

Saint Louis Zoo Education Liaisons: Good evening everyone we're just going to take a minute to let everybody make their way in, and we will get started in just a SEC.

Saint Louis Zoo Education Liaisons: Alright, we will go ahead and get started, good evening everyone, and thank you so much for joining us for our ninth.

Saint Louis Zoo Education Liaisons: Community climate forum supporting pollinators to mitigate climate change, my name is Lisa religious and, as always, I will be your host tonight.

Saint Louis Zoo Education Liaisons: I am a conservation education liaison at the St Louis zoo and co Chair of the zoo's climate communication committee.

Saint Louis Zoo Education Liaisons: Before I introduce our presenter I want to first give a quick overview of how this webinar will work first this webinar is being recorded.

Saint Louis Zoo Education Liaisons: And will be shared s te I Z O dot O rg slash climate change, probably the same place for many of you registered for this webinar.

Saint Louis Zoo Education Liaisons: Because this is a webinar we are unfortunately unable to see or hear you, but our goal tonight is to engage with you hear your thoughts and answer your questions.

Saint Louis Zoo Education Liaisons: I have a few awesome folks joining us for the discussion tonight we have frank.

Saint Louis Zoo Education Liaisons: Mike and one to helping us out all of us will be monitoring the Q amp a and the chat so please put your questions in the Q amp a box and any thoughts or discussion points in the chat.

Saint Louis Zoo Education Liaisons: Please remember to be respectful and courteous to our presenter panelists and each other, and please keep your questions and thoughts relevant to the present a topic.

Saint Louis Zoo Education Liaisons: If someone is unable to follow these protocols their comment or question will be removed and they themselves may be removed entirely from the webinar.

Saint Louis Zoo Education Liaisons: Our presenter will also leave as much time as possible at the end of her presentation to address questions and discussion points.

Saint Louis Zoo Education Liaisons: With our panelists so now, without further ado let's get started our distinguished presenter tonight is kayla Garcia, the zoological manager of the bear insectarium take it away caitlin.

Kayla Garcia: Thanks Lisa hi everyone i'm really excited to talk to you today about pollinators and kind of how pollinators are affected by climate change.

Kayla Garcia: So we'll get going here and like Lisa said there should be plenty of time to answer questions at the end.

Kayla Garcia: And, before I get started, I did want to let you know i'm sure some of you can empathize I had some technical difficulties with my presentation so it's not.

Kayla Garcia: Quite the same format, as I was hoping to be able to show you tonight, but hopefully you all can bear with me and we'll still be able to get some good conversations going and i'll be able to give you all some helpful information alright so i'm going to share my screen.

Kayla Garcia: hey now I hope everyone can see that.

Saint Louis Zoo Education Liaisons: looks good.

Wonderful.

Kayla Garcia: Okay, great so like Lisa said i'm this logical mind manager of invertebrates here at the Vegas insectarium.

Kayla Garcia: At the St Louis zoo and my day to day is spent overseeing this building.

Kayla Garcia: and overseeing all of the animals that we care for in our building we care for over 100 different species of invertebrates of all shapes and sizes.

Kayla Garcia: some of which are in our pollinators and we also like to be able to give information to get into folks like you who are attending tonight about all the ways that.

Kayla Garcia: Hopefully we can change people's minds about some of these animals that people, maybe don't feel quite as comfortable around so again that's why i'm happy to kind of talk to you about that, today, particularly climate change now I wanted to start out with a little story.

Kayla Garcia: And this story is about some of my family actually so I don't know how many of you are familiar with the central Valley, or the sample team valley in California.

Kayla Garcia: But my grandparents lived there and I try and visit them whenever I can it's a pretty big Valley.

Kayla Garcia: it's surrounded by mountains and it gets very, very hot in the summer I, you can see me kind of posing next to.

Kayla Garcia: A thermometer I think it was actually a little bit harder, I think it kind of topped out at a little over 100 degrees this isn't my grandma's backyard.

Kayla Garcia: And the reason why i'm showing you guys, this is because of the picture over on the left here, this is me.

Kayla Garcia: flying in an airplane above the valley, you can kind of see some of the mountains, is a suit those are this year in Nevada so that's where somebody is descending National Park.

Kayla Garcia: But in between like just below that you can see lots and lots of fields, and the reason why i'm showing you this is because these fields actually produce about 13% of our country's.

Kayla Garcia: fruits and vegetables, now that doesn't sound like a whole lot, but when you think about the valley itself it's about 18,000 square miles.

Kayla Garcia: Which is about half a percent of the overall square mileage of the you know our country, the United States, so they produce it outside amount of the nation's fruits and vegetables, many of which are reliant on pollinators.

Kayla Garcia: And again, they also do a lot of pre production, this is a picture of a vineyard not too far from my grandparents House so agriculture is very, very big here, and you will hopefully learn a little bit more about why pollinators are so important.

Kayla Garcia: So the reason why I show these pictures of California, is because we are talking about climate change, and this family is.

Kayla Garcia: Very much susceptible to some of the effects of climate change, most of the land is actually quite dry and most of these crop fields are irrigated with water from the.

Kayla Garcia: Rivers so they actually piped water to irrigate these fields, to provide water for these graphs because it doesn't rain during the summer, like when we go to visit it will not rain at all until the fall, basically, so all of these crops are being.

Kayla Garcia: watered with water from a river that's brought specifically for this purpose.

