



At A Glance

GoDronex MICRO MECCA TOUR

Objectives

- All Pilots** ✦ Extend the endorphin rush by flying more packs with close racing
- ✦ Relationship building through “shoulder to shoulder” encounters

- Newcomer Pilots** ✦ Create a welcoming atmosphere free of intimidation

- Experienced Pilots** ✦ Reward individual performance in a team setting

- Organizers** ✦ Greatly reduce event workload

Format

- 2 pilot teams, 4-5 races @ 25 minutes each
- Charge 4 batteries in 20 minutes
- Handicap each team for true parity
- Switch teammates every race to achieve skill parity
- If there is an odd number headcount then a pilot can fly solo and given extra
- Teams compete against entire field on a round by round basis

Specifications

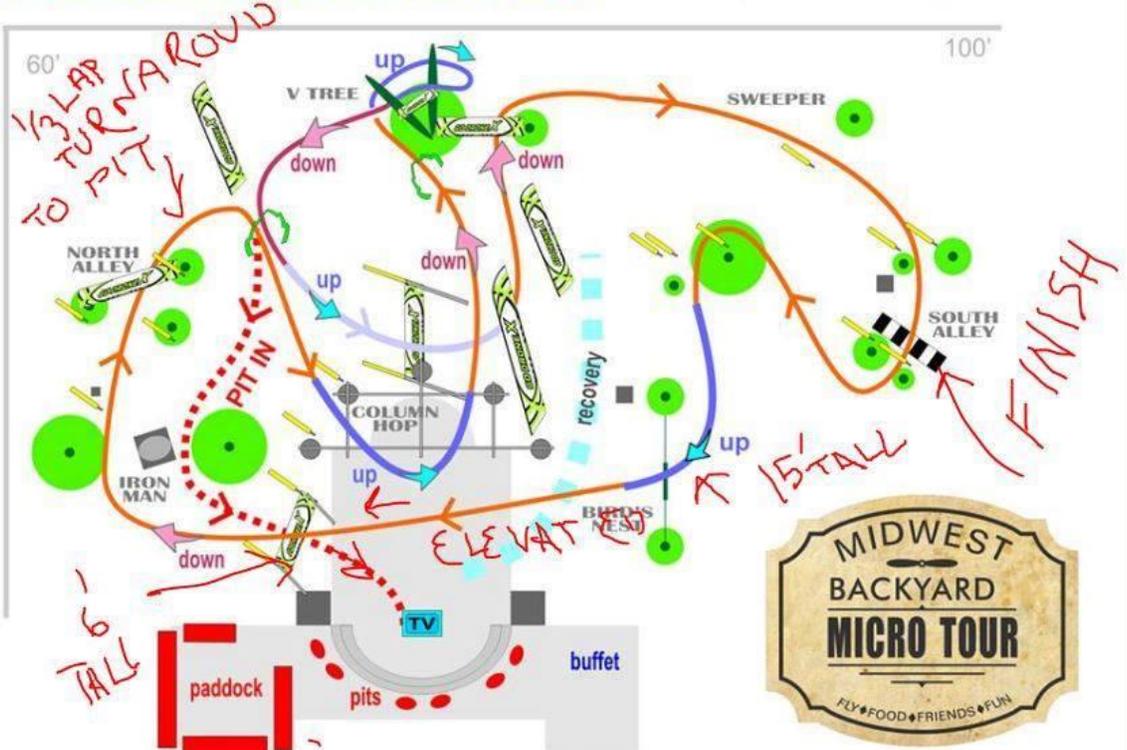
- 25mw vTx, dipoles allowed, Raceband 1 3 6 7 frequency
- no battery or motor size restrictions
- max weight of 175g for dipoles, 185g for CP antennas
- up to 2.5" prop

Course Design

- Technical course minimizing speed (safety & reduce micro damage)
 - Raised gates in front of pit area for safe passage to center of the course
 - Finish line / timing before the raised section over pits, usually right before the raised section
 - Typical gate is 16 square feet (4x4).
 - Pit entrance should be straight in and out to avoid video interference (not like car racing pits)
 - Pilot stations should be spread 20' apart to avoid video interference when plugging in
 - Pit station order: R1, R6, R3, R7 give most video separation.
 - Pit entrance after the raised section over the pits .
- About 1/3 of a lap before pitting in. Long pit entrances promote strategy.



