Belcher in Legacy

What should we expect of this deck?

Study done in October - December 2013

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Greetings

First of all, I want to thanks everyone who contributed in this project regardless their involvement. I also want to point out the importance of some tutorials / primers / studies done around Belcher on famous MTG website, such as MTGS, TheSource, or even StormBoard.

Table of contents

Introduction

Legacy, also known as “Type 1.5” is an eternal format alongside vintage in which you can find really aggressive combo decks, able to win as soon as turn 1. Belcher is one of those “ultra fast deck”, able to deal around 50 damages before your opponent even draw his first card, assuming you are on the play. Composed by lots of ritual effects, free mana sources and few lands you’ll always be able to go off in the very first turns.

For non-initiated to legacy or to Belcher, this deck has primary two win conditions. The first one is what defined the name of the deck “Belcher”. The related card is Goblin Charbelcher. Well, if you read the card, it doesn’t seem impressive at all. I mean, you have to pay like 7 mana to deal 2 or 3 damages before you reveal a land? What if I told you (just like the matrix’s meme) you only play 1 land, which is a Taiga! And you play 4 free cards into the form of Land Grant which can extract your lonely land? According to the rules, if you activate Belcher and you don’t reveal any land, you deal X damages, where X is the number of the card revealed this way = you win on the spot! If the Taiga is still in your deck when you active Belcher, you have to reveal 10 non-land cards, since Taiga is a mountain, it’ll double damages dealt by the Belcher.

The second win condition resides in the form of Empty the Warrens. This card is based on one of the most broken mechanism ever printed on an MTG Card: Storm. This allows you to copy the spell being cast X times, where X is the number of spells casted before during this turn. So, you play like 1 Gitaxian Probe, 2 Lotus Petal, 2 Rite Of Flame followed by an Empty the Warrens is basically 12 goblins on turn 1 which mean you have set a two turn clock!

Well, now that everyone is a little bit more familiar with this deck, I have to explain the main topic of this study. Imagine you are going to a tournament with a Belcher deck. Would you prefer playing a deck that has a 5% likehood going of turn 1? Or a deck that as a 40% likehood? This is one topic of this study: build the BEST Belcher’s list or at least, the best I can do with my knowledge on MTG & Mathematics & Computer science. Why am I telling you that? Well, to determine the best list I have made a JAVA program able to play a lot of random hand related to a pre-determined deck list. Then,

I'll gather the data and try to make them talk using mathematics and statistics using R, a freeware designed to do statistical computing. With those results, I really hope we we'll be able to build one of the best Belcher's list. And we'll have a proof that this list is better than others!

To summarize, I'll try in the first part of this study to explain the different kind of Belcher's list we can build. After this, we'll discuss the number of kills we have to play. Then I'll introduce you to the program developed and we'll analyze the data gathered. Finally we'll conclude about which kind of list we want to play to maximize or win ratio and which is the proportion of a particular card in the deck.

I'll also want you to remind that an experienced player playing perfectly this deck will have better results than this program. Why? Because sometimes you'll do a really tight play (like exiling Gitaxian Probe under a Chrome Mox to obtain an second mana source, which could lead you to victory on turn 1). Unfortunately, my program doesn't implement those extremely uncommon corner cases.

Glossary

Business spells

- Belcher — Goblin Charbelcher
- ETW — Empty the Warrens
- BW — Burning Wish

Main deck material

- ESG — Elvish Spirit Guide
- SSG — Simian Spirit Guide
- LED — Lion's Eye Diamond
- RoF — Rites of Flames
- SS — Seething Songs
- Petal — Lotus Petal
- Mox — Chrome Mox
- TW — Tinder Wall
- LG — Land Grant
- SW — Street Wraith
- Probe — Gitaxian Probe
- Des Rit — Desesparate Ritual
- Pyr Rit — Pyretic Ritual

Sideboard material

- PIF — Past in Flames
- ToA — Tendrils of Agony
- DR — Diminishing Returns
- Spree — Shattering Spree
- Carpet — Carpet of Flower
- Clasm' — Pyroclasm
- Forest — Come on… ☺

Different kind of Belcher

Belcher with Burning Wish

Here is a sample list with Burning Wish. It has been used by Ben Perry and led him into a 3rd place in SCG Cincinnati (277 players)

