

2018 NATS Equipment – Initial Data Review

We took a slightly different approach to collecting the data for the 2018 NATS participant equipment list. Instead of a paper form that had to be painfully transcribed and checked in a spreadsheet, I developed an online survey to collect the data. What follows is an initial report of the data collected. Out of 71 pilots who flew at least one round in the NATS this year, I have so-far received 54 survey results (some people may have flown more than one aircraft), I plan to provide a more detailed and complete report in the September K-Factor (the deadline for the August K-Factor had passed before even a small # of responses had been received) so there is STILL TIME for you to provide data on the equipment you flew if you have not already!

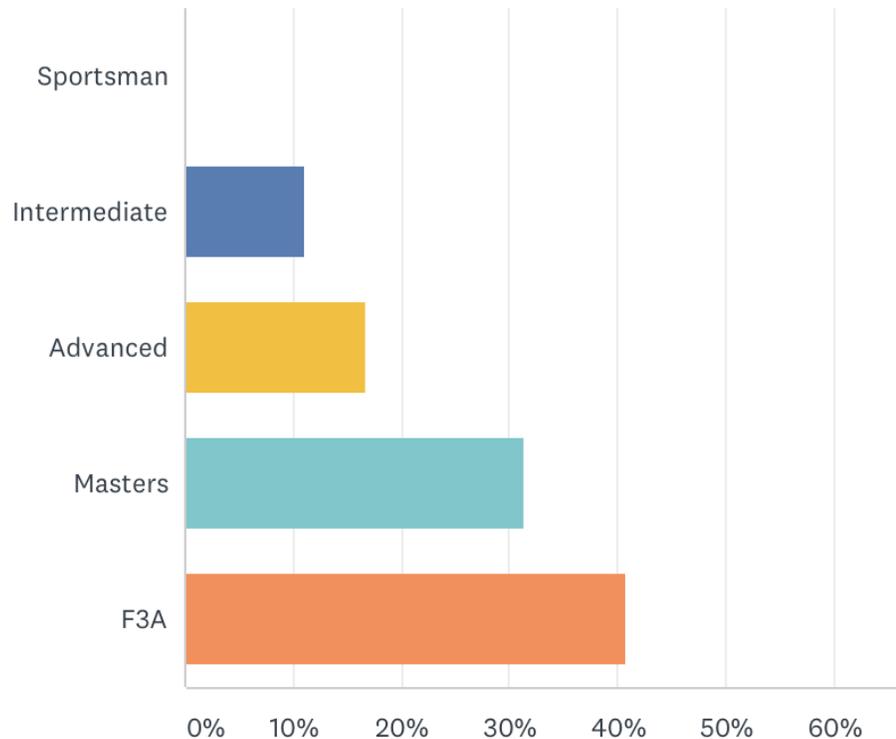
<https://www.surveymonkey.com/r/NATS2018EQ>

Basic Demographics

For the basics, of the 54 responses the class breakdown is as follows, this fairly closely follows the actual registration data, so response rates seem to be consistent across most classes.

Class

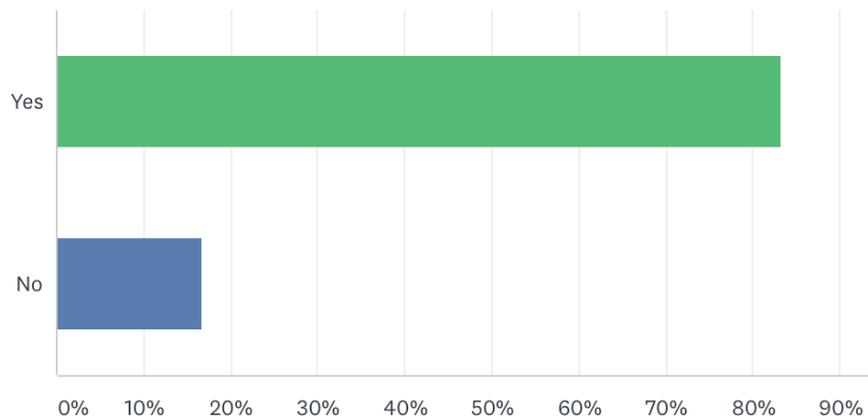
Answered: 54 Skipped: 0



The next question in the survey was actually just a point of interest for me. Given the data collected for the District Championship Series that makes the NATS a bit of a team event for the districts, I think some people *think* they are members but haven't actually paid! It does warm my heart a bit to know that 83% of attendees at least *want* to be NSRCA members and therefore recognize the value the NSRCA brings to the hobby!