Kayla Garcia: And for those of you, I think most of you, especially since we're at the end of the series here.

Kayla Garcia: know what about climate change and know roughly what climate change is, and it is kind of the long term shifts in temperature and weather patterns around the world.

Kayla Garcia: Now there's been some debate in the past about what has caused this but most scientists are in agreement, now that it's a human activity that has driven this climate change, specifically the large amounts of.

Kayla Garcia: burning of fossil fuels gases things like that which has, in effect, cause the temperature of the earth to rise.

Kayla Garcia: So, just a quick graph here that kind of shows the average global the global average surface temperature of the of the earth and it compares it to the average between.

Kayla Garcia: So you can kind of see that that average prior to about 1940 is sort of below or the temperatures are below and then it starts to rise generally kind of.

Kayla Garcia: sort of flip flop, and then, but as you get to about 1980 or so it steadily increase, and I believe the overall.

Kayla Garcia: Global surface temperature is about 1.8 degrees Fahrenheit higher than it was you know, at the end of the late 19th century um So what does that mean for pollinators I have a very long.

Kayla Garcia: list of different things that people believe could be potential effects of climate change on pollinators but I'll go through all of that kind of step by step, so.

Kayla Garcia: Some of the things that you start hearing about more recently, especially last year are some of these extreme weather, these are things that include heat waves.

Kayla Garcia: very powerful storms, a pack of hurricanes tornadoes things like that, and the thing about pollinators is that most pollinators are.

Kayla Garcia: insects and most of these insect pollinators are bees, and these are relatively small creatures, they can only withstand certain conditions that allow them to go and.

Kayla Garcia: forage for that pollen and for that nectar that they're trying to utilize to raise their yeah now if it's super hot outside if it's raining incredibly hard.

Kayla Garcia: If it's very dry, these are all instances where these might find it difficult to go out into their environment and collect that pollen that collect those resources, so what that.

Kayla Garcia: means is that they're not able to feed their babies as well, and they might end up not being able to have as many babies.

Kayla Garcia: Another really quick kind of climate change related factor is that warmer winters as the as the overall temperature of the earth.

Kayla Garcia: rises, that means our winters are a little bit warmer and that can they believe that can affect the pollinators overwintering success.

Kayla Garcia: Many pollinators will spend the winter kind of tucked up in the leaves and plant stems and I'll talk a little bit about that later.

Kayla Garcia: But if the temperatures are too warm, then that means that their little metabolism because they're not eating all during that time is is.

Kayla Garcia: kind of running faster than it would otherwise, so they might wake up too soon before.

Kayla Garcia: Before the flowers are fully written down or they might wake up and have lost a lot of weight compared to when they went into hibernation.

Kayla Garcia: And that also affects the plants, the plants themselves might not produce as much nectar and as much pollen.

Kayla Garcia: compared to what they may have before which then in turn can't be collected by the bees, because it's not there for them to collect so that's just a few kind of quick quick explanations for what I refer for how pollinators can be affected by climate change.

Kayla Garcia: I mentioned, I wanted to mention to the seasonality aspect or basically when things don't quite properly aligned.

Kayla Garcia: This is a Bumblebee and if I were Dr ED feedback my bus, she would know which receives a Bumblebee this is but I'm afraid I do not.

Kayla Garcia: But it's feeding on a blue false indigo, this is a native flower is needed to Missouri and it blooms kind of in the early summer we actually have a lot to me right now.

Kayla Garcia: Around the grounds and one of the problems with climate change is as as temperatures rise that can cause plants.

Kayla Garcia: to bloom more quickly and that can also cause.

Kayla Garcia: Bees to maybe leave the nest at different times compare early their hibernation compared to different times or compared to what they would normally which basically means there could be a mismatch.

Kayla Garcia: The bees are emerging as correct time that would allow them to pollinate flowers which then impacts, the flowers ability to reproduce and the visibility to reproduce so that's a big concern for a lot of scientists, is that, how is this going to affect.

Kayla Garcia: Our ecosystems over the long term, when these aren't able to pollinate things at the times they normally would and when flowers aren't able to to be pollinated.

Kayla Garcia: So another thing that often is a concern for folks when they're thinking about pollinators and climate change is the fact that.

Kayla Garcia: will hopefully these animals will become overtime adapted to these new conditions, however, are things changing too quickly for these animals to successfully adapt.

Kayla Garcia: that's something that is a huge concern for a lot of folks right now in Canada in to study pollinators and who study ecology, is just making sure that those animals are able to kind of keep up with the rapid piece of.

Kayla Garcia: The warming climate that can also end up impacting where these owners are able to live now This particularly affects animals that are sort of at.

Kayla Garcia: sure that, like the.

Kayla Garcia: The edge of a range where maybe they're able to tolerate warmer temperatures, up to a certain point, but if it gets any warmer than they might not be able to.

Kayla Garcia: be able to survive as well, so that can cause the sort of the movement of animals farther and farther.

Kayla Garcia: North as they're trying to find in environments that are able that are at a temperature that's better suited for that.

Kayla Garcia: Animals that may have lived in the south of Louisiana if things get really hot there those populations those arenas might gradually creep farther and farther North and same for everything else kind of on that on that sort of gradient.

Kayla Garcia: Another thing that affects pollinators is one very specific pollinator and that's the monarch butterfly.

Kayla Garcia: Now there aren't too many insects that migrate, but there are there are some and the monarch is probably the most famous.