Main Deck	Side Board
4 Elvish Spirit Guide	4 Xantid Swarm
4 Simian Spirit Guide	3 Guttural Response
4 Tinder Wall	1 Diminishing Returns
1 Pyretic Ritual	1 Empty the Warrens
4 Desperate Ritual	1 Hull Breach
4 Manamorphose	1 Infernal Tutor
4 Seething Song	1 Pyroclasm
3 Empty the Warrens	1 Reverent Silence
4 Burning Wish	1 Shattering Spree
4 Gitaxian Probe	1 Forest
4 Land Grant	
4 Rite of Flame	
3 Chrome Mox	
4 Goblin Charbelcher	
4 Lion's Eye Diamond	
4 Lotus Petal	
1 Taiga	

As you can see, this list run 11 business spells:

- 4 * Belcher
- 4 * Burning Wish (main wish targets are ETW or IT if you have enough mana)
- 3 * Empty the Warrens

This list runs only 8 cantrips:

- 4 * Gitaxian Probe
- 4 * Manamorphose

And finally, only 3 Chrome Mox.

This list is very consistent and offers a good toolbox thanks to Burning Wish. But is 11 business spells a good number? What about 3 * Chrome Mox?

Wishless Belcher

Here is a sample list without any Burning Wish. It has been used by Tyler King and led him into a 13th place in SCG Cincinnati (279 players)

Main Deck	Side Board
4 Elvish Spirit Guide	1 Atog
4 Simian Spirit Guide	1 Auratog
4 Street Wraith	1 Chronatog
4 Tinder Wall	1 Foratog
4 Desperate Ritual	1 Lithatog
4 Manamorphose	1 Megatog
4 Pyretic Ritual	1 Necratog
4 Empty the Warrens	1 Phantatog
4 Gitaxian Probe	1 Psychatog
4 Land Grant	1 Sarcatog
4 Rite of Flame	1 Steamflogger Boss
3 Lion's Eye Diamond	1 Thaumatog
4 Chrome Mox	1 Atogatog
4 Goblin Charbelcher	1 Chandler
4 Lotus Petal	1 Goblin Game
1 Taiga	

As you can see, this list run only 8 business spells:

- 4 * Belcher
- 4 * Empty The Warrens

This list runs 12 cantrips:

- 4 * Gitaxian Probe
- 4 * Manamorphose
- 4 * Street Wraith

And finally, a full playset Chrome Mox.

Have a look at the sideboard. Why is the Atog family there? Trolling… There are also lists with 15 islands or even 0 card in SB!

This list is very all in, has fewer solution than the Wish version but has more ritual that mean you can easily goes off on turn 1 once you have found a business spell.

Cards considered as core / flex slots

Personally, I consider flex slots to be mostly:

- LED
- Chrome Mox
- Street Wraith
- Pyretic Ritual
- Seething Song
- Manamorphose

Everything out of this list is, I my opinion, the core of the deck. You'll always want to play 4 of them because at the time I'm writing this, nothing better exists…

Analysis of the Lists

About the program

To be short, I have made a program in JAVA able to play "like a bot" the Belcher deck. I want to say that I tried to manage all the situations you can encounter, but I know rare case exists that you will put a Gitaxian Probe under a mox to continue casting spell (for example). But outside of those extremely uncommon cases, I hope I have dealt with the main ones.

Decks are imported with cockatrice format, using a XML parser (SAX) to convert into object the deck. Then, the algorithm is called 1 000 000 times and finally results are gathered into a CSV sheet. Then, I'll analyze data using R, a freeware designed to do statistics.

Some precisions to know:

- I'm not playing hands that have 0 or at least 4 business spells (= mulligan)
- I'm only simulating the very first turn
- I'm not using diminishing return in SB because it's often a card used in a specific situation, in which the human might have some insight (with Gitaxian Probe for example)
- The "new" mulligan rule isn't implemented. However this change improve the deck, especially when you mull to 6 and have a Gitaxian Probe or a Manamorphose in hand → you'll have less chance to draw another business spell or a Taiga when you have Land Grant in hand ☺

