

Kristen Goodrich

And so one of the ecosystem services for me are cultural ecosystem services, for me is just the psychological piece to having natural places to be inspired by, to be in awe of, and to really help continue motivating despite a really amazing, I think, and unprecedented challenge we have ahead of us. And I think that I'm probably not alone in that.

Anne Marie Tipton

This is the ancestral land of the First People, the Kumeyaay.

Nature's benefits, or the goods and services vital to human health and livelihoods, are also called ecosystem services. While there are several categories of ecosystem services, of focus today, and increasingly within the National Estuarine Research Reserve System, is the category of cultural ecosystem services. These are the non-material benefits that result from paired human and environmental interactions and include stewardship, aesthetics, recreation, and education. For places with strong indigenous and local community presence, these encompass environmental conditions that allow for spiritual experiences, cultural heritage, sense of place, and way of life.

In this episode of Divided Together, we'll hear from Dr. Kristen Goodrich on her perspective about the Tijuana Estuary's ecosystem services. We'll also hear from Adela Bonilla Armenta, who works in a collective in Los Laureles, Tijuana Mexico that focuses on upcycling waste to make beautiful and functional products, and Gregg Cady in the Tijuana River Valley in San Diego who is involved in farm education. We will examine reciprocal relationship with place and hear the stories of two people in a bioregion, with livelihoods that are influenced by their being situated in the Tijuana River Watershed yet on different sides of the U.S.-Mexico border.

I'm Anne Marie Tipton, the Education Coordinator for the Tijuana River National Estuarine Research Reserve, and I'll be your guide.

Kristen

My name is Kristen Goodrich and I'm the Coastal Training Program Coordinator at the Tijuana River National Estuarine Research Reserve.

AMT

A growing field of research is beginning to explore how to measure and talk about ecosystem services as more than just a unidirectional flow from nature to us. This is of particular interest to Kristen.

Kristen

So when we think about categories of ecosystem services, we typically think of them in these areas of supporting, provisioning, regulating, but what's of maybe greatest interest to me is the cultural ecosystem

services or those benefits that are provided to people in these realms of aesthetics or spirituality or recreation, or even benefits that help human health and even mental health.

And the way that I think cultural ecosystem services are often characterized are these non-material benefits, so some of the benefits that are hard to measure. You know, oftentimes ecosystem services are talked about in very quantitative terms. So they are treated as ways of thinking about economic benefits that come from natural places. But what's a little harder to measure, and a little bit harder to quantify, and why there are some really interesting research efforts and studies out there, are ways to think about how we can qualitatively assess what types of ecosystem services are generated by healthy, intact systems.

AMT

Kristen further explains the types of ecosystem services.

Kristen:

So provisioning is a concept or a category that includes services like providing food, providing fresh water, providing resources like wood or fuel or fiber. Regulating is a different category or concept that really points to how natural systems can help maintain some equilibrium. So thinking about, particularly important as we face a changing climate, what are some of the ways that these natural systems can help us mitigate and adapt to climate change?

AMT

One very important service, especially here at the Tijuana Estuary, is flood regulation.

Kristen

So in systems that are really impacted by flooding like our region here in Southern California. You know, we're in a Mediterranean system. It's a really flashy system in that we get a couple rain events. So when those rain events happen, we get pretty significant flooding down here in the Tijuana River Valley. Having natural systems intact that can kind of absorb some of that water and mitigate or regulate some of the impacts are a really important ecosystem service.

And then supporting is another category where we think about some of the functions of these systems helping to provide nutrient cycling or soil formation, or even offering primary production. But the category that's often overlooked and in part because it may just be hard to measure is this category of cultural ecosystem services.

AMT

Kristen puts her whole self into her work and that sometimes has psychological effects, but inspiration is also derived from this coastal wetland.

Kristen

You know, I think for me working on climate change adaptation has been a particularly heavy topic. You know, we as scientists are often exposed or learn about some of the impacts of climate change on these places that we love, and it can be very heavy and it can be a difficult message also to carry if you play a role as a communicator, a science communicator. And so I guess I could say I gain a lot of my grounding and maintain a lot of my stamina to continue to do this work because every day I come here and I'm able to see what was protected, what we still have to save. And that's despite seeing such, in some cases really significant environmental degradation.

And I think a lot of my transition into becoming a social scientist has been to try to explore ways that we can qualitatively study some of this because there's a lot to be gained from sitting down with individuals who use the resource, whether it's traditional use, our indigenous communities, or have more modern use here just as a resident of a community that's adjacent to this protected place. And I think that there's a lot to be gained by sitting down and having conversations to learn more about what it is that people gain from having these places be protected.