Kayla Garcia: And what some of you might already know is that monarchs rely on seasonal on temperature cues in order to tell them when it's time to migrate.

Kayla Garcia: And there are two different kinds of groups of monarchs in the United States that migrate there's a group that migrates kind of west of the Rockies and there's another larger group that migrates.

Kayla Garcia: For migrates from from areas in West of the Rockies to overwintering sites in coastal California and then there's another group that migrate, all the way down to their overwintering sites and Mexico, so the two primary ones at least.

Kayla Garcia: Now, what can happen is if it's too if it gets you know warm enough at the overwintering sites.

Kayla Garcia: Because of climate change that the monarchs you're like Oh, it must be time for me to head on North so I can start finding milk lead and laying eggs and breeding and they start to make that journey, unfortunately.

Kayla Garcia: It might not really have warmed up enough for them to find that next week and locally, is already something that is, unfortunately, in short supply in a lot of parts of the country now.

Kayla Garcia: So they end up making that trip and realizing or we get to the point where they don't find it look wait for them to be able to lay their eggs.

Kayla Garcia: And this can also impact them, on the other end of things where you know if the temperature is not getting cooler.

Kayla Garcia: Around the time than they would normally migrate cells that could end up staying too late and not being able to find food sources for them.

Kayla Garcia: For themselves kind of on the way down or less food sources so that's something that you know monarch migration is critically tied into kind of temperature and if those temperature cues are.

Kayla Garcia: thrown off it can take time for animals do adapt to that and it can dramatically impact population.

Kayla Garcia: So, just a quick look at a graph that kind of talks a little bit about the monarch population that over winters in Mexico, and you can kind of see.

Kayla Garcia: You know there's been some ups and downs over the years, but there has been, unfortunately, a pretty steady trend downward in the overall numbers of monarchs counted.

Kayla Garcia: For area, this is actually area occupied so like the the space that they're able to physically be and they kind of measured, the measure the area that they can see the monarchs and and that area has decreased over time.

Kayla Garcia: it's fallen actually quite quite low over these last few years, and this is due to a variety of factors like new things and about animal populations are you know habitat loss loss of milkweed you know, which is the host plant for the monarch caterpillars to be able to eat and.

Kayla Garcia: be able to grow up on, but people believe that climate change is also playing a factor in this kind of this decrease in the number of monarchs that are making it.

Kayla Garcia: To the overwintering site and then obviously can fly back from the overwintering site and read and reproduce in their northern breeding grounds.

Kayla Garcia: So I talked a little bit about bees and about how important they are to our.

Kayla Garcia: To us, to the food that we eat, and the reason again why I mentioned the central valley's because a lot of these fruits and vegetables are produced there, I mean this is a really pretty poster that was.

Kayla Garcia: made by the pollinator partnership, they do an art contest every year, basically, and you can kind of I hope you're able to see that.

Kayla Garcia: There are many different species of these kind of framing these this lovely cornucopia of fruits and vegetables on everything from the European honeybee.

Kayla Garcia: To bumblebees to my personal favorites slushy, these are all bees that pollinate our fruits and vegetables, and I think I mentioned that most pollinators are insects.

Kayla Garcia: But most insect pollinators harpies So these are problems are the number one pollinator of fruits and vegetables, and there are many, many species of these which.

Kayla Garcia: I know when I first was learning about our need upon this is really surprised by in Missouri there's actually about 420 species of bees everything from the big carpenter bees that are super active right now in our misery meadow.

Kayla Garcia: To the really, really, really, really tiny sweat bees and very tiny there's also a really small carpenter bee so that's another small, one that is pretty you can see, visiting all the different flowers and.

Kayla Garcia: So again, one third of our total food production is dependent on pollinators, many of which are insects.

Kayla Garcia: And just a list of some of the other some of the many examples of the things that are pollinated by bees, so you have a visual and that you have a nice long list of just some of the fruits and vegetables that are pollinated by bees and on which we rely.

Kayla Garcia: The good news is is that climate change is affecting our pollinators in a variety of ways, a lot of it can be at least.

Kayla Garcia: mitigated to some extent by helping improve pollinator habitat now one of the things that people are concerned about with pollinators is obviously with climate change, cheap Labor reducing the amount of.

Kayla Garcia: Useful habitat for our pollinators.

Kayla Garcia: And one of the ways that we each person, hopefully, listening to this to this talk can kind of help with that is support the the the increase of this need of habitat.

Kayla Garcia: What do you need to do that well, you can plant, the right plants native plants plants that are found that are that have adapted to the area in which you live over time.

Kayla Garcia: Are the plants that are best suited for a particular area and also serve as a very important source of food, so all of the native wildlife, because they have.

Kayla Garcia: They have evolved it together and adapted to rely on each other and away from the pollinator perspective is food and from the meeting pani perspective.

Kayla Garcia: what's wonderful in this area is that there are lots of great resources that can help you.

Kayla Garcia: can teach you what sorts of things you need and how you can go about putting them some of my personal favorites and we partner with Grenada if you're at the zoo.

Kayla Garcia: Is through the Missouri Perry foundation, they have a branch of their of their organization called grow native that is sort of a public outreach component that has wonderful information on how you can.

Kayla Garcia: where you can find these native plants nurseries all over the see how you go about planting them even include gardening plants, so if you're not sure like how to put together a plan.

Kayla Garcia: For your space they've got lots of plans available on their website and that's the place that I, I definitely encourage you all to visit they have so much information.

