Joliet Bicycle Club Newsletter
September 2021

Joliet Bicycle Club Volume 35, Issue 9, September 2021

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Message from the President—Non-Edited

August 28,2021

Hello fellow JBC members,

August has been a great month for JBC. We had a very successful July 4th workers ride and a very successful picnic also.

Thank you to Bob & Carolyn Jacob's for their hard work in putting this great annual event together.

September should be a great month for riding, hopefully the temperatures will come down with the humidity and we hope to see some fall colors as well.

If you did not see the Google groups emails or the JBC Facebook page please take a look and see the photos of our presentation of checks to The Lisbon Seward Fire Dept company 2 as well as the Kendall County Rebels youth baseball teams. JBC is proud to be donors to these great organizations. I'm sure there will be photos of the presentation in this newsletter.

We are planning on having a year end banquet in November. Tentatively, we are looking at Aurelio's in Frankfort.

Speaking of the year end banquet, this is where we usually elect our board of directors.

Currently, yours truly is the president, Janae Hunziker is the VP, Conrad Brouwer is the treasurer and Al Rooker is the secretary. I will be stepping down as president in 2021and this will be my final year as president.

If anyone is interested in running for a board position, please send me an email and we will put together a ballot. If nobody is interested Janae will become the new president and we will be looking for a VP.

With all this being said, I want to say how honored I have been to be the president of JBC for the past 3 years. The position has been very rewarding and I am humbled by all the support I have received over the years. If there is anything I have learned, not only as president but as an active member as well, it is that the friendships we create through JBC will often times be for life. When I ride in some of the large groups, I look at all the people on the ride and I am amazed that I know everybody's names, their wives names and most of the time their children's names. I am most proud of the friends I have gained through JBC.

Through these friendships at times, some good friends leave the club and new members become new friends. The old friendships never end. We have been very fortunate to have 2 very dedicated members in JBC for many years. I sorely say so long to Dominick and Jeanie Chellino. Please join me in wishing them the best in their new lives in Florida. I am very proud to call them friends, as many of us do.

We also say good bye to Peggy McEvilly Reed who will be taking a new position in CA. Peggy has been an active member for many years. We wish her the best in The Golden State.

I could go on and on about our great club and our members. Enjoy the newsletter.

