010

For a list of BJCP competitions around the country, go to <http://www.bjcp.org/> and select the Scheduled Competitions link



Meeting every 2nd Wednesday of every month
www.strandbrewers.org

*Dedicated to the art and science of home beer making,
 beer education and beer drinking*

Brewing the best damn beer

The objectives of the Strand Brewers' Club are to Brew Beer; to disseminate among the members information pertaining to the brewing, consuming, presentation, judging and history of beer; to promote and encourage homebrewing competition; and to foster general goodwill throughout this great nation of ours through the making and consuming of this noble and most excellent beverage.

It is the policy of the Strand Brewers' Club (SBC) to brew and consume beer strictly for fun. Under no circumstances does the SBC support or condone in any manner the sale or barter of homebrewed beer, the operation of a motor vehicle under the influence of alcohol by a member or participant in any club event, or the provision of alcohol to minors.

Strand Brewers' Mentor Pool

In time of need...who ya gonna call? These Brew Buddies have volunteered to answer any brewing questions you might have, and to be available to teach beginning homebrewers our homebrew craft.

Name	Phone	Email	Location
Dave Peterson	(310) 530-3168	diablo390 (at) aol.com	Torrance
Dan Hakes	(323) 730-1003	danhakes (at) mac.com	Downtown Los Angeles
Bill Krouss	(310) 831-6352	bkrouss (at) cox.net	Rancho Palos Verdes
Jim Hilbing	(310) 798-0911	james (at) hilbing.us	Redondo Beach
Jim Wilson	(310) 316-2374	jim7258 (at) gmail.com	Redondo Beach
Steve Fafard	(310) 373-1724	sfafard (at) cox.net	Rolling Hills Estates
Jay Ankeney	(310) 545-3983	jayankeney (at) mac.com	Manhattan Beach
Brian McGovney	(310) 376-8246	brian.mcgovney (at) gmail.com	Redondo Beach

...and your 2010 Club Officers:

2010 Club Officers

President:	Chris Voisey	(310) 941-4810	chris (at) voisey.net
Vice-President:	Jake Filipovich	(818) 825-1088	pittboss13 (at) verizon.net
Secretary:	Devin Knowles	(323) 841-2037	devin.e.knowles (at) gmail.com
Treasurer:	Rob Proffitt	(310) 787-9511	rproff (at) earthlink.net
Activities Director:	Bryan K. Willis	(310) 462-5528	bryankwillis (at) yahoo.com