Kayla Garcia: And then, a real quick one here is, you know soil is not something that's always talked about in terms of these sorts of conversation and I don't I certainly am not giving enough attention right now.

Kayla Garcia: But so is an integral part to plant health and our overall the health of our earth's.

Kayla Garcia: Having soil and you're finishing the soil is a huge way to support the plants that you're hoping to grow and I bet I hope you want to grow.

Kayla Garcia: So what I mean here by this composting just turning those leaves material like i'm going to talk a little bit about leaves in a second, but if if you do need to rake up leaves.

Kayla Garcia: don't just back them up and throw them away like take like it's it's easy enough to kind of set them inside of your yard, hopefully, where they can be allowed to decompose and break down and then you can add them back into your gardens and add them back into your flower beds.

Kayla Garcia: So just a few close up pictures of some of the sort of the main players of Missouri bees and you can see, they have all these different sheets all these different sizes.

Kayla Garcia: I don't see the squash be here, but I do see the longhorn these down at the very bottom.

Kayla Garcia: There actually a sunflower specialist a lot of them are you can see that one has an extremely long antenna which make it a pretty easy one to identify if you're just starting out and figuring out, which is which, in your garden.

Kayla Garcia: One thing that I wanted to talk about briefly is not only do you need to hopefully not only can you support me to pollinators by connecting me to plants.

Kayla Garcia: You can also support them, they making sure they have good places to nest it might be surprising, but 70% of bees are actually crown nesters most people think of honey bees and their hives.

Kayla Garcia: But most of these one or solitary they live by themselves there's one one me that makes them acts that she lays eggs in and.

Kayla Garcia: You know that takes care of she takes care of her babies.

Kayla Garcia: But to that 70% actually messing about So these are things like the solitary means but bumblebees which are a social species, they live in the in the colony also nest on the ground, and then the other 30% are actually.

Kayla Garcia: Mostly stem nesters now there's a there's a there's obviously some numbers there a little or don't quite add up, but my father majority of all of our new species are either ground ministers and then 30% are actually stem nesters.

Kayla Garcia: Now, what do I mean by that some of you may have seen these you know, have seen some of these social media campaigns we've believes, and that leaving leaves is a great way for you to give lots of different animals not just pollinators but butterflies Beetles a place to overwinter safely.

Kayla Garcia: That is one easy way that you can promote wildlife habitat in your heart when you think of Moss like the beautiful green Luna them off those are those overwintering cocoons and it's you know very easy if you don't see this cocoon which looks like a piece of a dead leaf.

Kayla Garcia: As you're raking leaves you might accidentally be throwing out some of these wonderful animals, and then the stems leaving.

Kayla Garcia: Plants down like letting your garden garden kind of have those plants Doms up through.

Kayla Garcia: You know mid spring and give these a chance to one have a place to spend the winter and to give them a chance to leave those stems when it's when the weather finally warms up and they're ready to be active again.

Kayla Garcia: And again at the xerxes society is actually another really wonderful organization they focus on invertebrate conservation.

Kayla Garcia: And they have lots of information available online for you to access if you're interested in learning more I wish I could talk to you about it more but.

Kayla Garcia: I want to make sure that I leave room for for questions, and I see some some questions popping up in the chat so we'll keep on rolling.

Kayla Garcia: So, again it's very it, it can take some some effort to to start a native plant a garden just because it can take these plants, a few years to get established the actual plantings not too bad.

Kayla Garcia: But it's not necessarily instantaneous process what i've heard some people say about native plants is you know.

Kayla Garcia: First they firstly sleep, you know they're they're kind of getting their roots going, then they create they they start to put up their their leaves or shoots and then they and then they leave so sometimes it can take me now three years or more for them to really get going.

Kayla Garcia: But I think that the effort is well worth it, this is a prairie restoration picture that I swiped from one of Ed's feedback presentations and I am actually not quite sure where this one.

Kayla Garcia: came from, but I wanted to include this picture, because it talks about it, it reinforces connectivity.

Kayla Garcia: Now, obviously help every one of you goes home and pencil need a fancy your yards to help improve pollinator habitat.

Kayla Garcia: And, can you imagine what that would do if, like everyone did that a you want to make sure like.

Kayla Garcia: You want to have this this landscape of options for our pollinators to be able to to choose from, and to figure out where it is that they might want to live.

Kayla Garcia: And the more smaller air eat more habitats and we kind of convert creates an overall much larger.

Kayla Garcia: Connected landscape that supports our pollinators that's something that is really important that backyards are great roadways are great businesses anywhere, you can put in a pollinator garden.

Kayla Garcia: and also through all seasons, make sure you're planting things that bloom in the spring, in the summer and the fall.

Kayla Garcia: You want to make sure that you're supporting pollinators through the entirety of the of the active season, these are two of my favorite follow me flowers golden rod.

Kayla Garcia: And New England after I just love the yellow and purple when they're, especially when the planet together it's really striking, and these are both native plants as well.

Kayla Garcia: So again, you know if you don't have made a plan to do got a landscape that's mostly mostly grass.

Kayla Garcia: grass isn't something that's that that gives a whole lot to our pollinators now I didn't talk too much about this obviously now this isn't the greatest.

Kayla Garcia: But there's another campaign that's recently picked up speed calm no mo me and that's encouraging people to let their yards go out in the month of May and.