Rolling Forward,

Rob Weiss

Rob Weiss, President, JBC

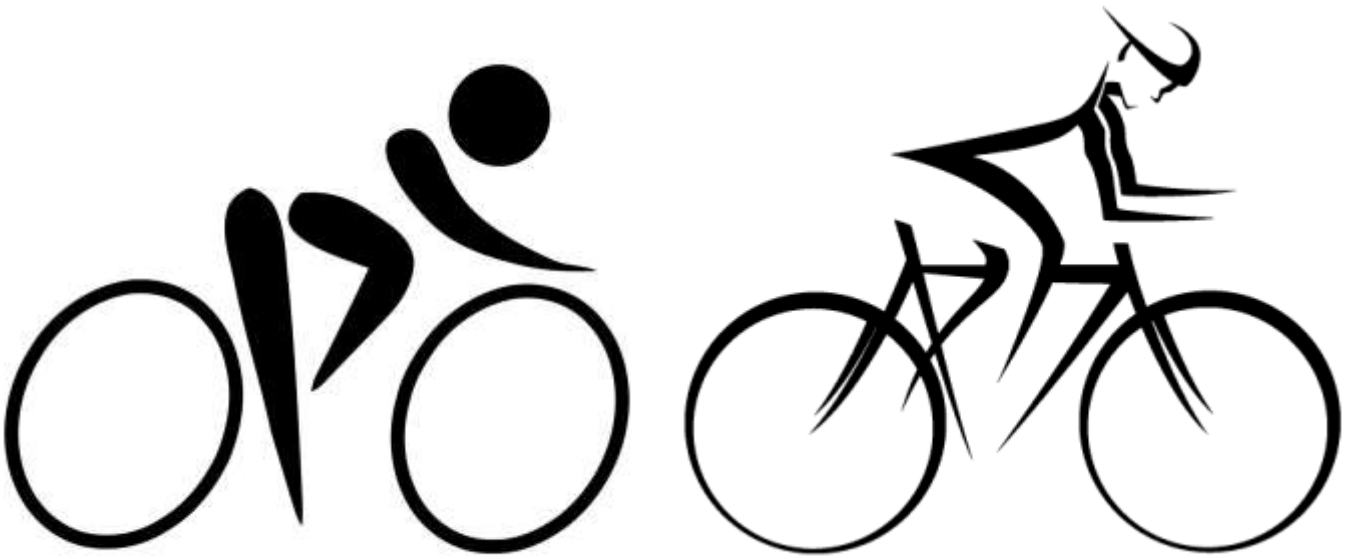
Membership Corner

By Steve Geary

Welcome our new members:

Steven Emge

Mindy Sayers

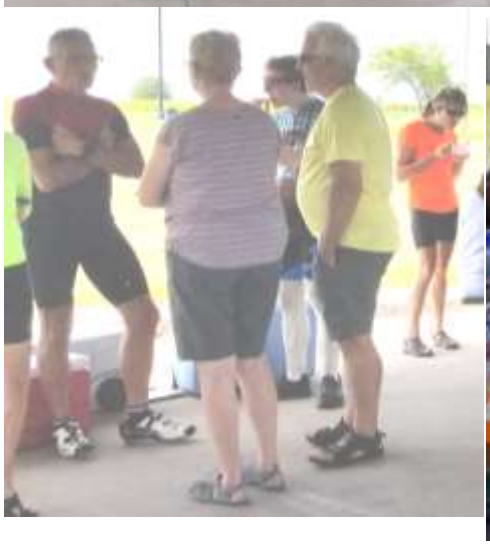


How to Stay Safe in the Most Extreme Heat Conditions

Submitted by Jim Arends. (thank you Jim)

Please note any items that are underscored in this newsletter are clickable links. You may have to use CTRL and Click the Link depending on your computer.

2021 JBC Summer Picnic Ride—August 14, 2021



Thank you Bob and Carolyn.

SOMETHING TO THINK ABOUT & PLAN FOR! "JBC WILL BE 50 YEARS YOUNG IN 2022"

Special Celebration Ideas???????

Tech Corner

The Buzz About Pawl

By Steve Geary

Imagine you're at the top of a long descent. You shift into high gear, get into a tuck position, and mentally prepare yourself for the best part of the ride. No need to pedal at this point. Just let gravity take over and enjoy the ride while it lasts. Just you, the road, and that buzzing sound coming from your rear wheel hub. For some it's a welcome sound that means you're making forward progress without having to pedal.

Every Freehub or Freewheel has it's own voice. Some are loud, even obnoxious, while others speak softly. It makes for a second conversation of sorts, rising and falling with the speed and effort of a group of cyclists riding down the road.

All this chatter can be attributed to the rear Freehub body. In the past this Freewheeling mechanism was screwed onto the wheel hub, but as the number of speeds increased the freewheel device became incorporated into the hub body, thereby making it a Freehub. Shimano popularized this design back in the '80s and most other brands followed.

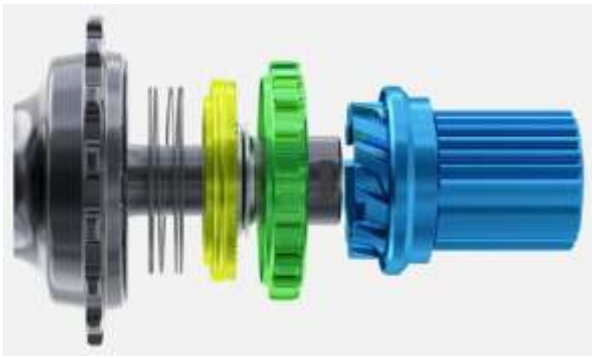
Above is an example of the old style screw on freewheel mechanism.
Left is an example of a Freehub design where the freewheeling mechanism is incorporated into the hub body.
Below is the device that houses the Pawls. This unit uses 3 Pawls with curved leaf springs.