Are you a member of the NSRCA?

Answered: 54 Skipped: 0



Airframe Data

By necessity because I could not possibly remember all the possible manufacturers of aircraft, not to mention the model names etc., and the multiple choice list would have been overwhelming if I could have gotten even close to complete. I made this a free-form text entry field. The following “word cloud” sizes the brands and model names by the frequency of appearance in the responses, the larger and darker the text, the more frequently it appeared in the list. Not surprisingly, we find BJ Craft and CK Aero in the lead with the Element and Allure prevailing, but AJ’s Acuity is getting a fair amount of “airtime” as well (pun very much intended!)

Note that this is NOT the complete set, just those that appeared a statistically significant number of times more than others. There were, for example, some unique responses like Jeff Carder’s home-designed, home-built, and beautiful Thunderbolt and Lightning airframes!

AJ Aircraft Allure CA BJ Craft Invitation CK Aero design
 BJ Craft Element Bipe Acuity

The spinning parts

Again, a free-form input, we have a word cloud for the spinner and prop choices, with Falcon and Contra leading the way with Tru-Turn and Gator trailing. 82mm seems to be the most commonly used nose size...

Gator Contra 85mm Falcon Turn 82mm Carbon V4

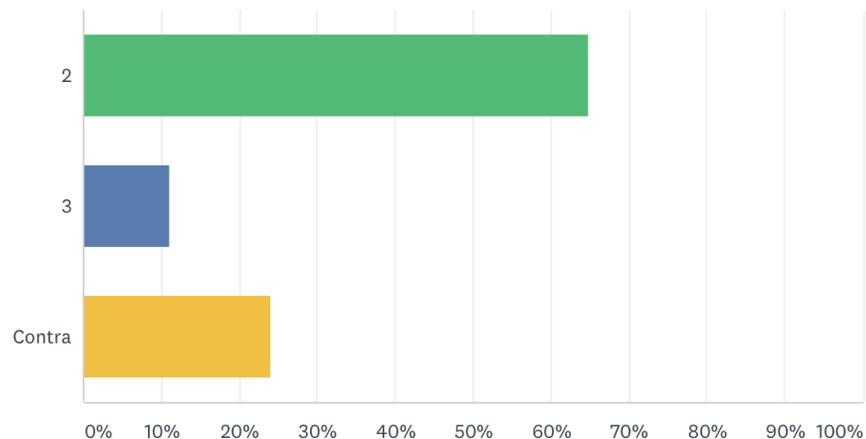
Given the spinner data, the prop data should be no surprise:

22x22 front 5x13 23x22 20x13 21x14 Contra 23x20 Falcon rear 21x13
 carbon APC PT Blade

As a big fan of the 3 blade prop myself, I'm surprised that the "poor man's contra" (or, as I prefer, the "lazy man's contra" as it is relatively maintenance free...) of the 3 bladed prop isn't used more often. I personally love my Falcon 3-blade!