AMT

Conversations with people like Gregg Cady...

Gregg Cady:

My name is Gregg Cady, and I'm the farm director of Wild Willow Farm.

AMT:

Wild Willow Farm, located just east of the reserve in the Tijuana River Valley, is a part of the Resource Conservation District. Its mission is to connect people with the food, with the land, and with each other. They educate people about their regenerative agricultural practices and host events where volunteers can do farm tasks, pull weeds, and take care of their goats and chickens. They don't use any chemical pesticides or fertilizers and focus on biodiversity. The farm itself exists to serve primarily the local community, but they provide field trips to students from all over Southern California.

Gregg got the spark to do something that made a difference ten years ago.

Gregg

I've always been really interested in cooking food and grew tomatoes on my apartment patio and different herbs and things like that I would use to try a new recipe. Then I thought, "Well, what's my five-year plan?" If I could figure out what to do that would be positive on something that I would enjoy doing and have some sort of impact. I decided, "Well, I'm going to try to learn more about it," and I went back to school.

AMT

Gregg began taking classes at San Diego City College and received an Associate's degree, and also a social science degree for sustainable urban agriculture. And then?

Gregg

Then transferred to another university and got a bachelor's in agricultural and environmental plant science and got some work on big farms and learned more of the science side of it and was really interested in finding a way to continue that.

AMT

Gregg was then asked to take over the management of Wild Willow Farm.

Gregg

This was a farm that I had been to years and years ago when I was at San Diego City College and met Mel and loved... have always had a thing for wanting to have my own wood-fired oven and here it was, this place that needed some love but has a really great core community. I think some people saw there was a change, that we're this corporate interest that's come and taken over all of the farm, but really, the farmers are the same. We're all in it because we care about food justice. We care about making positive change. We all love food and growing food and sharing that. It feels good to see some folks that maybe haven't had access to what real farming is or even an appreciation for nutrition and what they put in their bodies, and then making a lifestyle change based on their experience in farm school or something like that. So it feels really good to do it.

AMT

Wild Willow Farm is adjacent to the Tijuana River. While there are definite benefits for a farm to be located next to the largest coastal wetland in southern California, there are also serious challenges such as sewage flow combined with super high tides.

Gregg

We were very concerned about the quality of our food and food safety, and we had to wait for soil tests. That's something, too, the benefits of really caring for the soil is the way it's able to clean up. There's all sorts of value to having healthy biology in your soil. I think it took us several months before we had a clean soil test. Then the farm flooded again. Then a few months after that we got back to our CSA, and then COVID came around and had some challenges with that.

AMT

It's important to Gregg to be a good steward of the land and to not exacerbate the water quality problems by how they run Wild Willow farm.

Gregg

Where we are, we have to be especially careful because there's a high water table, and we're in the watershed of the Tijuana River. We don't want to have a bad example by putting too much fertilizer and having nitrogen or phosphorous leeching, which is a problem that exists in agriculture. I think that's important to realize that there's an impact. In California, the tagline is "We grow the food to feed the world," but there is a big impact in the main way agriculture's performed in primarily Central Valley. That leaching can cause massive environmental problems where there's towns where you can't drink the water because it's so polluted directly from the overuse of fertilizers. So we're trying to show this is our style of doing that.

AMT

Gregg grew up in northern San Diego County and only knew a little bit about the Tijuana River Valley, but after working there, he started to see how the estuary and the farm are interconnected and values the ecosystem services it provides.

Gregg

I don't think I'd spent much time in Imperial Beach until I moved back down here a few years ago and have since learned... I'm interested because where the farm is located and the health of the ecosystem especially that Tijuana River. I've talked to some of the ranchers that have been down there, and I've heard some of the stories. I know there's just a continued impact on water quality and all kinds of other issues.

But I think it's important to make sure that we have a healthy ecosystem and we preserve the natural biodiversity that's down there.

It's a beautiful place. I used to love to come down to the farmer's market every Friday just to be able to sit. I would really work hard to harvest all my produce and come out here, and I feel like it was a big rush. Then looking at the ocean and this beautiful scenery, it's kind of keeps everything in perspective.

AMT

Gregg shows his appreciation of the many ecosystem services, cultural included, from the salt marsh and its surrounding habitats in how he describes his experience of the ocean calming him at a busy day selling his produce at the farmers' market.

Gregg

It's a bird sanctuary, so we have an amazing variety of birds that fly over the farm. We see the benefits of pollinators. Most flowering plants need some sort of pollination and most food crops need to have a bee or a wasp or a bat or a bird come and pollinate to preserve that, to have that plant variety continue to exist. So we see that as really important on our farm to have variety. We do plant native plants for the purpose of just helping out the ecosystem really.