**ROUND 2:
GREGG'S PLACE
ROLLERCOASTER**



Event Scoring

- 1 individual point for every team you beat per round
- Most individual points win
- Points includes teams that drop out.
IE, if you started with 4 teams and 2 people drop out by the end (ie technical issues), you still are awarded a point for beating them because you were more prepared than them and should get credit for that.
- Ties are broken by a run off. No handicapping.

Pilot	Top 2 Events		7 pilots			6.0 pilots		
	rank	Tot	pts	rank	Serie	pts	rank	Serie
Nick Lee	1	200	11	1	100			
Mark Spaniel	3	161	9	2	86			
Gregg Novosad	4	159	8	3	71	4.0	4	50
Troy Wojciechowski	10	71	7	4	57			
Dakota Snow	5	114	6	5	43			
Billy	17	29	4	6	29			
Mark Spohrleder	2	175	1	7	14			
Zach Carlson	6	100				7.1	1	100
Travis Miller	6	100						
Michael Olivier	8	86						
Troy (Springfield)	9	83				6.0	2	83
Jerrod Andrews	11	67				4.1	3	67

Series Scoring

- Take top 2 scores from individual events and double championship score.
In essence, the regular season counts for half and the championship counts for half.
With series you want to reward attendance.
- If your first race is Champs then your score is not doubled.
- Use percentile scoring.
(total pilots-rank) + 1) * (100/total pilots)
Example: 10 pilots enter
 $1^{st} \text{ place } 100 \text{ points } ((10-1) + 1) * (100/10)$
 $3^{rd} \text{ place } 80 \text{ points } ((10-3) + 1) * (100/10)$
 $10^{th} \text{ place } 10 \text{ points } ((10-10) + 1) * (100/10)$ *note, even the last place finisher gets some points

Host Requirements

- Setup course
- Power / Bathroom / Music
- Food & Beverage (precook everything the day before and kept in warm in oven day-of)
- AMA at hosts discretion (highly discouraged if held on someone’s private property as they have home owner’s insurance)
- All money goes to host

LiveTime Setup

1. Race Tab

Name teams the same as frequency.

- > Hover over Drone Number 4
- Right mouse and assign to 7.
- change 3 to 6
- change 2 to 3

2. Race Tab / Settings / Timing

Lap Settings

- > Ignore Invalid
- > Minimum lap time = 0 (for now)

Heads-Up Settings

- > No Change

Statistics

- > Check "Use heads-up first lap"

Caution Settings

- > Check "Caution Flags"
- > "During Caution" Drop down to Count Laps.

3. Race Tab / Settings / Round

Start Settings

- > Heads-up

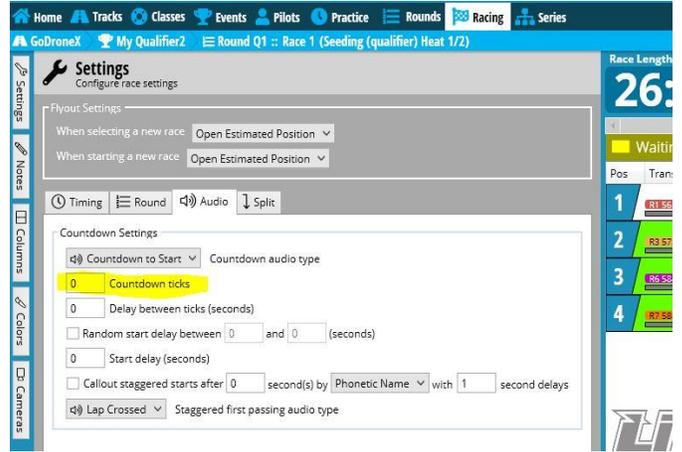
Length Settings

- > 25 minutes

4. Race Tab / Settings / Audio

Countdown ticks = 0.

We don't want any sounds when we start the race.



5. Starting the Race

A) Press "S"tart.

There should be no sounds.