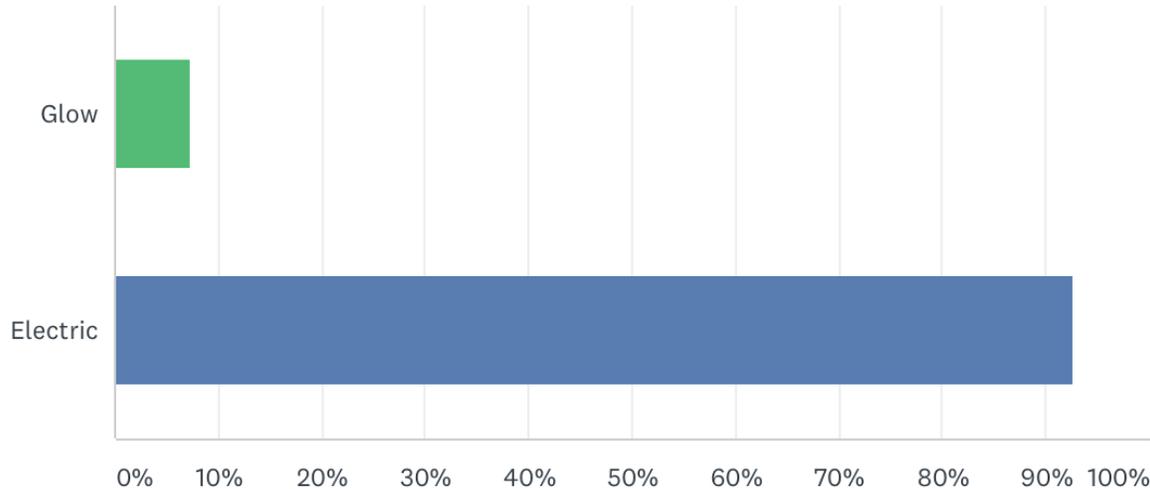
Propeller blade count

Answered: 54 Skipped: 0



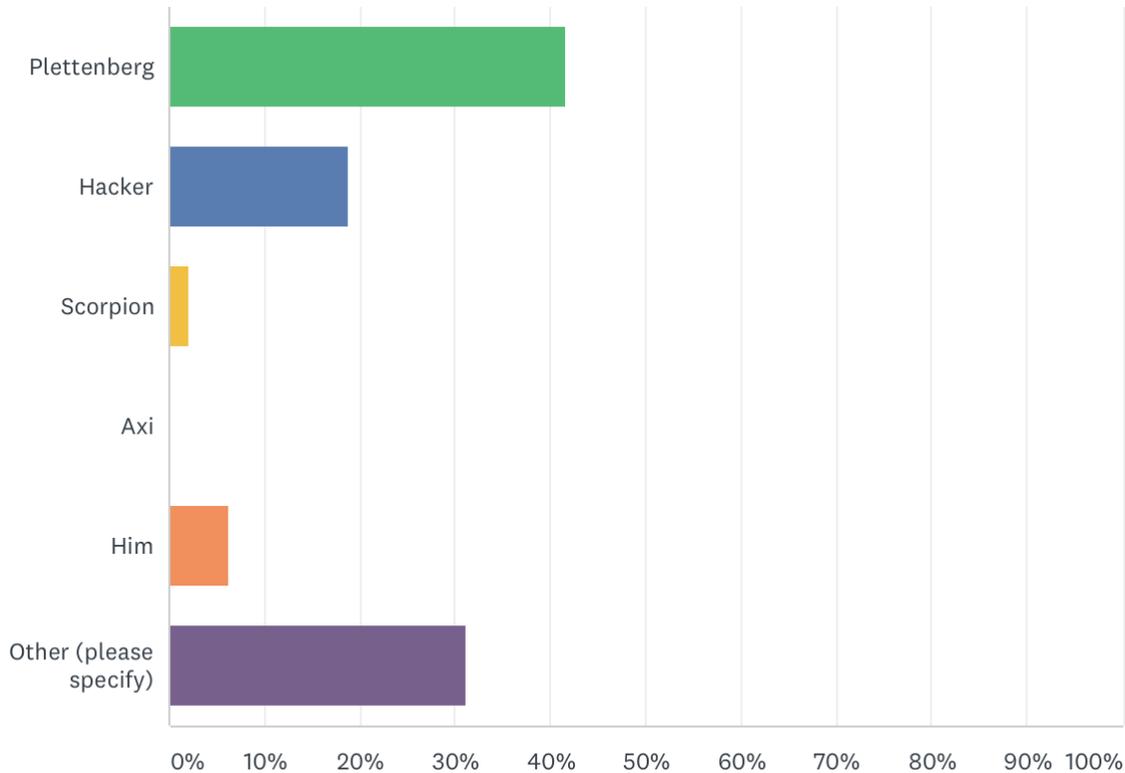
Glow vs. Electric

Ok. I admit, this surprised me! I knew that Electric was more prevalent than Glow, but I would never have guessed that it had overwhelmed glow to this degree! This could be a data skew though, it's possible glow flyers are less digitally connected and thus have missed the several pointers to the survey, or were reluctant to get engaged with the laptops I provided at the weigh-in and pilots meetings to get the data entered...