Kayla Garcia: I think it kind of depends on where you live like April, for me, all of my violence and my dealings in my yard are really growing so we did a noma April at my house.

Kayla Garcia: But that's a great way to support pollinators and create a little more diversity in your lawn if that's something that's important to you have.

Kayla Garcia: So that you are able to incorporate some some plants that are providing pollinators food and nectar and pollen resources and again connectivity.

Kayla Garcia: The City of St Louis has a program called the leads for monarchs where people were able to basically follow this list.

Kayla Garcia: That allowed them to pick nectar plants and Paula plants for monarchs and other pollinators and then people can register it, and this is a wonderful map, I think this was actually from 2014.

Kayla Garcia: Where the goal was to have 250 registered gardens upon me to gardens in the city of St

Louis and they're actually.

Kayla Garcia: Not quite double but but grouping up their connectivity that that ability to have multiple places where pollinators can kind of thrive and choose where exactly would be best for them to live, is a great way to to combat climate change.

Kayla Garcia: So, again go native excellent resources, this is actually a menu card that tells you.

Kayla Garcia: What fans to plant when those plants bloom and gives you a little bit more information about you know the conditions that each we always.

Kayla Garcia: require so that you can make sure you have the full spread of plants throughout the growing season that are providing food for pollinators and for other wildlife as well.

Kayla Garcia: So I know we're we're kind of cutting it close here, but I did want to mention just really quickly, there are other stressors that affect pollinators and can kind of you know, reduce their resilience to dealing with.

Kayla Garcia: Challenging situations which is what's being caused by climate change, one easy way hopefully.

Kayla Garcia: In your own in your own homes, is to cut back on pesticide use whenever you know use it, if only if absolutely necessary.

Kayla Garcia: A lot of pesticides people aren't totally sure what kinds of effects they have a, not just on pollinators bone other animals as well.

Kayla Garcia: Although I will say that there is a certain class upon meters or excuse me, pesticides and unica to noise which, unfortunately, have had.

Kayla Garcia: negative effects on these and and they are pretty common, one that is being used Now I know there's some legislation in various places that is looking at curtailing its use, because of that, but I think it's just a good kind of.

Kayla Garcia: Something to keep in the back of your mind use that integrated pest management, if you have to use the pesticides, you know i'm not necessarily saying that you shouldn't use them it's definitely have to consider that may be a last resort kind of.

Kayla Garcia: And again, that population resilience, you want to be able to improve the pollinators ability to survive these stressful conditions and a big way to do that is to make make them or give them enough space to be able to.

Kayla Garcia: It basically what's the word i'm looking for pad that space for them to kind of establish themselves, because that will also give them the ability to.

Kayla Garcia: Have a robust genetic pool basically from which they can breathe, we don't like to end up with the small, isolated populations, because that can really affect.

Kayla Garcia: The genetic diversity of the population itself, so I think that is the end of my presentation looks like it hmm I know we have a lot of questions and in the chat box, it looks like send some Q and a's, so I am more than happy to answer those questions.

Mike Dawson: So the first one kayla we have is where can you get the menu card.

Kayla Garcia: Oh yes, so if you go to be grow native websites and that's a pretty easy one for you, it should pop right up or you can just Google grow native pollinator menu.

Kayla Garcia: And that should take you to the web page where there's a link and it's very easy to find they have it in a PDF format, we can say that printed out it's a super nice super nice document that my curator my boss helped helped make.

Mike Dawson: Some of the questions that we had in the chat going on, was places we might be able to recommend to to find good resources for pollinating plants and things like that.

Kayla Garcia: Oh sure yeah so um let me i'm going to try and.

Kayla Garcia: So what I would say is grow native that's a wonderful resource it's got so much information they actually also produce like a pamphlet.

Kayla Garcia: And it's like all the nursery is from across the state of Missouri that our Members are that are known to carry need to plant.

Kayla Garcia: The zinc the St Louis zoo website, if you Google St Louis zoo pollinators and that should link you up to our web pages that also go into detail about where you can find more information.

Kayla Garcia: At speed that the curator is actually the Center director for the Center for native pollinator conservation so i'm kind of his his stand in as it, as it were, but those are two really good places that I would recommend there's also some really good books that kind of talk about.

Kayla Garcia: how you can support me to pollinators, and this is actually one that's produced by the xerxes society it's called attracting is backwards, but it's called attracting native pollinators and that gives you lots of information about what to plant how much to plant.

Kayla Garcia: You know, making sure that you've got those nesting sites talks a little bit about the houses which I didn't mention but that's one way that you can kind of support those stem nesting bees, but that would be where.

Mike Dawson: So we have quite a few questions popping up in that, and the Q amp a which has got me a couple of the chance and we'll kind of jump back and forth.

Mike Dawson: Well i'll just start with the first one, I do some the same data plans that attract pollinating bees, where they also attract butterflies.

Kayla Garcia: A lot of them a lot of them will now, I will say that.

Kayla Garcia: butterflies are after somewhat different things, compared to these I mean, these will visit flowers for pollen and for nectar and pollen.

Kayla Garcia: butterflies are primarily after the nectar, but a lot of them will, and you can also.

Kayla Garcia: If you're if you're really focused on wanting to attract like butterflies as well, again, I would encourage you to check out the grow native website, because they have list for.

Kayla Garcia: butterfly friendly native plants hummingbird friendly native plants pretty much anything that you can think of.

Mike Dawson: Are there any tips to build homes or nest areas for pollinators or where we would find some of those.