So who's Pawl? Well Pawl is actually the noise maker in your Freehub. Think of it as a tooth. When it makes contact with the hub body drive ring it delivers torque in a forward direction, but allows for freewheeling in the opposite direction. When you're coasting (not pedaling) the sound you hear is the pawls clicking up and down over the teeth, which is what produces the buzz of the Freehub. The frequency of that buzz depends on two things: firstly, how quickly the wheel is rotating, and secondly, the number of teeth in the drive ring. More teeth means that the pawls will click more often, producing a richer (or angrier) buzz from the rear wheel.

Star Ratchets

William Hügi developed an alternative ratchet design during the early '90s where he abandoned pawls in favor of two spring-loaded ratchet rings. Teeth were cut into the opposing faces of each ring to create an axial (rather than radial) drive mechanism for the hub. Importantly, every tooth of the ratchet is engaged when the wheel is being driven, which is quite a bit stronger than the Pawl design. Hügi's star ratchet system was first adopted by DT Swiss in 1995 and soon after, the two companies merged. The patented mechanism has been a hallmark of DT's high end hubs ever since, though other companies, such as Bontrager, Giant, and Roval have licensed the design.

Left: Zipp Wheel Company uses a Star Ratchet design. However only one ring has any teeth and the opposite ring is flat with a series of rectangular holes, allowing the teeth from the other ring to penetrate and engage.



Above: Shimano's Scylence system. This Star Ratchet design incorporates a helical driver that disengages completely to provide silent and almost zero friction coasting.

Roller and Sprag

Not all Freehub mechanisms are built around a ratchet. Instead, a roller clutch can be used to grasp a drive-shaft in the hub. This design offers very quick engagement as well as silent coasting, however the requisite hardware is much heavier than any ratchet.

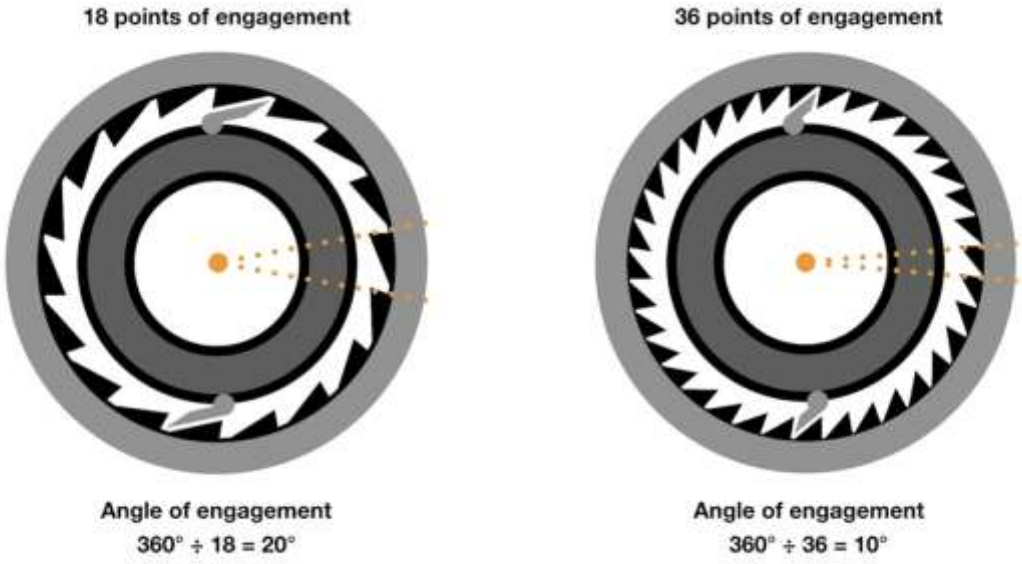
There are no teeth in a roller clutch, hence the silent coasting. Instead, a ring of rollers slide onto a drive shaft, each one like a chock under a wheel, to wedge the Freehub against the hub as it is engaged. A spring encourages each roller to retract when coasting.

A Sprag clutch is built upon the same basic principle as a roller clutch, however it makes use of asymmetrical "Sprags" that rock rather than slide onto the drive shaft of the hub. Once again, each Sprag behaves as a wedge to lock the Freehub body against the drive shaft until the load is removed, at which point a spring coaxes the Sprags to release the shaft for coasting.