B) Immediately press "C"aution.

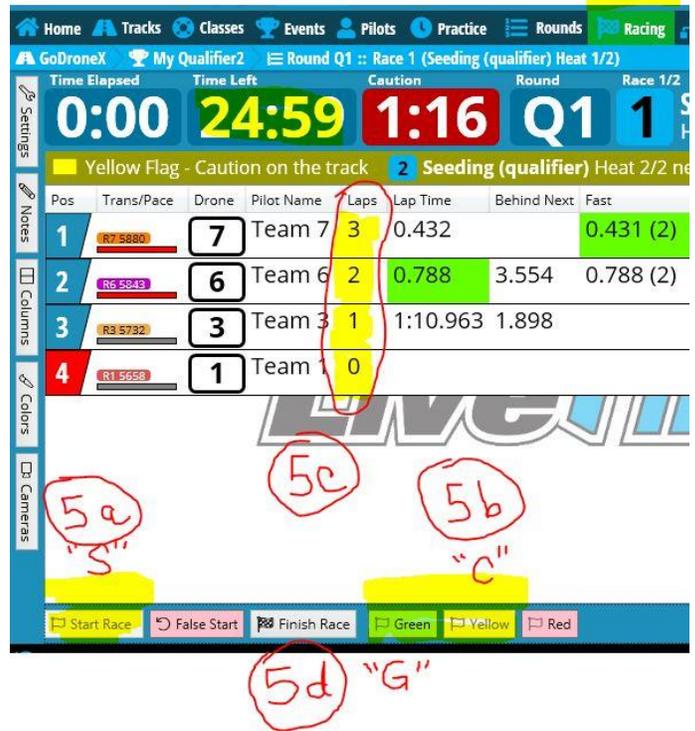
This will pause the race clock but still allow us to add handicap laps (called forcing in LiveTime).

C) Manually press keypad to give teams their handicap.

"1", "3", "6", "7" adds a lap assuming you have changed their driver numbers from 1,2,3,4 to 1,3,6,7.

* Open Settings tab and set Minimum Lap Time to 18 -24 seconds

D) Manually announce the start and press "G"reen to restart the race.



Handicapping

- To seed the first race we use the pilots published handicap.
Using the method below, create an expected lap time for each pilot.
You could also monitor practice lap times (useful for new pilots without any history).

- For the second race on, use previous races' typical lap time as a seed time.

The Race Director should take notes during the last third of each racing and note each racer's typical lap time.

Use LiveTime / Racing Tab / Race Laps right flyout.

Lap	Type	Forced	Time
1			1.256
2			2.078
3			1.547

- Assign 2 pilots to a team. Make sure pilots haven't flown together.
- Calculate team projected laps.
- Determine how many handicap laps a team gets by finding the lowest team projection then determine every other team's gap.

HANDICAPPING EXAMPLE

Race is 25 minutes and each pilot will fly half the race or 12.5 minutes



Pilot A 30 sec or .50 min
Pilot B 30 sec or .50 min

typical lap times from last race

projected lap count

TEAM 1

$$\frac{12.5 \text{ min}}{.5 \text{ min}} + \frac{12.5 \text{ min}}{.5 \text{ min}} = 25 \text{ laps} + 25 \text{ laps} = 50 \text{ laps}$$

Pilot A 30 sec or .50 min
Pilot B 45 sec or .75 min

typical lap times from last race

projected lap count

TEAM 2

$$\frac{12.5 \text{ min}}{.5 \text{ min}} + \frac{12.5 \text{ min}}{.75 \text{ min}} = 25 \text{ laps} + 17 \text{ laps} = [42 \text{ laps}]$$

TEAM 2 would be spotted **8 laps**

FACTORING PIT STOPS

5 minutes of pit stops are expected so the real race length is 20 minutes (7 stops x ~43 sec = 5 minutes)



Pilot A 30 sec or .50 min
Pilot B 30 sec or .50 min

typical lap times from last race

projected lap count

TEAM 1

shorter race length

$$\frac{10.0 \text{ min}}{.5 \text{ min}} + \frac{10.0 \text{ min}}{.5 \text{ min}} = 20 \text{ laps} + 20 \text{ laps} = 40 \text{ laps}$$

Pilot A 30 sec or .50 min
Pilot B 45 sec or .75 min

typical lap times from last race

projected lap count

TEAM 2

$$\frac{10.0 \text{ min}}{.5 \text{ min}} + \frac{10.0 \text{ min}}{.75 \text{ min}} = 20 \text{ laps} + 13 \text{ laps} = [33 \text{ laps}]$$

TEAM 2 would be spotted **7 laps**
▲ one lap less

* Note. In the example above, how changed the race length affects the handicap.

