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## **The Future of Research Is Indigenous: Culturally Grounding Our Indigenous Scholarship**

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Short Title: The Future of Research Is Indigenous

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Indigenous peoples are the original stewards of their Native and Ancestral lands—having maintained the balances of their ecosystems since time immemorial. However, as a result of colonization, imperialism, and the mass genocide against Indigenous peoples, environmental systems have been altered and drastically changed. Since western ideologies such as capitalism and western science were introduced, Indigenous stewardships and their knowledge systems have been invalidated and oftentimes, ignored in the environmental and ecological discourse. Their complex nature-culture nexus has been dismissed and suppressed and European men have been given the credit for their discoveries and nuances in the environmental and ecological discourse (Wildcat, D., 2009). As a result, Indigenous peoples have been left out from these conversations.

However, despite the genocide and forced assimilation tactics placed on Indigenous peoples, their teachings have been preserved in tribes and communities through oral traditions and cultural practices. While some of these teachings were in relation to their living conditions in the past, as we will demonstrate in this special edition, Indigenous knowledge systems can adapt to new climates, spaces, times, and environment. It is no surprise that Indigenous peoples' teachings can serve as solutions to the environmental degradation and crisis we are currently facing in a changing climate due to their resiliency and adaptive capacity (Aftandilian, D., 2011). Our special edition demonstrates how Indigenous science can help heal our Mother Earth and our four-peer reviewed articles do an outstanding job at displaying this through their current research, analysis, and critical lens.

It is important to note that Indigenous science cannot be defined by one sole definition as it consists of all Indigenous knowledge systems—locally, regionally, and globally. While some Indigenous knowledges can share similarities with one another, they differ based on the

geographic location of each tribe, nation, or community. This is due to the reality that Indigenous knowledge systems are place-based and not socially acquired through western systems (i.e. education) (Singer, J., et al. 2015). Indigenous knowledge systems are acquired through cultural upbringings and Indigenous ways of teaching (i.e. storytelling, learning by doing). It is not entirely written in textbooks or expressed in research, as some components of Indigenous epistemologies are sacred and are only kept between family and tribal kinships. Indigenous knowledge systems include both traditional ecological knowledge (TEK) and Indigenous knowledge (IK) (Rinkevich, S., 2008). It is important to note that tribes and Indigenous communities have the autonomy to define their way of thinking, knowing, and being in the world with the term or concept of their choosing. As a result, we will use terms that define Indigenous science interchangeably in this special edition. Some of these terms include: tribal science, Indigenous knowledge, traditional ecological knowledge, Indigenous ethnoscience, and other terms each community member utilizes to describe and label their knowledge.

As we continue to experience climate change, marginalized communities are impacted first and are the ones helped last. These impacts result in environmental injustices that are addressed through linear western policies, laws, and regulations that do not incorporate important tribal and cultural values (Hernandez, J., 2019). Despite this gap between climate change, environmental justice, and Indigenous peoples, they continue to be in the frontlines of these movements. Their communities are already confronting the impacts of climate change such as sea level rise, ocean acidification impacts on shellfish, shifting sea ice patterns. (Reo, N., et al. 2017). These natural resources are sometimes keystone cultural species that sustain their livelihoods, traditions, and cultures. This highlights why it is imperative that we continue to indigenize ecology and environmental science, so that these gaps that misappropriately impact

Indigenous peoples are addressed. It is a means of survival and thus, our duty as Indigenous scientists, scholars, and researchers is to amplify these voices now more than ever.

### **Indigenous Environmental and Climate Justice**

Environmental justice holds many definitions as it is a social justice concept that is tailored and adjusted to fit each community's narrative in the environmental discourse. While environmental justice has been a term now co-opted by many, it is a term that roots itself in the community's advocacy and resiliency. It cannot solely be framed within an academic setting—as the ivory tower excludes many communities of color who are advocating and fighting for the inclusion of their voices, perspectives, and knowledge systems (Cantzler, J., et al. 2016). Environmental justice has been federally defined as equally distributing environmental burdens among all communities. Climate justice is a social movement that began as a result of ineffective solutions proposed to address climate change. It is deeply rooted in the environmental justice perspectives as climate change burdens and impacts communities of color the most and not all people equally. It is no surprise that Indigenous peoples are the most vulnerable to climate change and despite this, they still have unequal representation in global, national, and local decision making processes for environmental policies (Warlenius, R., 2018).