Aside from silent coasting and near-instant engagement, roller/sprag clutch promises less drag than a ratchet when freewheeling. In some instances, that might mean a bit of free speed, but it can also prevent auto-rotation of large sprockets that can create significant backlash for the chain and cranks when coasting.

As attractive as these benefits may be, roller/sprag clutches are rare in today's market. Shimano introduced a roller clutch (dubbed "Silent Clutch") to a few of its MTB hubs for a short period starting in the '90s, however the only place it can be found today is in its Alfine and Nexus internally-geared hubs. True Precision Components has been building its MTB and BMX hubs with roller clutches for almost two decades, while Onyx has been championing the merits of a sprag clutch over the last few years. Any question about the reliability of these clutches seems to have disappeared, so the only drawback seems to be the extra weight of the clutch.

Angle of Engagement

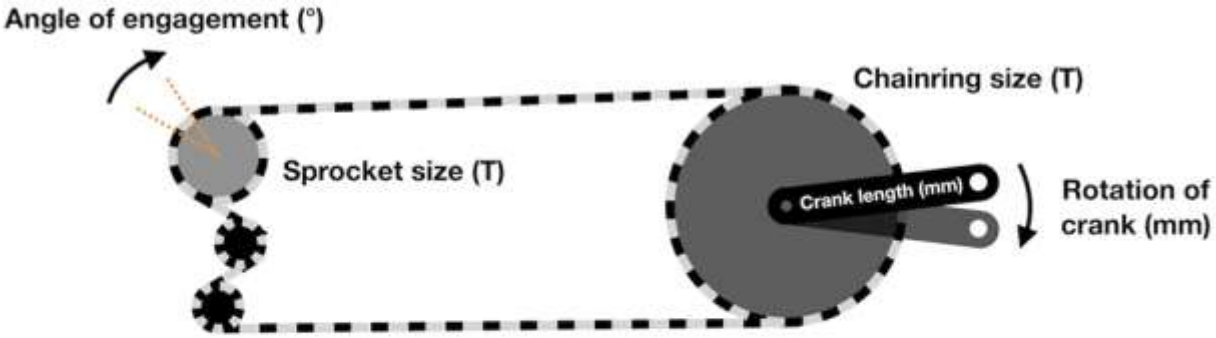


There is more to appreciate about the Freehub mechanism than simply the amount of clicking that it makes or how loud that swarm of bees might be. Every hub offers a specific angle of engagement, which is a measure of how far the Freehub must rotate before the drive ring or shaft is engaged. For a ratchet, this angle primarily depends upon the number of teeth present in the drive ring, as shown above. In this example, a Freehub with 18 points of engagement requires 20° of rotation to move the pawls from one tooth of the drive ring to the next; doubling the number of teeth on the drive ring halves the angle of engagement to 10°.

Industry Nine is a Wheel manufacturer that is well know in the MTB circles as having the most points of engagement in their hubs. This is achieved by adding an extra set of pawls and then offsetting them to reduce the angle of engagement. This is how Industry Nine is able to create 120 points of engagement for a 60T drive ring, while Kappius and Profile take this notion a step further with three or four sets of offset pawls to create over 200 points of engagement.

Roller and sprag clutches are able to grasp the drive shaft of the hub at any point of rotation, making for infinite points of engagement.

Backlash & Gear



$$\text{Backlash} = 2\pi \times \text{Crank length} \times \frac{\text{Angle of engagement}}{360} \times \frac{\text{Sprocket size}}{\text{Chainring size}}$$