Tracking

MIDWEST BACKYARD MICRO TOUR
FLY • FOOD • FRIENDS • FUN

4000 RACING VTX SETTINGS
4000 R1 RED BLUE
3750 R2 RED BLUE
3500 R3 GREEN BLUE FB
3500 R4 GREEN BLUE FB
3500 R5 BLUE BLUE
3500 R6 BLUE BLUE
3500 R7 BLUE BLUE
3500 R8 BLUE BLUE
3500 R9 BLUE BLUE
3500 R10 BLUE BLUE
3500 R11 BLUE BLUE
3500 R12 BLUE BLUE
3500 R13 BLUE BLUE
3500 R14 BLUE BLUE
3500 R15 BLUE BLUE
3500 R16 BLUE BLUE

ROUND 1
1) Fill Roster w/ Last Initial (left)
2) Fill 1st rnd based on Arrival

ROUND 2
1) Swap 4 slowest between groups
2) Juggle remaining same group

ROUND 3
1) Carry slowest of each freq over
2) Juggle faster pilot

ROUND 4
1) Carry slowest of each freq over
2) Juggle faster pilot

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Afternoon Morning

ROSTER						
	R1	R2	R3	R4	Tot	Place
1	TROY	2	2/4	1/5	2/5	
2	ZACH	2	1/3	2/5	1/1	
3	GREGG	0	2/2	0/2	2/4	
4	CHRIS	0	0/0	2/2	2	
5	HAYLEY	1	1/2	0/2	2	
6	JEROD	1	2/2	1/3	1/4	
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						

ROUND						
	X	PILOT	LAPS	RANK	PTS	
GROUP A	34	TROY		1	2	
	22	ZACH				
	32	GREGG		3	0	
	45	CHRIS				
	45	HAYLEY		2	1	
	30	JEROD				
GROUP B	48	CHRIS		1	2	
	18	ZACH				
	3	GREGG		3	0	
	46	HAYLEY				
	28	TROY		2	1	
	24	JEROD				

ROUND						
	X	PILOT	LAPS	RANK	PTS	
GROUP A	20	JEROD				3 0
	48	CHRIS				
	30	GREGG		1	2	
	18	TROY				
	46	HAYLEY				2 1
	20	ZACH				
GROUP B	19	ZACH		1	2	
	35	GREGG				
	26	TROY		2	0	
	26	ZACH				2 0

On the left, the running points total for each pilot. One point for every team you beat. Compete as a team but scored as an individual.

On the right. A history of all the race pairings so we avoid duplicates.

EXECUTION

2 Days Before

1. Make Food
2. Test LiveTime

Day Before

1. Setup course

Day Of

--- Before event start ---

- 8:00 Warm food in oven, Setup Electronics
9:45 Assign people to team / frequency based on arrival
10:00 Pilot meeting / Course walkthrough
10:15 2 practice packs

--- Morning Rounds 1 & 2 ---

- 10:30 R1 Group A & B (25m per group, no handicapping)
11:30 R1 Group A & B (70 minutes per round with handicapping & staging)
12:50 lunch (45m)

--- Afternoon Rounds 3 & 4 (5 rounds if time allows) ---

- 1:40 R3 Group A & B
2:40 R4 Group A & B
3:50 Awards
4:00 Tear Down

Typical stick time for 4 races

- 4 races = 56 minutes (12.5 minutes per round * 4 rounds) + (2 practice packs * 3m)
5 races = 68 minutes (add another 12.5 min)
If you fly a solo race, add another 12.5 minutes.

It is very common for pilots to fly 80 minutes!