Electric Power System Choices

I blame myself for one oddity here – I missed a typo in my choices, “Him” should be “HiMax” and my reviewers and I did not catch it! The vast majority of “Other” fill-ins was HiMax, with a small smattering of “Pyro” mixed in. Safe to say about 30% of the responses were HiMax, putting them in second place to Pletty, with Hacker running a strong third with just under 18%.



On the specific model of motor, it should be no surprise that Advance leads the way, but I am surprised, given the brand data above, that Hi-Max model names barely make the cloud (though “Pro” is part of the HC6330 model name) while 2 hacker motors do! I suspect this illustrates the importance of selecting memorable names for your products so people can say the name of the product (not just the brand) with confidence when asked!

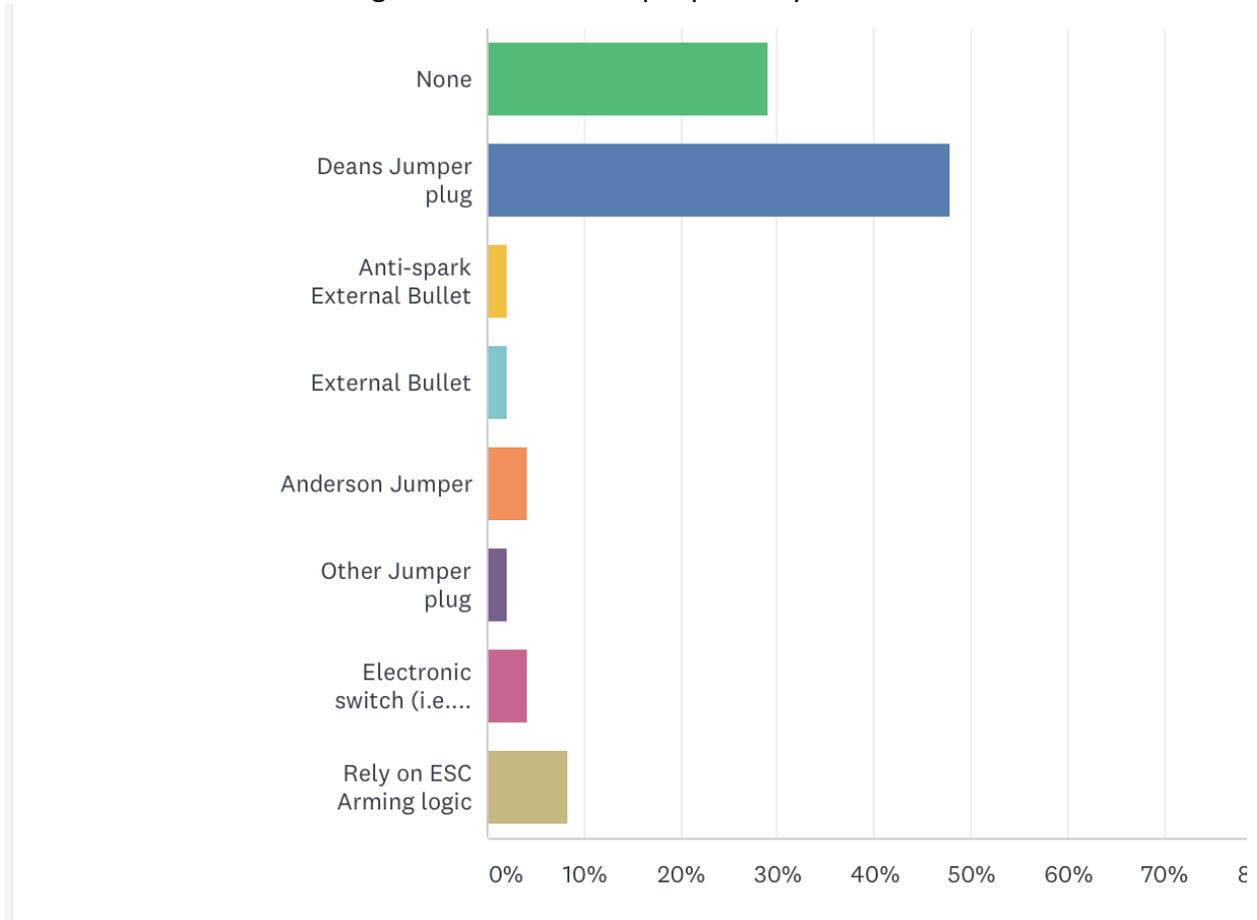
Pro C54 Q80 HC6330 Advance 14XS Pyro

The ESC brand and model data is interesting, Jeti has a strong lead here when you combine the Jeti Mezon and “Mezon” entries. Castle and Futaba make a strong showing.

80HV Edge Castle Spin Jeti Mezon Mezon lite opto OS Creations Futaba

Electric motors need no starter, this makes them a potential threat in the pits at a contest. In fact, at a recent local contest a pilot was distracted by a bad flight and did not have his usual caller. His armed contra-driven plane got parked behind another plane and as he walked away from the plane he bumped the throttle up. That contra made mince-meat of the other plane’s tail before getting shut down and the contra was ruined and the motor mount was broken out of the nose. That was an extremely expensive mistake and we’re all very lucky it was a \$6000