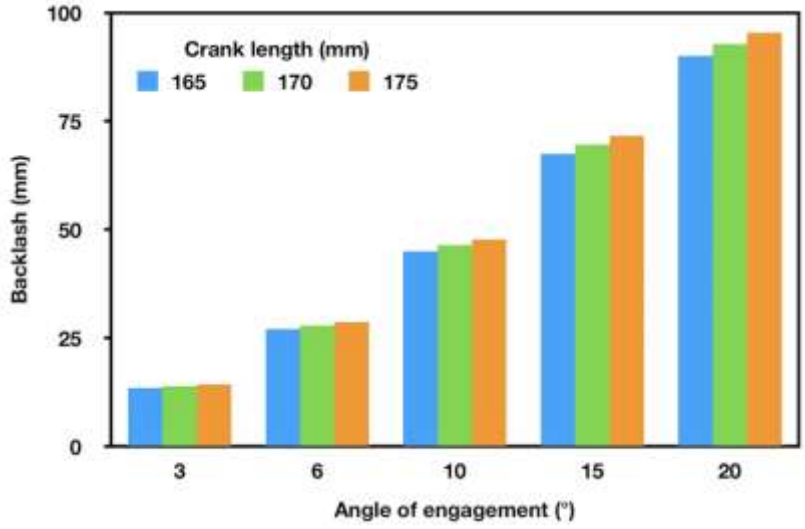
Now comes the fun part where we get to do the math and talk about gear ratios! The angle of engagement of a hub creates a lag in the drive-train that can be felt any time a rider resumes pedaling. As the Freehub body and sprockets rotate to engage the drive mechanism, so too will the cranks. Sometimes this backlash is barely noticeable, but there are times where this can be detrimental to regaining momentum in challenging conditions.

A hub with a low angle of engagement will always produce less backlash than a hub with a high angle of engagement, however, the final result will vary, depending upon the gearing of the bike. When the sprocket is the same size as the chainring, then the hub and crank will share the same angle of engagement. As the size of the chainring increases, the cranks will rotate to a lesser degree, while larger sprocket sizes will have the opposite effect.

For example, when a hub that has 20° of engagement is combined with a chainring that is four times larger than the sprocket (e.g. 52 x 13), then that will reduce the angle of engagement for the cranks to 5°. For 170mm cranks, that is equivalent to 15mm of backlash, which is likely to go unnoticed. If the same hub is then combined with a chainring that is half the size of the sprocket (e.g. 25 x 50), then that will increase the angle of engagement for the cranks to 40°, and a set of 170mm cranks will rotate a much more noticeable 120mm.

High gear ratios reduce the amount of backlash for the crank, while low gear ratios exacerbate it. This occurs in a geometric fashion, and while there is no consensus on an acceptable amount of backlash, it is clear that riders that make use of low gear ratios (MTBers) will be more susceptible to it. This is where a hub with a low angle of engagement of $\leq 6°$ has a lot to offer, especially if the bike is equipped with very low gear ratios. Mountain bikes also tend to have long crank arms to assist with low speed torque production. This will add to the backlash. Road bikes generally have shorter crank arms and spend more time in the higher gears, thus the backlash is less noticeable.

Gravel riders and bike-packers generally fall somewhere in between these two extremes, so there may be some instances where a hub with a low angle of engagement might prove useful. These moments will be fleeting, though, and it certainly won't do anything to ease the effort of tackling a long and unrelenting grade.



How much is too much?

Any ratchet suffers a certain amount of drag, and in the case of a rear hub, there is a concern that it will slow the rider. This is something that is easy to see when spinning a rear wheel in a stand, since a freewheeling ratchet will shorten the time it takes for a wheel to spin down. A ratchet that has more teeth and/or extra pawls with a lower angle of engagement will generally suffer more drag, especially if it is very loud.

It is a misconception that loud ratchets indicate high quality. In fact some Freehub manufactures suggest regulating the amount of noise by what type or how much grease is applied to the pawls. A cheaply made hub with little or no grease can make a lot of noise, whereas a high quality hub can be well lubricated and be very quiet. I prefer the latter for several reasons; less

Road bikes generally favor ratchets with fewer points of engagement for lower cost, simplicity and light weight. Roadies love counting grams! The MTBers will tolerate a few extra grams for the benefit of lower engagement angles and its ability to withstand high torque loads.
Right: Super light weight ratchet with a Titanium body, only 2 pawls and a rubber O-ring instead of steel springs.

Steve Geary

Skinny Wheels, Skinny Tires, Skinny Arms, Quiet Hubs

TRIVIA FUN

Let's have some fun with this old photo. Can you answer any of the below questions?

- What ride were these JBC members attending?
- What year was this picture taken?
- Where was this picture taken?
- Who were the ride chairs?
- Identify any of the participants.