The lack of representation of Indigenous peoples results in environmental policy preferences favoring the wealthy and white communities and disfavoring communities of color. As we continue to undergo climate change, unequal distribution of risks and responsibilities continues to burden Indigenous communities (Kluttz, J., et al. 2018). Due to the mitigation and adaptation practices implemented by Indigenous communities, they are better able to adapt and address the impacts of climate change on their communities. Since they heavily rely on natural

resources for cultural resiliency and survival, when natural resources are impacted as a result of climate change, Indigenous peoples are also impacted. Climate change is resulting in *ecological debt*, but it is Indigenous peoples who are paying the highest price for this debt (Barrett, S., 2013 & Running, K., 2015).

We continue to bear witness to the fight for environmental and climate justice led by Indigenous peoples around the world. However, we continue to also witness how Indigenous science continues to be dismissed in the name of western science. In Hawaii, Kānaka Maoli are leading a resistance movement to protect their sacred mountain, Mauna Kea, against the construction of a 30 meter telescope (Witze, A., 2015 & Brown, M., 2016). In Canada, the Wet'suwet'en Nation is advocating against the construction of a pipeline that is ignoring tribal sovereignty and will lead to more environmental degradation and pollution (Petersen, K., 2020). In Australia, we witnessed how ignoring the First Nations and their Indigenous science led to a massive fire that destroyed many ecosystems and resulted in one-billion animals dying. This catastrophe could have been prevented or better managed through prescribed burning—a First Nation tradition in Australia and various Indigenous communities across the globe. All of these current cases all have one commonality—the suppression and dismissal of Indigenous science that is essential to healing our Mother Earth.

### **Indigenizing Environmental and Ecological Sciences**

“Indigenizing” is a concept that has gained more attention in our current scholarly and pedagogical realm. However, for the purposes of this special edition, we are referring to “Indigenizing” as addressing colonial layers that continue to invalidate Indigenous science. “Indigenizing” also incorporates Indigenous-led research, projects, and community-work that

respects and amplifies Indigenous voices in their respective studies. It moves away from having Indigenous-inclusion to Indigenous-led initiatives, research, and projects. In this special issue, we want to shift our focus from Indigenous-inclusion to Indigenous-led as it is time for Indigenous peoples to not only hold a seat at the table, but lead the table. As mentioned before, climate change and environmental injustices disproportionately impact Indigenous peoples the most. Despite all the climate change and environmental initiatives, policies, and regulations, there has not been much that has changed among Indigenous communities. It is time to change our perspective of wanting Indigenous-inclusion to creating Indigenous-led initiatives, projects, and research. As a result, all of our peer-review articles in this special edition are first-authored by an Indigenous scholar, scientist, and/or researcher. While we understand that to conduct certain research, projects, and initiatives requires collaborative work with non-Indigenous scientists, and scholars, our mission for this special edition was to uplift and amplify the Indigenous voices first.

Our first article in this special issue demonstrates how using cultural chants, stories, and genealogies passed down orally for centuries among Kānaka Maoli can aid conservation management decisions pertaining to sharks (manō) (Puniwai, N., 2020). The first-author, Dr. Noelani Puniwai is an Indigenous professor at the University of Hawai'i at Mānoa who believes in the integration of pono science, the foundational wisdom of our kūpuna, and our experiential daily practice of aloha 'āina to awaken responsible action for the future of our Hawai'i. Our second article discusses an important environmental justice case that has been ignored in the Navajo reservation—the uranium mines (Rock, T., et.al., 2020). First-author Dr. Tommy Rock grew up in a small community on the Navajo reservation, where he saw firsthand the effects of uranium mining on his relatives. Our third article discusses how oral stories from the people of

the Amskapi Piikani Nation (Blackfeet) can help address an environmental justice issue for the potential of toxic dumping within Blackfeet lands (Paul, K., et.al., 2020). First author, Kimberly L. Paul is a member of the Blackfeet Nation and completed her thesis focusing on this environmental justice case. Our last article demonstrates how we can indigenize restoration in urban parks, centering their case study at Daybreak Star Indian Cultural Center, Discovery Park, located in Seattle, WA (Hernandez, J., et.al., 2020).

### ***Diux quixeli & Mahalo: Thank You***

As Indigenous scholars, researchers, and scientists, we want to thank you for helping us uplift Indigenous voices, perspectives, and science with this special edition. We also want to thank all of our peer-reviewers for assisting us throughout the process and dedicating their time to ensure our articles met the criteria. A special thank you to Dr. R. Malhi and the *Human Biology Journal* team for creating a space for Indigenous Science & Ecology. We also want to thank Dr. Katrina Claw and Krystal Tsosie for leading this initiative to hold two special editions focusing on Indigenous Science. The future of research is Indigenous and through culturally grounding our Indigenous scholarship, we can continue to **Revolutionize, Decolonize, and Indigenize.**

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