Belcher with Burning Wish

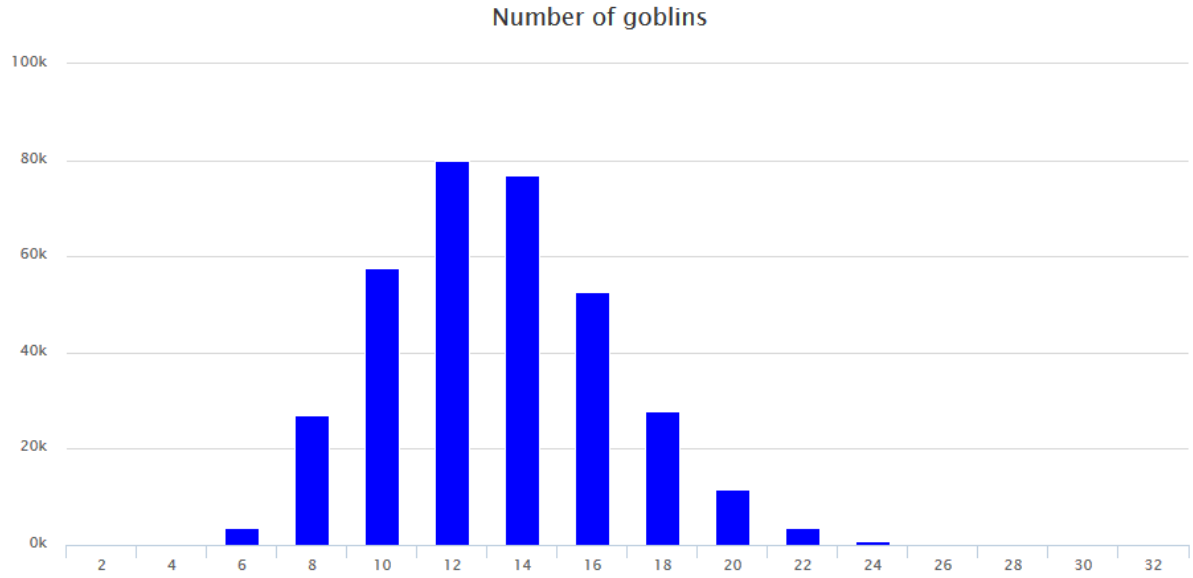
Descriptive statistics

	7 cards	6 cards	5 cards	8 cards
% of hand we have to mulligan	24.0 %	28.7 %	35.2 %	20.8 %
% of hand doing nothing	19.5 %	38.8 %	55.5 %	8.4 %
% of winning T1 with Belcher	10.2 %	2.4 %	< 0.1 %	23.7 %
% of fizzle T1 with Belcher	1.0 %	0.3 %	< 0.1 %	2.2 %
% of landing Belcher & win next turn	1.3 %	0.5 %	< 0.1 %	1.9 %
% of landing belcher & no activation	9.8 %	9.8 %	4.3 %	5.2 %
% of recruiting pairs of gob's	34.2 %	19.5 %	5.0 %	37.8 %
Mean of gob's	13.3	11.4	9.6	15.3
Std of gob's	3.3	2.9	2.6	3.7

The probability that we have to mull to 6 is 24.0%
The probability that we have to mull to 5 is 6.9%
The probability that we have to mull to 4 is 2.4%

All this mulligan are just because we don't have any business spells (or too much to achieve anything). My personal advice would be that you'll never mull < 5 unless catastrophic hand (4 * BW + 1 * ETW…) It will happen like at least 1 game in 15… (Only considering the number of business spells and not hand like 4 * Land Grand + Taiga…)

Repartition of number of goblins obtained on ETW for a 7 cards hand



Histogram

As you can see, most of the time you'll get 13 gobs +- 3 with a 7 cards' hand going for ETW's plan. The fact that you use BW creates some dumb cases that creates 20+ gobs, which won't happen much in a Wishless version.