Note that the average stick time for a typical 5" solo drone format is ~15 minutes.

Useful Links

[Signup / Standings / Scoring Template / Strategy Calculator Spreadsheets](#)

[Micro Mecca Tour Facebook](#)

[GoDroneX Facebook](#)

[GoDroneX website](#)

Photos



Trench Run in Mark's backyard in Milwaukee WI



Tight gate slalom at Falcon Hobby in Springfield IL



Timing at a park in Oshkosh Wisconsin



Makers faire in Madison WI with Robotic Gates



Shrimp tacos, jambalaya, roasted corn in IL 'burbs.



Bottoms up but bad for lap times.

Background

My name is Gregg Novosad, founder of [GoDroneX](#) in Chicago. I have been running drone performance [events since 2014](#). In 2017 I lost all desire to attend or organize 5" solo events since they no longer addressed my needs. I had little help and the events became so complex that I could no longer fly.

I was coming home in a bad mood. My wife said "I don't know why you do this. You always come home angry." At that point I focused on what I enjoyed; [scholastic and entertainment events](#). But I still longed for the endorphin fix of competing.

I attended several other events so I could just have fun and enjoy that endorphin release. Even though the organizers did a fantastic job, the current format of 7 flights coupled with the 1.5 hour drive meant less than one minute of stick time for every hour away from home. For me, the current format was broken. So I sat down and wrote out all the problems from as many perspectives as I could.

Competitor Perspective

<i>Stick Time</i>	The average actual flight time at a solo drone event is 12 minutes. That translates into 1 minute of flight time for every hour away from home.
<i>More flights to come up to speed</i>	It takes more flights to hit peak lap times as one gets older. Long delays between rounds don't help.
<i>Too much raffling</i>	Raffles raising money for clubs but at times it gets excessive.
<i>Drone Damage</i>	Complex courses and increased speeds mean constant repairs.

Organizer Perspective

<i>Breaking Even</i>	Around the Chicago market we must rent our space. This means finding a location (phone calls), getting AMA insurance (paperwork) and dropping payments off (driving around). Lots of risk, little reward.
<i>Transporting Event Materials</i>	Loading, unloading, storage and course repairs take time; time that no one else sees. But the main stress is constant double checking the manifest, so nothing was forgotten. Forget a hammer and you have no flags.
<i>Can't Compete</i>	Events got more complex, expectations grow, and little help meant organizing was a full-time job.
<i>Pre Post Event Time Demands</i>	Maintaining the series standings, creating trophies & videos, post event write ups & photos gobbled up more time.
<i>Sponsors</i>	Sponsors take time and I don't believe there is a value proposition for the sponsors. More work than the benefit.

Newcomer Perspective

<i>Course Difficulty</i>	There is no middle ground. Either a course is too easy for skilled pilots or too hard for newcomers. Newcomers are either stoked or never come back.
<i>Intimidation Factor</i>	Seasoned pilots are very good. I'm sure it scares away many.
<i>AMA</i>	\$80 for AMA to even just try an organized event drives people away.

We need Solutions not Problems: **FLY MORE, STAGE LESS**

There are only a few ways to solve the stick time issue: more pilots per heat, less pilots, longer heats, less staging and more rounds. The real solution comes down to these principals in this order:

- #1) **Reduced staging** with team racing
- #2) **Increase safety** with Micro sized specification
- #3) **Reduce workload** by holding events at free locations without AMA insurance
- #4) **Reward individual performance** inside a team format
- #5) **Variable costs** means you don't lose money
- #6) **Reduce headcount** means more rounds in less time

In 2016 I started [scholastic competitions](#) with a team format. I migrated the format to adults in my [backyard during the summer of 2017](#). I ran three events. We had adult beverages, decent food, rocking music and a simple timing system but most importantly, a massive amount of stick time.