Kayla Garcia: yeah so.

Kayla Garcia: One of the easiest things that you can do actually is just if you've got like a place where you can maybe leave some grounds there that's a great way to.

Kayla Garcia: Provide like good good habitat for ground nesting bs I think and also he mixes in like sand and he has like a rural area in his yard, where he makes us soil and fan so that it's doable basically for these beings.

Kayla Garcia: To encourage them to Messer and I actually had some success with that and he is in.

Kayla Garcia: The women would park neighborhood in St Louis city so even in the city and you can do easy things like that now, in terms of like making be houses and and those sorts of structures i've seen some really creative ones online in different places.

Kayla Garcia: And I have not made one of those myself, but I know i'm i'm almost positive that xerxes society that the group that is working for pollinator and invertebrate conservation have some resources that can kind of guide you through that.

Wanda Kolo: This is wanda i'm just popping in and I just wanted to mention that i'm including some links in here in the chat for anyone who's and I saw also.

Wanda Kolo: Michael Mike also added a few links in here but there's a lot of information, some of it on our own zoo website so certainly take a look in those places for just some tips about how to build a nest for native bees, how to you know all these different plant resources.

Kayla Garcia: what's great yeah Thank you wanda that looks good I can i'm looking at that now.

Mike Dawson: So when you.

Mike Dawson: Oh.

frank fischer: Sorry sorry Mike hey kayla one of the questions in the chat as a native plants plants and how dear.

Kayla Garcia: yeah so that.

Kayla Garcia: I think I know yeah the deer obviously if you're if you're living in an area where you've got an abundance of deer that can be it can be a bit of a big of a bit of a challenge i'm sure.

Kayla Garcia: Now I know there are certain plants that that dear seem to bother less and I unfortunately I don't know if I can name one off the top of my head.

Kayla Garcia: But that is a wonderful question because the I would say the The good thing in the bad thing about planting native plants is yes, they are going to be food for not just the pollinators.

Kayla Garcia: But also the native rabbits and potentially the deer, but there are certain things that I know deer are less likely to browse on, for example.

Kayla Garcia: Our Eastern red cedar that is a tree that supports.

Kayla Garcia: Various wildlife it's actually really popular i'm i'm i'm actually.

Kayla Garcia: A bird watcher I love bird so i'm also really interested in supporting bird habitat and that one is something that's hurting enough at the deer.

Kayla Garcia: won't touch and you also will hopefully get lots of beautiful scenery relax means to visit us well if you plant a seed, or if you see here, if you have those little columns get produced they left those berries.

Thanks.

Wanda Kolo: era, one of the first questions that came in, is a really great one, I want to make sure we get to it, so the question is, are there any local programs that you know, have to help private citizens or neighborhoods with pollinator gardens the way there are in some places with wrangler.

Kayla Garcia: wildlife a that's a really good question and I would say, it would be a great idea to reach out to the St Louis audubon society they actually have a really wonderful program I believe it's called.

Kayla Garcia: Bringing bringing nature home or something along those lines, I should know it off the top of my head and they will actually.

Kayla Garcia: come out to either your private property or potentially I could see them also working with like a neighborhood group and would give you recommendations on a site.

Kayla Garcia: You know your yard or another place you're looking at about what to plant and tell you like depending on your goals.

Kayla Garcia: What the best way to go to go about that with me now I believe there's a small fee I don't think it's super expensive.

Kayla Garcia: But they get they will come out to your site, they will send you a report listing all of their all right, you know their recommendations and then we also get a chance to talk to you know needed by experts who are there to kind of be be a resource for you.

Mike Dawson: Thanks.

Kayla Garcia: yeah i'm going to double check that I think it's called.

Wanda Kolo: yeah that's a great program and there's another one that I, maybe, maybe some of the other hosts know more about it but there's something called wild ones.

Wanda Kolo: And that's more of like a I guess it's like a Community i'm just a lot of citizens who, maybe are more interested in this, you know in this realm.

Wanda Kolo: And they you know get together and events so i'll try to find a link to that as well that may be something that's available in your neighborhood that you could get connected with and just get connected with like minded people you know.

Mike Dawson: Another place i'd recommend is the St Louis native plant society is just a good place for them to hear people were talking about native plants and which ones were good and what soils and you can always post and ask questions.

Kayla Garcia: that's a great one that's a great one there's there's also Is this the same one you just mentioned the Missouri native plant society.

Mike Dawson: yeah.

Kayla Garcia: Okay yeah that's the Facebook group that it's all over the State and that people are very supportive there's lots of questions and like Mike said and that's a really active group a nice group.

Mike Dawson: So to jump back into Q amp a I had two questions and and I just want to make sure we don't miss this because we do promote these sometimes would be and when people are putting out be hotels, which directions, are the best for them to face, and I put them out myself and I sometimes forget.

Kayla Garcia: You know Mike you put me on the spot here.

Because.

Kayla Garcia: i'm going to tell you the wrong thing, but there is there you're absolutely right, there is a specific direction that you are supposed to.

Kayla Garcia: supposed to kind of orient your needs to be homes because it helps.

Kayla Garcia: It helps kind of warm up the master that the bees can be active at the right time and also so that it doesn't get too hot basically for the for the babies.

Kayla Garcia: But yes, I will have to ask and put it in my phone because I always forget.

Mike Dawson: i'll see if I can pull something up for them here.