Wishless Belcher

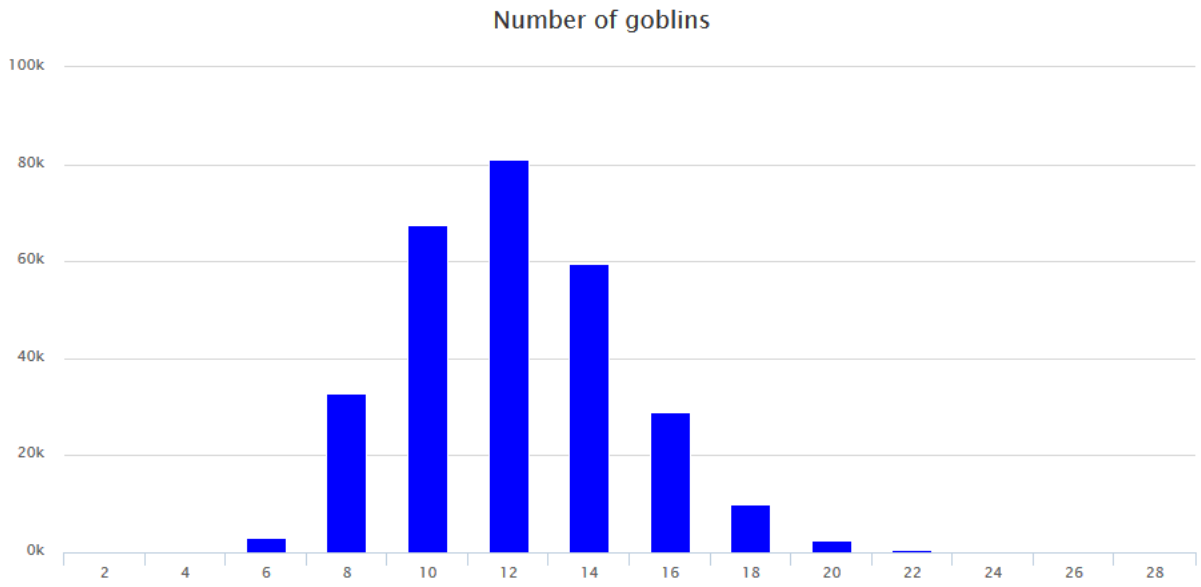
Descriptive statistics

	7 cards	6 cards	5 cards	8 cards
% of hand we have to mulligan	35.1%	40.8%	47.7%	30.2%
% of hand doing nothing	12.7%	25.9%	41.0%	5.4%
% of winning T1 with Belcher	8.5%	2.2%	< 0.1%	18.3%
% of fizzle T1 with Belcher	0.8%	0.2%	< 0.1%	1.7%
% of landing Belcher & win next turn	2.1%	1.3%	< 0.1%	2.9%
% of landing belcher & no activation	12.3%	12.1%	5.6%	8.2%
% of recruiting pairs of gob's	28.6%	17.5%	5.6%	33.3%
Mean of gob's	12.1	10.5	8.8	13.8
Std of gob's	2.8	2.5	2.3	3.1

The probability that we have to mull to 6 is 35.1%
The probability that we have to mull to 5 is 14.3%
The probability that we have to mull to 4 is 6.8%

The big problem here is that the mulligan percentage is really high compared to the wish list… It'll be taken in consideration later when we will try to build the 'best' list.

Repartition of number of goblins obtained on ETW for a 7 cards hand



Histogram

Contrary to versions with BW, you'll get less gobs in average, but also a smaller standard deviation. So we can say you'll get 12 (+- 3) goblins while trying to go off with ETW.

How much Business Spells we have to play?

As we can see, there are different kinds of schools while playing Belcher. Some typical list plays 8 business spells, others play 11. We can also find lists playing 10. Of course, this number differs while considering the build (Wishless can't really play 11 kills…) For now, we are setting aside the build.

The question that we are going to answer is "how much business spells must be played in an optimal list?" We will consider a 60 cards deck. With x business spells. The aim here is to have at least one kill per opening hand (1) and exactly one if possible (2).

To obtain the result in the (1), it's really easy. The more we play kills, the highest is the probability to have one in hand. But if we have too much business spells, we will have more than one in hand. That's not what Belcher want!

So, how to satisfy the (2)? Well, we 'know' that the probability to have exactly 1 card from x kills while drawing an opening hand of z cards in a deck of 60 follows a hyper geometric distribution with those parameters (on Excel you can try HYPGEOM.DIST(1,z,x,60))

Now, the problem is to maximize this function with z = 7 (and why not with z = 6 or z = 5 because some times, we have to mulligan)

I have made a table in which solve this problem. The highlighted values are the optimal ones and are related to the number of cards drawn in opening.