AMT

Wild Willow's farming methods complement the ecosystem and uses nature to combat pests.

Gregg

At the farm, we show our style of agriculture, which is embracing biodiversity. It's taking care of the soil. We teach about composting, and we'll apply compost to add organic matter to our soils. There are so many benefits, fertilizer, nutrition, retention, water infiltration, water storage, and we're doing it without any assistance from chemical pesticides or herbicides or anything like that. We have perennial flowering plants at all times, and we do specific plantings so that we encourage the natural predation of the bad bugs that will come around.

... We have raptor perches. We have chickens that unfortunately were a few years ago decimated by a coyote that kind of lived on the property. But we look at that as a challenge, but hopefully that coyote is helping us with the rabbits and the squirrels and all the gophers and everything else that's a challenge.

AMT

Wild Willow Farm takes its educational role seriously, yet another cultural service, and how it can set an example for the people it serves.

Gregg

I think it's really important that the land where we are, for one, there's an agricultural legacy there, but there's also a history of people living in the land for 10,000 years and people lived off the land. Our impacts that have, I think, as humans cause some of the degradation to the water quality. I see the farm as being important as an educational piece and showing people that there's an alternative to conventional farming. This is something that anyone can do in their home garden and the benefits of just caring for the soil and seeing the life that exists.

AMT:

Unlike Wild Willow Farm, *Los Laureles Canyon*, south of Border Field State Park on the Mexico side, is separated from the coastal wetland and its ecosystem services by topography and a border fence. Most of the residents have never been to the estuary, including Adela Bonilla Armenta. This poses a question about how people separated from the ecosystem, in this case, by a border, experience its services.

Adela Bonilla

Mi nombre es Adela Bonilla Armenta. Tengo 20 años viviendo en el Cañón de Los Laureles.

Adela Bonilla/Translator

My name is Adela Bonilla Armenta. For 20 years I have been living in *Los Laureles* Canyon.

AMT

Plastics upcycling craftsperson Adela Bonilla lives in a *colonia*, or neighborhood of the Mexican city of Tijuana, that was rapidly urbanized and outpaced municipal services needed to support the communities that live there like waste collection. Migrant and low-income families are most likely to inhabit erosive areas including canyons, like Los Laureles, where flooding occurs and is exacerbated by debris that blocks channels, adding to the vulnerability and marginalization of these communities. This trash is carried by floodwaters also presenting a major threat to the health of the Tijuana Estuary downstream.

Adela

Bueno, yo vivo aquí en el cañón. En tiempo cuando hay lluvias, si llueve bastante es muy difícil que los carros entren hasta acá, se quedan a medio camino porque el canal se abre y se acaban las calles por lo mismo de que va mucha basura entre el agua y se va desbordando todo. Muchas veces también aquí enfrente se han caído casas que están cerca del canal, se han caído, se han desbaratado. Lleva mucha basura el canal, los niños no pueden ir a la escuela porque como no hay calle tienen el peligro de que la misma corriente se los lleve.

Sí se limitan muchas cosas cuando llueve y cuando está seco, también hay mucho peligro porque mucha gente tiene la costumbre de quemar basura. Al quemar basura corren riesgo de que se prenda la casa, como hace tres días se quemaron dos casas aquí enfrente a causa de que habían emprendido una basura. La basura ocasiona muchos problemas aquí en toda el área del cañón.

Adela/Translator

Well, I live here in the canyon. And when there is rain, if it rains a lot, it's very difficult for the cars to enter here, they stop halfway because the channel opens and the streets end because a lot of trash goes into the water and everything overflows. Many times, houses that are near the channel have also fallen down in front of us, they have fallen, they have been dismantled. The channel carries a lot of trash, the children cannot go to school because, since there's no street, they are in danger of being carried away by the current.

Yes, many things are limited when it rains and when it's dry, there is also a lot of danger because many people have the habit of burning trash. By burning trash, they run the risk of the house catching fire, like three days ago two houses were burned across the street because they had started a trash dump fire. Trash causes a lot of problems here throughout the canyon area.

AMT

Adela continued to describe the devastating fire incident.

Adela

Yo en los momentos, por ejemplo, antier que se quemaron las casas, siento impotencia porque se le habló a los bomberos. No hay muy buen acceso a que vengan, tardaron, llegaron patrullas primero, como a la media hora llegaron los bomberos, ya las casas ya se habían terminado de quemar todas. No hay acceso para esas áreas. El canal cuando llueve se derrumba, necesita la canalización ahí y enseñar más bien a la gente a cuidar y que no dejen tirar basura porque muchas veces de otros lugares vienen y tiran basura cuando la gente no se da cuenta.