Oxai and not a person that was injured! I understand the top F3A pilots not wanting to risk a lost unknown due to an arming system failure (though I think an external bullet connection is about as “bulletproof” an option for arming as I can imagine) but everyone else really *should* be using an arming system – we don’t all have the luxury of a non-flying caller supporting us at contests! As a point of interest, our competition rules **explicitly** disallow the electronic-controlled arming systems like the Emcotec safety power switch (SPS) or, worse, the ESC-based arming systems that require you to power up with the throttle high.... Electronics fail! It doesn’t take more than one glitch to ruin a lot of people’s day!

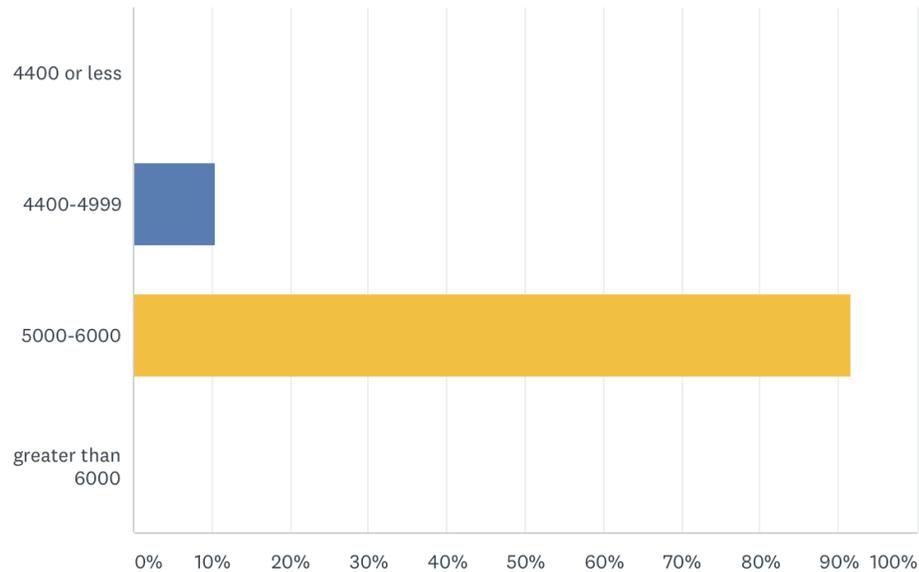


Unsurprisingly, we find Thunderpower Prolite and Zippy Compact batteries leading the battery “charge” but Gator/F3A Unlimited’s batteries have a strong 3rd place in the word cloud. In electric pattern it’s all about the weight of the battery!

mAh HV Lipo 5S Zippy Gator RC Thunderpower
 Zippy Compact Prolite Power Thunder Power Unlimited HV Lipo
 Gator

Speaking of weight, I don't have a good graph yet, but scanning the data, it looks like 1100 grams plus or minus 70 grams is the "sweet spot" for getting used in an electric pattern plane's power system, and that makes the brand and model choices seen in the word cloud above all the more obvious as all 3 of those brands and models come in easily under the 1200g range.