WHAT WORKED

- **25 minute heats.** Super easy on the host. "Go!" From 1:1 stage to fly time for a 5" solo event all the way down to 5:1 for team events. Instant time saving with much less organizer effort. Fly more, stage less. Win / Win.
- **You finish all your packs.** If you crash, you get flipped over just like RC cars. This is possible because pilots can go on a hot Micro track without fear of bodily harm.
- **Four races net between 3 to 4 packs per race.** One team race is equal to the same stick time as one entire day of a 5" solo event. And there are 4 team races in a day. We average 3:30 – 4:00 of actual flight time per pack now.
- **You're engaged even when not flying.** You have duties when your teammate is flying like keeping his lap counts and monitoring target lap times (strategy).
- **Simple scoring system.** You don't need high granularity of lap times; simple lap counting works. We grabbed a spectator to press a keypad (free LiveTime). You shout your team number 15' before the finish and the scorer had time to move his finger over the keypad. He presses it when you crossed the line. No fancy timing systems needed, and you get lap times to boot!
- **Minimal Space.** 90' x 50' is all that is needed. That is the size of a suburban backyard. It forces a technical course which slows down the speed which in turn minimizes damage.
- **No AMA.** Homeowners insurance means no AMA. No different than having a backyard party with Jarts. This makes the event attractive to newcomers.
- **No injuries.** Getting hit with a 150 gram AUW may sting but it won't put you in the hospital. Keep courses technical with short straights. We didn't use prop guards.
- **Comradery.** Having 4 different team members throughout the day forces you to interact outside your normal group. Men bond with 'shoulder to shoulder' interactions like sitting at a bar watching a sporting event. There is nothing more 'shoulder to shoulder' than team racing.
- **Different skill levels weren't an issue.** Juggling team members creates parity. The best pilots were on the podium when scored with the method of one individual point for every team you beat.
- **25 minutes of endorphin.** Team parity was pretty good by the 3rd race. We had teams on the same lead lap for the entire race! That's when it starts raining endorphins.
- **50 full minutes of stick time.** Remember you finish every pack and get flipped if needed. 12.5 minutes of stick time per pilot for 4 races. That's more stick time than most 5" racer's entire season!
- **Newcomers not Noobs.** Just because you haven't seen someone at a 5" event doesn't mean they can't fly. Lots of micro pilots out there. A whole different world.

- **Beginners held their own.** They flew within the comfort zone and rarely crashed. It was stressed that teams were built for parity so the aggregate skill trumped individual skills. This took the pressure off the new guys. They did great and actually crashed less than the 'pros'.
- **Experienced pilots didn't feel 'stuck' with a Noob.** Again, team parity, juggling and expectation management solve everything. At the end of the event the top guys got trophies and started buying into the format.

WHAT DIDN'T

- **Showing up late.** The events were free and promoted as 'friendly team racing'. Some treated it as a fun fly not a race. Always charge something.
- **Showing up with broken quads.** Again some had a fun fly mindset.
- **30 min was too long.** Once you were down by 4 laps at the 20 min mark you gave up. This is why I am not a fan of 3 hour endurance events. The endorphin fix disappears quickly as you fall further behind.
- **Can't charge batteries in time.** Some didn't have charging setups to handle 4 batteries in 20 minutes. This surprise pops up after you have already juggled the team members and assigned frequencies for race #2. Now you have to redo race #2 assignments. In a 5" event the organizer wouldn't care but with team events it's a big deal. Needs to be stated clearly in the event description.
- **Getting 'stuck' twice with someone.** Unbeknownst to me, there was an unorganized pilot who was never ready and it pissed his team members off. I didn't switch team members that one race because I thought we had great parity. Lesson learned: always juggle even if you think you have perfect parity.
- **Assigning teams on arrival.** I assigned teammates and frequencies based on arrival so it was random. That avoids cliques. Some guys got assigned then went into the shop to fix their quad. I had to hold up the event for these "quick" fixes that took over an hour. Again, not an issue for a solo race but a deal breaker for teams. Lesson: assign when you have a working quad in hand.
- **Changing the course every round.** It's a backyard so it's easy to do. However someone was always fixing their quad during the 20 min downtime and never heard the course changes. Racers wanted the same course so they could get in their groove.
- **Practice.** No one used it. They just BSed. We lost 1.5 hours with people showing up late, not practicing and repairing. We could have got 2 more races in.