X\Z	5	6	7
1	8,33%	10,00%	11,67%
2	15,54%	18,31%	20,96%
3	21,70%	25,09%	28,19%
4	26,90%	30,52%	33,63%
5	31,22%	34,74%	37,53%
6	34,74%	37,90%	40,12%
7	37,53%	40,12%	41,61%
8	39,66%	41,53%	42,17%
9	41,18%	42,23%	41,97%
10	42,17%	42,32%	41,15%
11	42,67%	41,90%	39,83%
12	42,75%	41,04%	38,13%
13	42,46%	39,83%	36,14%
14	41,83%	38,33%	33,95%

So, if we want to have on average 1 and exactly 1 kill in hand, that mean you have to put x or x+1 kills in your deck to achieve (2). Why I'm saying x+1? Because since the hyper geometric distribution is a discreet function, we don't know for now is the x for 7 cards in 8 or 8.9. In the second case, that mean if we play 8 kills, we will have like 0.9X kills per hand on average! That's not what we want. We have to tend to 1 by superior value! Because we will always prefer 1.X kill/hand than 0.9X, which mean will have to mulligan on average.

So now we have an idea, we know that we shouldn't play less than 8 kills. Nothing new, but we have a proof! Let's move on another method to determine the amount of kills we have to play. A much better one I guess.

Well, as I told you the law followed by this distribution is a hyper geometric distribution. We 'know' (more information on Wikipedia) that if you want to fix the expected value of this distribution equal to 1 (= you want exactly one kill in hand) the formula is [cards in deck] / [cards in opening].

Here is a little table which summarizes the results:

CARDS IN OPENNING	**3**	**4**	**5**	**6**	**7**
KILLS (EV=1)	20	15	12	10	8,57

So now that we have exact values, we know we have to play at least 9 kills per deck. Yes, that proves that Wishless versions are suboptimal considering only the presence of a business spell in an opening 7.

Okay so, we play 9 kills and it is ok, right?! No it isn't ☹ Unfortunately, we have to take care of mulligans. Yes, we saw that we have to mull between 24 – 35% (function of the number of kills) so sometimes we'll have a 6 cards hand. In this case the right number is 10 and so on…

Considering we are mulliganing a lot (1 hand in 4 with a wish version), I think that playing 10 business spells is the good number and 11 is 'okay' only if we go down to 5… It'll happen approx. 1 hand in 15, so I can tell you that 10 kills seems to be the right number to maximize the probability to have at least 1 (1) and exactly 1 kill in hand (2).

So Wish or Wishless?

Well, as we can see on previous chapters, both lists have pro and cons. Wishless is, once you have a business spell less inclined to fizzle but will have most of the time a less impressive results even if 8 gob's can win versus couples of decks. It'll be a really good choice for a budget player (no wish, no side, 3 LED or fewer).

Personally, after having these results under my eyes I'll definitely play belcher with my full playset of Burning Wish. First of all, the list is less susceptible to mulligan into oblivion. Second, the "percentage of shitty hand" (= number of mulligan + number of fizzling hand) is really better: 43.5 % versus 47.8 % for a Wishless build with a 7 cards in opening hand. Then, don't forget that an optimal list plays at least 9 kills, even if 10 is the recommended number due to mulligan happening quite a lot. Finally, the ability to tutor for diminishing return, goblin war strike, or solutions like pyroclasm versus hatebear is really helpful.

But don't forget that wish lists are a little harder to pilot. First because it fold a little easier to Force of Will ('Hey man! Wanna counter this wish while my hand is empty?!') And because of the decision made (essentially playing with diminishing return, a high risk – high value card).

Tweaking the list

Building a "better" list

So, now we have our champion: the wish build… But which one is the best? Here is a really difficult question to answer.

I'll want to say it depends what we consider to be 'the best list'. Is it the lowest mulligan percentage possible? The ability to go for 50+ gobs? The ability to activate a belcher turn one more often? Well the answer is a mix of these. For myself, I think that maximizing consistency (i.e. diminishing the percentage of mulligan & "shitty hands") is one of the most important things, while not decreasing a lot of the percentage of winning T1 with belcher nor the number of gobs created with ETW.

For this study, I'll take the wish list and I'll try to modify some slots, based on a 7 cards hand (since it's the most common hand we have during a tournament).

Update September 2018 : Ban of Gitaxian Probe

Gitaxian Probe has been banned in legacy on the 2nd of July 2018.

To include this in my study, I'll add new deck lists at the end of my study (list 7 & 8) and we'll try to figure out which one is the best one without Gitaxian Probe.