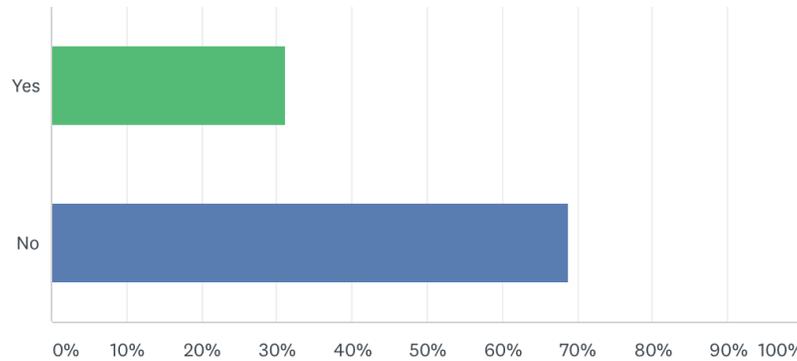
Again, not surprisingly, the prevailing battery capacity is in the 5000mAh range. I'm kicking myself for not having made that choice a little more fine-grained. Sorry! A learning for next time...



Many people I've spoken to didn't realize that if you have an HV (>4.2v/cell) pack, you don't get the full mAh capacity if you charge it to a competition-legal voltage (<42.56 volts fully charged)! I've witnessed one dead-stick due to someone not realizing they didn't have the full 5200+ mAh in their batteries when flying with a competition-legal charge.

Is your battery a high-voltage (>4.2v/cell) type LiPo? (asked only for normalization of capacity data)