Adela/Translator

At that time, for example, the day before yesterday when the houses were burned, I feel helpless because they called the firefighters. There is not very good access for them to come, they took a long time, the police arrived first, about half an hour later the firefighters arrived, and the houses had already burned to the ground. There is no access to those areas. When it rains, the channel collapses, it needs to be channeled there and we need to teach the people to be careful and not to litter because many times they come from other places and they throw out the trash on the streets when people aren't looking.

AMT:

The community in Los Laureles Canyon faces dangerous conditions during rains, in part because the canyon is lacking in natural features that offer ecosystem services like flood regulation. Here again is Kristen:

Kristen

I think in places where communities have been in large part severed from natural resources - and I think there's probably no better example than here in the border region where we have border infrastructure, separating communities from some of these natural spaces, like the Tijuana Estuary - ensuring that these systems are as healthy as they can be and can generate as most or as best the ecosystem services that it can allow for some of these other ecosystem services, like the provisioning that we were talking about, like food or fresh water, which all kind of feed into this idea that well-being is tied to healthy ecosystems.

AMT

Adela is adaptive. She began using the abundance of trash in her community to make upcycled crafts seventeen years ago.

Adela

Yo tengo muchos años reciclando y haciendo manualidades. Primero empecé dando clases de manualidades en un centro comunitario. Después se nos dio la oportunidad por medio de Semarnat de un proyecto productivo de género. Fue cuando nos juntamos unas alumnas que fueron mis alumnas en el Centro Comunitario y hicimos el proyecto para seguir con el reciclaje.

El proyecto de reciclado me lo ofrecieron por parte de Semarnat, entonces nosotros ya hacíamos, yo daba clases de piñatas artísticas y manualidades de reciclado. Nos enfocamos en lo que era el reciclaje.

El reciclaje lo empezamos a hacer porque en toda esta área hay muchísima basura, que para mí es materia prima. Elaboramos cosas de los materiales reciclados y después nos ayudamos económicamente vendiéndolos.

Adela/Translator

I have been recycling and doing crafts for many years. I first started teaching craft classes at a community center. Later we were given the opportunity for a women's collective through Semarnat. That's when some of my students at the Community Center got together and we did the project to continue recycling.

The recycling project was offered to me by Semarnat, but we were already doing it, I taught classes in making artistic piñatas and crafts using recyclable materials. We focused on what recycling was.

We started to do recycling because in this whole area there is a lot of trash, which for me is raw material. We make things from recycled materials and then help ourselves financially by selling them.

AMT

Often efforts must be focused upstream to address issues like solid waste at the source to reduce marine debris downstream. As the Reserve system studies how to measure cultural ecosystem services, the Tijuana Estuary's cross-border approach may offer an example of an indirect, yet possible way to conceptualize a service in a community that is separated from it.

Reserve Binational Liaison Ana Eguiarte and Kristen Goodrich collaborated with Adela on an idea eventually supported by the National Oceanic and Atmospheric Administration Marine Debris Program through funding from the United States-Mexico-Canada Agreement Implementation Act. It involves piloting a circular economy project with partners to demonstrate ways to repurpose debris that had no other value or recycling potential, ultimately creating opportunity for income generation among those affected by the situation by selling products. By taking trash out of the system, this process also reduces flood risk and prevents it from reaching and impacting the habitats downstream.

Adela

Tuve la oportunidad de estar en una reunión con personas del estuario y presentaron unos productos que se estaban haciendo con una máquina que me interesó mucho. Yo tengo 17 años planchando con plancha normal de casa y me interesó mucho la máquina, ahora tengo la oportunidad de tener la máquina y para mí el plan es trabajar con ellos ahorita por lo pronto experimentando yo con nuevos materiales y haciendo productos, dar los talleres a la gente que les interese.

A mí me motivó lo que es el proyecto del reciclado porque miré que se puede reciclar muchas cosas, por ejemplo, reciclan el aluminio, lo venden, el cartón lo venden, pero la bolsa realmente no hay quien la compre y es lo que más hay en todo el cañón. Yo empecé primero con mis

piñatas, empecé haciéndolas yo, después dando clases y después ya me metí más con lo que es reciclado porque veo que hay mucha basura. Todo se va al mar, todo lo que es el plástico, principalmente el plástico porque es lo que menos tiene precio, la gente no lo compra, no lo no lo junta.