Mike Dawson: And then that one question was about bird baths and water is that a great way for pollinators or is there a better way to put a water source out for pollinators.

Kayla Garcia: You know I think that's fine i'm calling us loft and visit you know, whatever kind of water, especially you have.

Kayla Garcia: I have seen these visit small like water features if you're interested in like having like a fountain or if you're interested in growing aquatic plants.

Kayla Garcia: As long as they have a place that they can kind of you know grip onto a plant and get down to the water to drink that's totally fine they do get a lot of their water from just.

Kayla Garcia: You know at the at in the morning it's often very do we so they're able to kind of get water from the view that's forms on plants and things like that overnight, but if you want to provide a water bath for pollinators i'm sure they would use that as well.

Mike Dawson: Take a look um I don't know Are you familiar kayla with squad weed at all.

Kayla Garcia: You know i'm not super familiar with.

Mike Dawson: I don't know if anybody else wanted if you're familiar, the question was is that a good pollinator plant, I know what score weed is I I would imagine it would be is blooming should be blooming I think matt.

Kayla Garcia: At least I do okay.

Kayla Garcia: i'm just not really yeah yeah that mean that that particular common name, so I know that man by.

Kayla Garcia: Round teeth groundsel and actually yes, we have a lot of it in our Missouri meadow and that's a great early.

Kayla Garcia: blooming pollinating our plant that is a good food resource for pollinators I actually snatched a bunch of seeds myself i'm going to plant some of that later at my house, but yeah that's a good one for sure.

Mike Dawson: And some fun for everybody just threw it in there, if you happen to be at the zoo to check out misery meadows, I put a link to a project we have on there and.

Mike Dawson: It goes up all the time, as far as how many animals utilize that space, not all of them are pollinators but, quite a few of our pollinators so.

Kayla Garcia: Thanks Mike yeah we we encourage folks if you're interested in I naturalist and if you're not familiar with it it's actually it's a, it is a phone APP that helps you identify.

Kayla Garcia: plants, animals phone guy ever anything that you might see take pictures of it and it's got a way like a you know, a.

Kayla Garcia: An algorithm that kind of again that is able to identify things for you it's pretty good, and you can actually.

Kayla Garcia: We have a project going on right now, like Mike said we're trying to keep track of every kind of insect and pollinator that's lighting our meadow so it's a great way to kind of contribute to that project you don't even have to.

Kayla Garcia: You know, be be like a member it'll automatically uploaded if you're in that geographic area of the meadow.

Kayla Garcia: But that's if you're looking for an easy way to identify things around your home or while you're out hiking I really like using a naturalist and all that information is actually.

Kayla Garcia: kind of kept in there you don't have to use location you'll have to share the location of things if you're a little wary about that, but it's a wonderful resource if you're wanting to learn more about the need of any plants or animals around you.

Kayla Garcia: Yes, packer oh yes that's the one around the ground so.

Mike Dawson: Say oh somebody put out there, seek is another good APP which is true it's also has made by the producers of financial this music.

Yes.

Kayla Garcia: And I see ya bring nature home I bring conservation home was the name of the program through the St Louis on on.

Kayla Garcia: Go ahead.

Wanda Kolo: Sorry yeah, I just wanted to mention to there was that question earlier about about bird baths and someone just.

Wanda Kolo: Added in here too, you can put pebbles in there that might help a little bit for for the smaller little guys to have something to hang on to while they get their drinks so that's always a good good advice there.

Kayla Garcia: yeah yeah and that's a good advice to you just in general, like.

Kayla Garcia: birds, I see, I see the comment there about avian flu, I know I know different recommendations are kind of out right now about maybe.

Kayla Garcia: i'm cutting back on the the bird feeders and the bird baths and other places where birds mitochondria meaning.

Kayla Garcia: But it bird bath you don't want to be cheap anyways that way, the birds can actually like get in there, feel comfortable and you want it to be rough enough so that they can like get a good grip, so they don't feel like they're going to slip on a fake but yeah that's a great idea.

Mike Dawson: hey I think we've answered most of us quite a little run back to real quick.

Saint Louis Zoo Education Liaisons: So I had a quick thing, so I know we've talked a little bit about you know Community wide and different initiatives you know to kind of broaden this as much as possible.

Saint Louis Zoo Education Liaisons: But I know, last month, we talked to more, it was very native plant focused and a lot of people were kind of wondering, do we go like zero to 60 do I take my entire line and just cover it in.

Saint Louis Zoo Education Liaisons: Every native plant, I could find and gene Ponzi from the earth way Center you know said what I thought was great advice, because I, I would love to do the same thing with my lawn but it's start wherever you can.

Saint Louis Zoo Education Liaisons: and grow wherever you can because whatever you can do you can make a difference with.

Kayla Garcia: wow that's wonderful advice.

Kayla Garcia: yeah I, I think the the inclusion of any kind of made a plant in your yard, is a is a wonderful step to take.

Kayla Garcia: And you know I know people have plants that they are fond of maybe for sentimental reasons, you know it's something that my grandmother grew and she passed it off to me, and I would say, as long as.

Kayla Garcia: you're making those steps to kind of have at least a mix of native plants and ornamental plants that's a step in the right direction, now there's a specific percentage, and I should know this Doug tallamy has has talked in written a lot about this.

Kayla Garcia: You know sort of the percentage of native plants to non native plants, you want to have in like your garden space.

Kayla Garcia: But I think starting where you can is wonderful don't feel like you have to do that, that that entire turn I just moved into a house I bought a House last year and.