Answered: 48 Skipped: 6

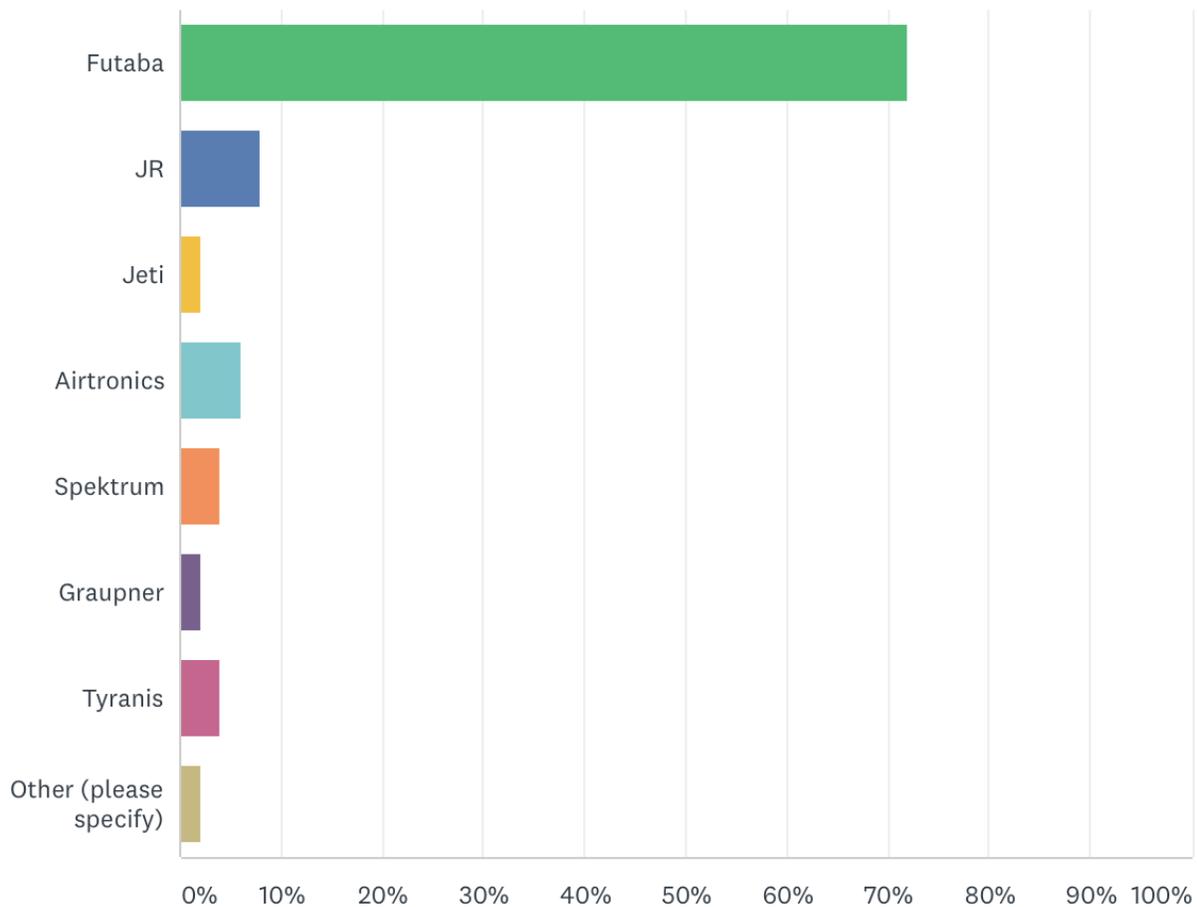


Glow data

Since only 4 respondents (thus far at least!) were flying glow, I don't have a fancy word cloud for you. 100% are flying a YS engine, though model choices range from YS185 to YS200, 100% are flying Cool Power with Nitro from 15-30%.

Control system choices

The past year has been a wild one with JR first exiting the hobby business, then selling the JR brand to another company, and various rumors flying in social media regarding the future of JR. The *clear* winner here is the steadfast Futaba, though I am partial to Jeti myself.... I was quite surprised by Spektrum's poor showing here – I thought we had more Spektrum users in our ranks. Perhaps they just aren't coming to the NATS?



Given the choice of brand, the model word cloud should be no choice.

SZ 14MZ 18SZ SD 10G 18MZ MZ

Receiver switches have PowerBox leading the way (with two different spellings below combined) and Futaba a very close second with “None” and Jeti’s excellent DSM switches coming in at 3rd and 4th. I’m curious about the “none” choice – Does this imply people are flying pattern planes with a BEC alone, or manually plugging/unplugging a receiver pack? That is very surprising indeed!

PowerBox Power box Futaba Jeti None

Given the consistency of speed and lightweight HV servos that deliver more than adequate torque for our models, the prevalence of “None” in the receiver voltage regulator space is not

surprising. Especially since a dual electrically isolated input switch like PowerBox or Jeti DSM switches can allow you to use a regulated BEC voltage of 8-8.4 volts with a lightweight 2S lipo receiver pack providing redundancy to maintain consistency of servo behavior throughout a normal flight.

Jaccio PowerBox **None** Tech Aero

Servo Choices

Given the transmitter choices above, the servo brand choices that follow should be no surprise. Also, given the difficulty of swapping out different physically sized servos it should be no surprise to see that the switch from JR isn't happening as fast on the servo side as on the transmitter side and no time for newcomers like Ditek to make the word cloud yet.

Elevator servo brand:

JR MKS **Futaba**

And model:

BLS173SV **BLS173**

Rudder servo brand:

JR **Futaba**

And model:

BLS171 BLS **BLS171SV**

Aileron servos have a greater variety of choices showing up, with Spektrum and MKS each making a respectable showing here:

JR Spektrum Futaba MKS

As I said, that's a quick summary of the data. I'll provide complete details with less analysis in the September K-factor. In the meantime, if you didn't already, please complete the equipment form at <https://www.surveymonkey.com/r/NATS2018EQ>

If folks find this useful, I could do a more expansive version across all pattern flyers. Drop me a note if you think that would be interesting!

Peter Vogel