Por eso me enfoqué en lo que es el reciclar más que nada el plástico.

Adela/Translator

I had the opportunity to be in a meeting with people from the estuary and they presented some products that were being made with a machine that interested me a lot. I have been ironing plastic with a regular iron at home for 17 years and I was very interested in the machine. Now I have the opportunity to have the machine and for me the plan is to work with it right now and for the time being experimenting with new materials and making products, giving workshops to people who care.

I was motivated by the recycling project because I saw that many things can be recycled, for example, aluminum is recycled and sold, cardboard can be sold, but no one really buys plastic bags and that is what we have most here in the entire canyon. I first started with my piñatas, I started making them myself, then teaching how to make them and then I got more involved with recyclable materials because I see that there is a lot of trash. Everything goes to the sea, everything that is plastic, mainly plastic because it is the least valuable, people do not buy it, they do not collect it.

That's why I focused on recycling plastic more than anything.

AMT

Adela enjoys her work and wishes she can keep some of her products, but she needs to earn a living.

Adela

De lo que a mí me ha gustado más, por lo que hago todo me gusta, quisiera quedarme con todo pero tenemos que hacer para poder producir también y generar algo de economía. He hecho muchas carteras planchando a mano con plancha de casa. Carteras, bolsas, manteles para mesa, mantelitos individuales, cosas así. Las piñatas me fascinan también, son piñatas artísticas grandes, no hago piñata chica. Todo me gusta, todo lo que sea reciclado me fascina.

Adela/Translator

What I have liked the most, and what I like the most is everything I do. I would like to keep everything I do but we have to be able to produce and generate some income. I have made many handbags ironing by hand with a household iron. Purses, bags, tablecloths, placemats, things like

that. I also love piñatas, they are large artistic piñatas, I don't make small piñatas. I like everything, I love everything that is recycled.

AMT

Indigenous peoples make many things from natural fibers, here in southern California, the Kumeyaay traditionally build tule boats from wetland plants. Adela, in a canyon with few natural resources left, makes something beautiful, functional, and valuable out of trash. While the connection is severed, the wetland's existence has implications for the people who inhabit places upstream.

Kristen:

But one thing we did talk about was that despite being so limited in these other categories, the supporting, the provisioning, the regulating, within the cultural ecosystem services, the educational component I think is one that'll be really interesting to explore how to measure. And also the unique emphasis on Los Laureles Canyon because of its proximity to the Tijuana Estuary has brought in a really significant interest among researchers, social scientists and other kinds of social scientists to understand this kind of unique bioregion and ways, again, that we can think about a social ecological system.

And so while it's not the most immediate ecosystem service that comes to mind when you think of a cultural ecosystem service, it might be something that we try to really think about how to measure differently for communities that are in our case adjacent to the estuary, divided by a border, yet may still have some exposure to some kind of ecosystem service or some type of benefit but it might not be the most immediate or direct. And I think that's just an opportunity for some really interesting research and practice in this area.

AMT

There's a natural kind of desire to try to quantify ecosystems services using economics. But according to Kristen, it's only one tool in a toolbox.

Kristen

I think by pursuing different ways of knowing and different ways of understanding, whether it's through interviews or different ways of developing methods to better understand how to develop metrics and indicators for measuring cultural ecosystem services, I think there's just enormous potential to be able to better advocate for the values or the ecosystem services that natural places like the Tijuana Estuary can provide.

AMT:

Cultural ecosystem services encompass the many ways the environment contributes to human well-being through experiences, connections to people and place, sustenance, relationships, and more. Their stories - one of a regenerative farmer adjacent to the Reserve on the U.S. side, another an upcycling craftsperson separated from the coastal wetland by an international border - gives us a way to think about how we live from, in, with, and as the Tijuana Estuary, with the

lens of ecosystem services and a focus on livelihoods. Gregg Cady and the team at Wild Willow Farms benefit from the ecosystem services the Tijuana River Valley provides. Adela Bonilla, who has never visited the Tijuana Estuary, is giving it and her community a chance to recover and a new life to the trash that is ever-present in the canyon.

Thanks to Kristen Goodrich, Gregg Cady, and Adela Bonilla for their time and sharing about their work. We are grateful to the National Estuarine Research Reserve System and in particular the He'eia and Kachemak Bay Reserves for their leadership and transfer of knowledge in this area of research and practice. Thank you for listening to Divided Together, brought to you by Parks California, and the generosity of an anonymous donor.

Adam Greenfield is the engineer and co-producer of this podcast. I'm Anne Marie Tipton, your guide and co-producer.