OTHER THOUGHTS

- **New faces.** Maybe it was location related, friends spreading the word, no AMA, micros or 'friendly team racing'. But I know a good deal of these guys will never go to a 5" solo race. Ever.
- **Strangers.** There will be many people you don't know who will be unattended in your house using the bathroom and perhaps your shop. Something to think about.
- **Food shortage.** Friends of pilots will stop by and it will be awkward when lunch is served. Have a policy. A 'Chip In' jar makes sense. Pilots get first dibs of course.
- **2 beers.** That was the average consumption.
- **Cook on Thursday.** Put the food in the oven on Saturday morning. You can't grill, fly and organize at the same time.
- **Strategy.** Ultimately, I expect pilots to start thinking about the best way to maximize lap count. I created a [Strategy Calculator](#) for this.
- **5" bigots.** Many will look down on the micro revolution. To them, it will never be the real deal. After experiencing it, it addressed my needs perfectly. I can't imagine any recreational pilot ever wanting to fly in a 5" event again. The addictive nature of the natural high for 50 minutes of stick time should be the single biggest factor of growth. But once again who cares. More people more problems. Eight pilots are a great time.
- **Host flies in the first heat of Race #2.** This gives him 30 minutes to bring the food out for lunch while the second heat races.
- **Juggling technique.** Juggling with 8 pilots is easy. But 16 is not. I devised a [special board](#) and instructions for a simple juggling method to achieve parity. Don't forget to record the score after each round. The board follows the tour.
- **Off the beaten path** I created trophies [and a fun promotion campaign](#). [These snuggies](#) were a buck each. I wanted something special for the hosts, so I ordered nine green snuggies, just like the Masters jacket.

Where are we now (as of August 2018, 6 events into our first true season).

In the Chicago area no one wants to host a 5" event. Waaaaay too much work with little help. I wanted to do the same backyard events just like 2017 but one was enough for me. So I reached out and asked for hosts for a backyard series across several states. Nine people offered, seven actually held events. Why did I get so many responses for hosts but yet so little help to run a regular event? Here's my take.

- #1) **It's in your backyard.** Minimal hassle. Setup on Friday after work. Grill on Friday night. Have fun on Saturday.
- #2) **There's a headcount cap.** More people more problems. Since the goal isn't to make money (ie no raffles) as long as you don't lose money it's fun to have friends over . . . once (a year).
- #3) **\$15 all goes to the host.** You can put out a pretty good food spread and decent beer for that amount.
- #4) **Host gets all the credit.** Not a 'chapter' or club. I personally think this is a major factor. It's not a person helping a club and getting a little thank you but rather everyone knows who did the work. The series is owned by the collective hosts, not one group. Also we chose 'friends of' when we listed affiliations.
- #5) **Anyone can host.** We have hobby shops, individuals and chapter organizers. But all the credit goes to the host and rightfully so.

Question / Answer

Q1) Could it be a chapter event?

Sure. But remember to give main credit to the guy who is hosting.

Q2) Why a backyard?

No AMA (homeowners insurance), easy setup, access to bathrooms and shop.

Q3) Why 16 head count cap and not more?

The goal is to make the host's life easy and just cover costs. Why bother with more hassle? The host needs to have fun (ie fly). Cooking for 16 people requires some effort. Cooking for 32 is a fast food restaurant. 16 is also the magic number for dipole based heats and hitting 50 minutes of stick time in 5 hours.

Q4) Why not 3-person teams?

Again, 50 minutes per pilot in 5 hours. It's better to have less people not more. Think of it from the host's perspective.

Q5) Why not 5"?

Safety and space.

Q6) Why no battery or motor limitation?

Bodily damage is a factor of speed, weight and prop tip speed. What is the tip speed of a 4s 3200kv vs 3s 7800kv? Not much. But going to a 3" blade dramatically increases the tip speed relative to 2.5". Therefore, a cap on prop size is needed but not motor size or cell count. A weight cap is the great equalizer.

Q7) Why not let people choose their own team members for the whole event? Why juggle at all?

You could do that. But keep in mind that

- 1) creates a 'cool kids' attitude and is not inviting to newcomers
- 2) it's less social
- 3) doesn't create parity thus reducing that endorphin rush