Please email me directly (boopbabe@yahoo.com) with your guesses. When guessing the member name, please include the number of the participant next to the name that you are guessing.

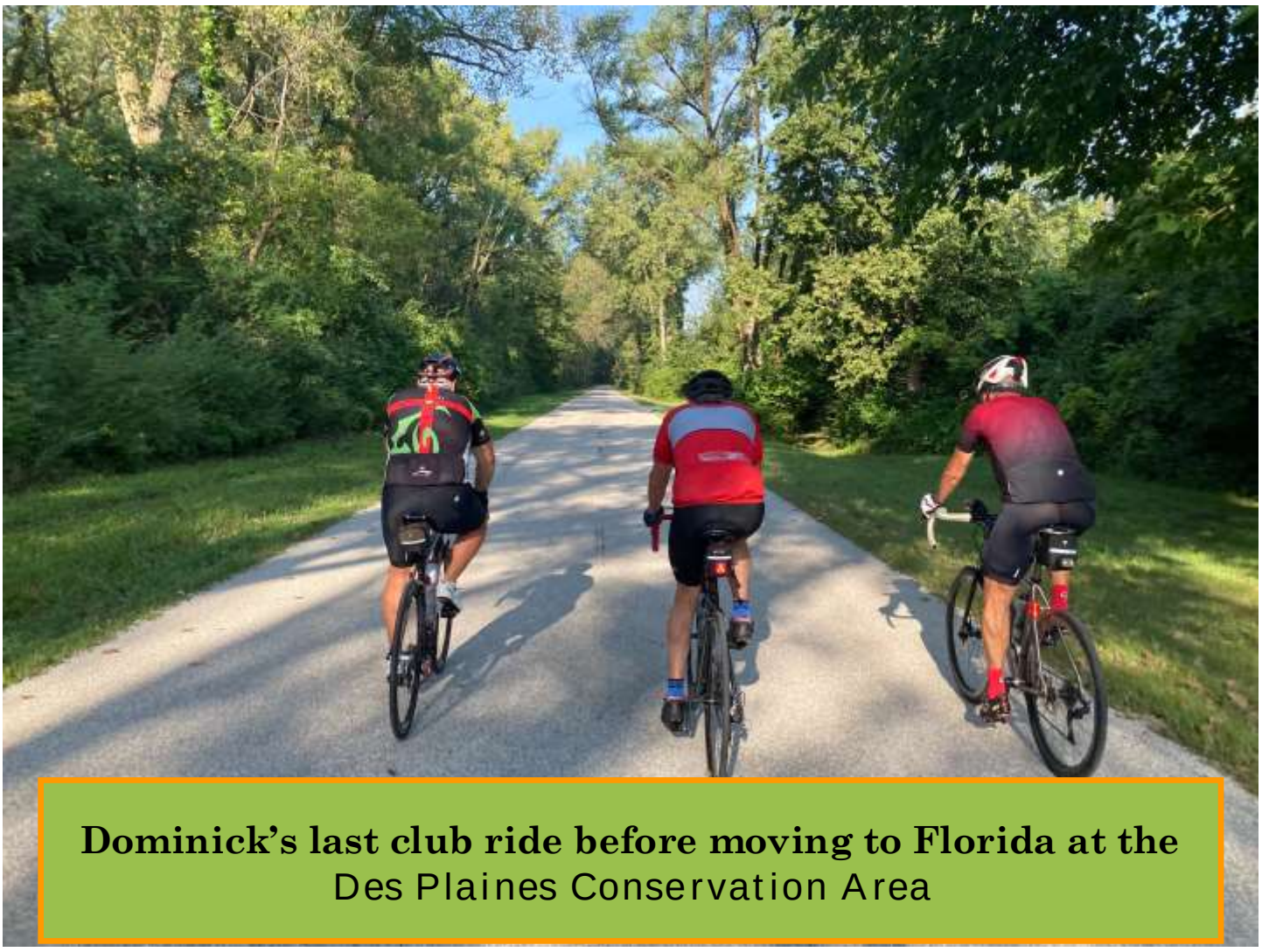
AND GO!!!!!