Kayla Garcia: I kind of let things go for the first year just to see what was in the yard and to see kind of what I wanted to do, and you know, slowly but surely i'm going to start.

Kayla Garcia: transitioning some things over, there are some other plants that i'll probably keep because they're not super invasive and I also think they're pretty so start where you can and don't ever feel like you need to.

Kayla Garcia: Go all or nothing, I would say that can be pretty overwhelming.

Mike Dawson: The other thing and we could throw out there which be helpful to is is, as you add stuff to your your garden.

Mike Dawson: To try to think about the timing of when they Bloom, and so you can try to keep things in your garden that bloom from the spring, you know so that way for these and other pollinators is something in your garden throughout the entire season.

Kayla Garcia: Yes, yes, that is great advice, and I would encourage folks to look at the pollinator menu card, which is a pretty.

Kayla Garcia: it's very helpful, the path figure out if you want to plant one thing films in the spring, and one thing in the summer, one thing in the fall, so you at least, are supporting all through that growing season as a plant that's great.

Wanda Kolo: hey look kind of along what you just said i'm with just knowing that we are experiencing warming temperatures here as others are as well and.

Wanda Kolo: Earlier winter or sorry earlier spring times, are there any I know you're not a plant your

urine insect person, but are there any plants that you would recommend that we may be focus on to make sure that there's enough food for the you know the early risers.

Kayla Garcia: Well that's a good question one that yeah so.

Kayla Garcia: Some nice early plants are the.

Kayla Garcia: Standard kind of garden violets are blue violet violet site often show up in people's yards that's a really nice early learning plan and also a host vcs for the Larry butterflies can.

Kayla Garcia: Do knock out two things at once there if you keep the violence they can be kind of aggressive, though, I will say i'm having I have violence popping up pretty much everywhere.

Kayla Garcia: My turn around and there's another pilot but also, I would say things like that PIC CARA the ground soul, or the squad leaders what some folks call that that's another nice really booming plant that's one of the earlier earlier blooming plants.

Kayla Garcia: Some of the garden or excuse me, the woodland flocks species, I see these utilize there's also a very pretty delicate a wildfire called spring beauty.

Kayla Garcia: That grows all frost salons here in forest park but that's one that a lot of the small sweat bees and other small needed these world.

Kayla Garcia: visit as soon as they start blaming now there's some some of the spring ephemeral so the flowers that kind of bloom in the early spring and then kind of fade away.

Kayla Garcia: Are things like the Virginia blue balls.

Kayla Garcia: He blood work.

Kayla Garcia: and

Kayla Garcia: other kind of small group and flowers as well, and then to be honest dandelions they're not a native species, but they are one that's around and that they do provide some pollinate some nectar and pollen resources for these as well.

Wanda Kolo: Wonderful Thank you.

Wanda Kolo: I saw that a frank earlier mentioned that clover is really great to just as like a ground cover as well, so that's another one to.

Wanda Kolo: If you're trying to get rid of your lawn or at least intersperse it with your line.

Kayla Garcia: yeah so there's actually some really nice like i'm.

Kayla Garcia: Pulling i've seen some pollinator friendly like lawn mixes for folks that are looking to me to get away from like you know your sort of standard standard options and a lot of those do include clover.

Kayla Garcia: there's the kind of the white clover, which is again yeah it's not a native plant, but it is, it is used by a lot of bs but there also are some native colors that.

Kayla Garcia: You know, if you look for it, you can find if you're interested in kind of working at into your yard and your lawns and they were pretty nicely, you know they can still move them if you want it.

Kayla Garcia: To be in a shorter line is important to you, for you know for kids or other activities that you might want to be able to do in your yard, but yeah I really like clover, because to be totally totally

love it.

frank fischer: yeah it's great okay let's frank all point is do is just raise your mower up a little bit.

frank fischer: You can you can leave the clover.

Kayla Garcia: yeah for sure.

frank fischer: For you, yes.

Kayla Garcia: Absolutely, I will, I will say that you if you're sharing your your your your long with these it does does pay to be kind of observant because you know they're going to be buzzing in there, too, and as long as you're kind of paying attention to where where you are, and I think.

Kayla Garcia: Everyone can can cohabitate thankfully.

Mike Dawson: I don't see any other questions, so I think we've covered all kinds of good stuff tonight, so thank you kayla.

Kayla Garcia: Thank you, I am glad I could be here and answer questions, and I know there's lots of good links in the chat So hopefully folks are able to kind of copy those down and.

Kayla Garcia: Find out more info hopefully i've set some folks on a path to adding more need to plant slow yes.

Saint Louis Zoo Education Liaisons: Yes, thank you so much kayla and thank you to Mike and wanda and frank for moderating tonight, and thank you all so much for joining us, I hope you enjoy this fabulous presentation and tonight marks the last webinar in the.

Saint Louis Zoo Education Liaisons: Community climate forum series, so thank you for, especially those of you that are repeaters.

Saint Louis Zoo Education Liaisons: it's been great spending, this time with you over the last nine months I can't believe it's been that long already so we will be back in September we're just going to take the summer off.

Saint Louis Zoo Education Liaisons: And we'll be back in September, in conjunction with the zoo's climate solutions Day celebration so be on the lookout for us this fall Thank you again kayla and everyone have a wonderful rest of your evening.

frank fischer: Everybody.

Wanda Kolo: I every line.