Tested main decks

Deck 1 Stock list	Deck 2 - SS + PR	Deck 3 No Manamorphose
1 Taiga	1 Taiga	1 Taiga
4 Simian Spirit Guide	4 Simian Spirit Guide	4 Simian Spirit Guide
4 Elvish Spirit Guide	4 Elvish Spirit Guide	4 Elvish Spirit Guide
4 Lotus Petal	4 Lotus Petal	4 Lotus Petal
4 Land Grant	4 Land Grant	4 Land Grant
4 Rite of Flame	4 Rite of Flame	4 Rite of Flame
4 Tinder Wall	4 Tinder Wall	4 Tinder Wall
4 Desperate Ritual	4 Desperate Ritual	4 Desperate Ritual
4 Goblin Charbelcher	4 Goblin Charbelcher	4 Goblin Charbelcher
4 Gitaxian Probe	4 Gitaxian Probe	4 Gitaxian Probe
4 Burning Wish	4 Burning Wish	4 Burning Wish
3 Empty the Warrens	3 Empty the Warrens	3 Empty the Warrens
3 Chrome Mox	3 Chrome Mox	4 Chrome Mox
4 Lion's Eye Diamond	4 Lion's Eye Diamond	4 Lion's Eye Diamond
1 Pyretic Ritual	4 Pyretic Ritual	4 Pyretic Ritual
4 Seething Song	1 Seething Song	4 Seething Song
4 Manamorphose	4 Manamorphose	0 Manamorphose

Deck 4 More rituals	Deck 5 Build from MTGDEALS	Deck 6 1 Mox only, 10 BP
1 Taiga	1 Taiga	1 Taiga
4 Simian Spirit Guide	4 Simian Spirit Guide	4 Simian Spirit Guide
4 Elvish Spirit Guide	4 Elvish Spirit Guide	4 Elvish Spirit Guide
4 Lotus Petal	4 Lotus Petal	4 Lotus Petal
4 Land Grant	4 Land Grant	4 Land Grant
4 Rite of Flame	4 Rite of Flame	4 Rite of Flame
4 Tinder Wall	4 Tinder Wall	4 Tinder Wall
4 Desperate Ritual	4 Desperate Ritual	4 Desperate Ritual
4 Goblin Charbelcher	4 Goblin Charbelcher	4 Goblin Charbelcher
4 Gitaxian Probe	4 Gitaxian Probe	4 Gitaxian Probe
3 Burning Wish	4 Burning Wish	4 Burning Wish
3 Empty the Warrens	2 Empty the Warrens	2 Empty the Warrens
3 Chrome Mox	2 Chrome Mox	1 Chrome Mox
3 Lion's Eye Diamond	4 Lion’s Eye Diamond	4 Lion’s Eye Diamond
3 Pyretic Ritual	3 Pyretic Ritual	4 Pyretic Ritual
4 Seething Song	4 Seething Song	4 Seething Song
4 Manamorphose	4 Manamorphose	4 Manamorphose

Deck 7 Probe → SW	Deck 8 Less Street Wraith
1 Taiga	1 Taiga
4 Simian Spirit Guide	4 Simian Spirit Guide
4 Elvish Spirit Guide	4 Elvish Spirit Guide
4 Lotus Petal	4 Lotus Petal
4 Land Grant	4 Land Grant
4 Rite of Flame	4 Rite of Flame
4 Tinder Wall	4 Tinder Wall
4 Desperate Ritual	4 Desperate Ritual
4 Goblin Charbelcher	4 Goblin Charbelcher
4 Street Wraith	1 Street Wraith
4 Burning Wish	4 Burning Wish
2 Empty the Warrens	2 Empty the Warrens
2 Chrome Mox	4 Chrome Mox
4 Lion's Eye Diamond	4 Lion's Eye Diamond
3 Pyretic Ritual	4 Pyretic Ritual
4 Seething Song	4 Seething Song
4 Manamorphose	4 Manamorphose

Results & Analysis

You can observe in the following table the results of the previous deck lists.

As you can see, differences aren't really obvious, since tweaks we made were not really important (I mean we didn't modify a lot of cards, and the core of decks is the same).

I'll say it again, results are obtained on 7 cards hand.