Worker's Ride—August 8, 2021

Club Donations—August 8—Plattville

After the worker's ride on August 8 in Plattville, the JBC Board provided a donation to the Kendal County Rebels for $500 and $1,500 to the Lisbon-Seward fire Department Plattville Company 2.

Dominick's farewell ride to Imperial Oak Brewery on August 15.



Dominick's last club ride before moving to Florida at the Des Plaines Conservation Area

Dominick and Jeanie begin a new chapter in their life.

by Shirl Boatman

I was first introduced to JBC by Steve Geary in 2007. Dominick and Jeanie were some of the first members I met. Whether it was playing volleyball, cycling, hiking, or any other various JBC events, I have enjoyed their friendship.

Throughout the years, they have been very valuable members to JBC and have given countless volunteer hours. They have held board positions, social chairs, and doing whatever they could to help make the club a success.

Many club members have known them longer than I, but everyone is sad to see them move to Florida. I am also excited for them as they begin a new chapter in their life.

May the Wind Be at Your Back, and the Sun Upon Your Face.

Steve Santolin's Psycho Century ride on August 22

JBC Ride Definitions / Rules / Etiquette

SG - Show & Go - ride leaders, and distances can be decided at the ride

Ride contacts are to be called for information about the ride.

S - Social - Group stays together, rides at posted level, has ride leader.

All riders should plan to arrive at any scheduled ride at least 10 minutes before the scheduled departure time.

AD HOC RIDES

1. A non-calendar ride, via google groups email invite
2. 12 hour advance notice, e.g. Friday 8am ride invite sent by 8pm Thursday
3. Invite must include starting time, location and ride level (I-V)
4. Additional details about the ride can be shared too.
5. Miles are recorded as: AH/date/leader initials/miles/riders (in alpha form).
6. Use AD Hoc number assigned to the day of the ride
7. 2 riders minimum for in-state and out of state rides

Please send AD Hoc and regular miles to Bill Cihon at: miles@jolietbicycleclub.com

Send invitational miles with Invitational Mileage Report in the subject line to Bill Cihon at: miles@jolietbicycleclub.com

LEVEL	MPH
I	10-12.4
II	12.5-15
III	15.1-18
IV	18.1-20
V	20.1+

Click this link to view the JBC Member Guide:

JBC Board and Committee Contacts

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Phone: 630.910.5200
president@jolietbicycleclub.com

Vice-President, Janae Hunziker
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vice-president@jolietbicycleclub.com

Treasurer, Conrad Brouwer
Phone: 630.918.1552
treasurer@jolietbicycleclub.com

Secretary, Al Rooker
Phone: 815.272.3595
secretary@jolietbicycleclub.com

Ride Calendar, Bob Kehoe
Phone: 815.436.7701
kehoerj162@yahoo.com

Ride Mileage Recorder, & Invitational Rides—Bill Cihon
miles@jolietbicycleclub.com

For invitational rides: Place Invitational Mileage Report in the subject line to:
miles@jolietbicycleclub.com

Membership Chair & JBC Google Groups Manager,
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Newsletter Editor, Shirl Boatman
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editor@jolietbicycleclub.com

Webmaster, Paul Tomasik
webmaster@jolieticycleclub.com

Reporting Miles, Ride List, Membership

Ride leaders or whomever is in charge for the ride should report miles for daily JBC rides listed on the calendar and for Ad Hoc Rides. Please send the Ride #, date, and list of riders in alphabetical order, and their miles to:

miles@jolietbicycleclub.com

Mileage reports should be sent within 3 days of the ride.

The JBC Ride List is published monthly on the JBC website.
http://www.jolietbicycleclub.com/ride-calendar/
All JBC Ad Hoc Rides are announced through JBC Google Groups emails.
Make sure you are signed up on JBC Google Groups to get all club announcements.

JBC annual dues are $15.00

JBC Meeting Information

Regular JBC club meetings are at 7 pm on the 2nd Monday of the month. JBC holds meetings in Feb, March, April, May, June, Aug, Sept, Oct, Nov. Meeting locations and dates may change.

Joliet Bicycle Club
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Website: **jolietbicycleclub.com**