	Deck 1	Deck 2	Deck 3	Deck 4	Deck 5	Deck 6	Deck 7	Deck 8
% of hand we have to mulligan	24.0 %	24.0 %	24.0 %	27.0 %	27.0 %	27.0 %	27.0 %	27.0 %
% of hand doing nothing	19.5 %	19.5 %	18.9 %	17.2 %	18.4 %	18.4 %	18.4 %	19.8 %
% of winning T1 with Belcher	10.2 %	8.9 %	9.5 %	9.6 %	11.4 %	11.8 %	11.4 %	9.9 %
% of fizzle T1 with Belcher	1.0 %	0.9 %	1.0 %	1.0 %	1.1 %	1.2 %	1.1 %	1.0 %
% of landing Belcher & win next turn	1.3 %	1.3 %	1.4 %	1.3 %	0.8 %	0.4 %	0.8 %	1.3 %
% of landing belcher & no activation	9.8 %	12.1 %	10.9 %	11.4 %	11.0 %	10.7 %	11.2 %	11.7 %
% of recruiting pairs of gob's	34.2 %	33.4 %	34.3 %	32.5 %	30.2 %	30.5 %	30.1 %	29.2 %
Mean of gob's	13.3	13.1	12.5	13.1	13.7	13.8	12.8	12.8
Std of gob's	3.3	3.3	2.9	3.2	3.3	3.4	3.0	2.9

List #2:

- Has 'bad hand' as much as list 1
- Has far less win turn 1 with Belcher
- Produce little less gob's on average
- Is just a worst list #1, I'll pass on this one
- **Conclusion: Keep the seething songs**

List #3:

- Got slightly better overall hand. You'll mulligan as much (because the number of business spell is the same, this will remain the same %) but will be less concerned by fizzling while going off, simply because no Manamorphose = less randomness on draw.
- Because of 4 Chrome Mox, you'll be able to land a turn 1 belcher, followed by an activation turn 2 or later more often (at the cost of activating turn 1, that's not what really want)
- Because no Manamorphose, the average storm count will decrease = a little less gob's. We also have a lower variance which mean the number of gob's will be in [9.5 ; 15.5] 68% of time contrary to the [10 ; 17] in the list #1.
- Some hand will however not be as good as we would like. Not being able to fix mana for Tinder Wall or Infernal Tutor in SB = not fun… I'm not sure that the cost of the decrease of randomness and the average storm count is worth the .6% of fizzling hand…
- **Conclusion: No advantage gained while cutting Manamorphose**

List #4:

- More mulligan due to the presence of only 10 business spells: 27% instead of 24%. Assuming you are at a 9 round tournament (GP day 1), playing 2 and half game per round = 22.5 games played, this increase will probably cost you 1 more mulligan. It's acceptable
- Better hand while kept. 2.3% won is really cool. That mean you won't draw often into things that doesn't make you win (more business spells…)
- Less Belcher win T1. Not cool
- Less gob's produced on average. Not cool again
- Gob's produced less often (1 BW is missing)
- Seems like a worst list #1… Much more mulligan (+3%), not that much rewarded. I'll pass on this one
- **Conclusion: Nah bro', leave the full playset of BW & LED in this deck. Playing 10 kills might be really worth the extra mulligan %.**

List #5 (who appeared to be 'the chosen list' by the writer on MTGDEALS (cf. § Cool Links)):

- Still more mulligan compared to list 1 (see list #4)
- Better hand while kept. 1.1% won is cool.
- More Belcher win T1, +1.2% compared to the list #1 is a huge improve! Even if it doesn't seem so. 1 free 'turn 1' win each 83 games is… Free?! ☺
- The higher % of belching turn 1 explains that you cast ETW less often (especially when you have 1 few copy compared to list #1). But when you have to cast an ETW, you'll get on average near half a goblin more with no impact on standard deviation! That mean you'll be in the [10.5 ; 17.5] range 68% of time! Another cool improvement
- Well, overall a little more risky list due to the '10 business spells' instead of the classic 11. But better result once you have a keepable hand. I like this one as much as the list #1
- **Conclusion: More risk, more reward. Is it what we want? I guess yes since the risk taken is really ridiculous compared to advantage obtained. The 3rd mox might not be as good as we thought.**

List #6:

- This list is the same as the #5 with + 1 Pyretic ritual & - 1 Chrome mox
- Behave the same than list #5 overall but we win few % everywhere (T1 win with Belcher, number of gob's, hands that do nothing...) with no major downside on pre board game when persisting mana sources are not that much important.
- **Conclusion: Slightly better list than #5 <u>on turn 1</u>, confirming that the 3rd mox isn't that good with 10 kills.**

List #7:

- This list is the same as the #5 with Street Wraith instead of Gitaxian Probe
- Behave the same than list #5 but with 1 gob less on average because of the storm count loss
- Has a lower standard deviation which is explained easily because less Probe = less gob on average + less gob when chaining Probe
- Please note that Chrome Mox + Street Wraith can enable a little bit more easily Infernal Tutor tricks that are not taken into account in my program but it's a real corner case that shouldn't matter much.
- **Conclusion: Strictly worse list #5 but by a slight margin : just 1 gob lost on average**

List #8:

- This list try to drop SW but given the card pool, we keep 1 and fill the 3 remaining slots with ritual & mox
- More hand that does nothing
- Less win with Belcher on turn 1
- Not much gob's
- **Conclusion: Screw this… Playing 1 Street Wraith + more ritual is wrong. Period.**

Conclusion

First of all, the 'to go' list is clearly the version with Burning Wish. It allows you to:

- Find solutions when absolutely needed and not scoop to a random Gaddock Teeg
- Have a higher storm count (BW into ETW)
- Do crazy stupid dumbass things (BW – IT – BW – ETW… Or simply cast Diminishing Returns…)
- Increase the number of business spells that mean you'll mulligan less compared to Wishless versions.

Do not leave home without:

- 4 * Manamorphose
  - Free storm count, really fun when chaining draw spells
  - Free fixing for casting Tinder Wall or a 'not red card' from SB

- 4 * Seething Song
  - Too good not to play (+2 mana…)
  - Even if it's a 'counter me' spell

- 4 * Lion's Eye Diamond
  - Best way to activate Belcher
  - Black Lotus while casting BW
  - Free storm count (ok not that good but hey, it matters!)

- 2 * Chrome Mox
  - Recycle bad cards (double land grant…)
  - Gives extra storm
  - Gives another permanent mana sources for Belcher
  - Might be upgraded to 3 (especially with 11 kills) but **never** run 0 nor 4 * chrome mox in BW list!

- 10 * Kills (ETW / BW / Belcher)
  - 8 is bad, even with 7 cards drawn. On average, you won't have one kill in hand
  - 9 is okay only for 7 cards, but if you mulligan it'll get really hard to have one
  - 11 is too much for 7 or even 6 cards drawn, you'll take the risk to 'often' get 2 in hand

- 4 * Street Wraith instead of Gitaxian Probe
  - Dropping them to add mana sources and/or 1 more kill is bad
  - Even if we lost 1 storm count (or multiple if we chain them) it's not **that** dramatic
  - Even if we lost information from opponent hand

Here would be at this time my personal choice (Build the SB you want according the Metagame):

Perfect Belcher

Main Deck	Side Board
4 Elvish Spirit Guide	4 Xantid Swarm
4 Simian Spirit Guide	2 Carpet of Flowers
4 Tinder Wall	1 Diminishing Returns
3 Pyretic Ritual	1 Empty the Warrens
4 Desperate Ritual	1 Infernal Tutor
4 Manamorphose	1 Pyroclasm
4 Seething Song	1 Reverent Silence
2 Empty the Warrens	1 Shattering Spree
4 Burning Wish	1 Goblin War Strike
4 Street Wraith	1 Past in Flames
4 Land Grant	1 Forest
4 Rite of Flame	
2 Chrome Mox	
4 Goblin Charbelcher	
4 Lion's Eye Diamond	
4 Lotus Petal	
1 Taiga	

Cool links

- Primer of Belcher on The Source
  - http://www.mtgthesource.com/forums/showthread.php?25698-Primer-Deck-Belcher
- Primer of Belcher on MTGS
  - http://www.mtgsalvation.com/forums/the-game/legacy-type-1-5/established-legacy/combo/658090-primer-g-r-belcher
  - http://forums.mtgsalvation.com/showthread.php?t=272610
- Another simulator, done in C#
  - https://github.com/Dissolution/goldfisher
- Interesting podcast about belcher un Legacy & Vintage
  - http://www.eternalcentral.com/wp-content/uploads/2012/11/SeriousVintageEpisode4.mp3