HIGICC Newsletter - November 2021

HIGICC President's Award

Christine Chaplin, HIGICC

This year's HIGICC President's Award was given to Brennan O'Neill, who is the Hawaii Pacific Branch Manager at Frontier Precision. Ever since Brennan landed in Hawaii, he has been a huge advocate for the HIGICC. He's proactively organized pau hana socials with live music and has provided all the equipment to make them possible. Quite frequently, he is a first responder to our calls for speakers at our webinars and expos and has saved us numerous times during downtime at GIS Day. We want to celebrate his enthusiasm for our community, his expertise and professionalism. You can always count on Brennan to be at our events, with a big welcoming smile on his face! We want to thank Brennan for his hard work and commitment, and we look forward to many more events to come.

Brennan has a BS Degree in Geology. His first experience with GPS and measuring equipment was as an Earthquake Geologist with the U.S. Geological Survey. He measured Plate Tectonic movements along the San

Andreas Fault Zone. He then went to work for the University of Colorado as a Geodetic Engineer with the University Navstar Consortium (UNAVCO). At UNAVCO he used GPS to measure fault zones and volcanoes all over the world, Including the remeasurement of India, Nepal, and China. Brennan went to work for Trimble in 1995 as a Survey and Mapping Sales Engineer and is a Certified Trimble Survey trainer. He is presently the Hawaiian Pacific Branch Manager for Frontier Precision. In his spare time, he enjoys playing congo drums in a live band, stand up paddling with his lovely wife Kelly & their dog Sparky, and striking up a great conversation.

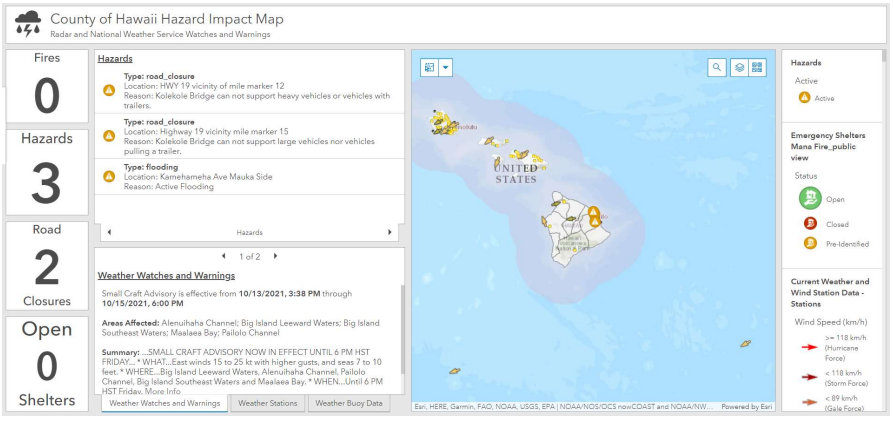
Hawai'i County Civil Defense Agency GIS and Emergency Management Operations

Joshua Black and Asia Wasser, Hawai'i County

Following the eruption of Kilāuea Volcano in 2018, the Hawai'i County Civil Defense Agency (HCCDA) sought to build a comprehensive common operating picture to enable direct communication with decision makers, operating partners, and the public. Although GIS had been utilized for emergency operations in the past, HCCDA wanted to expand and leverage their geospatial platform by integrating GIS data layers with critical infrastructure, natural hazards, and man-made threats - all while applying community demographics and vulnerabilities to better locate and apply resources before, during, and after a disaster.

Over the past three years, HCCDA has worked to create and improve upon a dynamic hazard impact web map and operations dashboard. This publicly available tool brings together internal data layers and NOAA live feeds and services to better construct and recognize current threats and risks, as well as provide real time tracking of weather impacts.

The purpose of this tool is two-fold. It provides the public with up-to-date information relating to hazards, road closures, fires, flooding, utility outages, shelter availability, and public facility closures. Internally, the dashboard increases situational awareness for emergency operations personnel and other stakeholders operating both in the HCCDA Emergency Operations Center and out in the field.



https://hawaii-county-civil-defense-agency-hawaiicountygis.hub.arcgis.com/apps/hazard-impact-map/

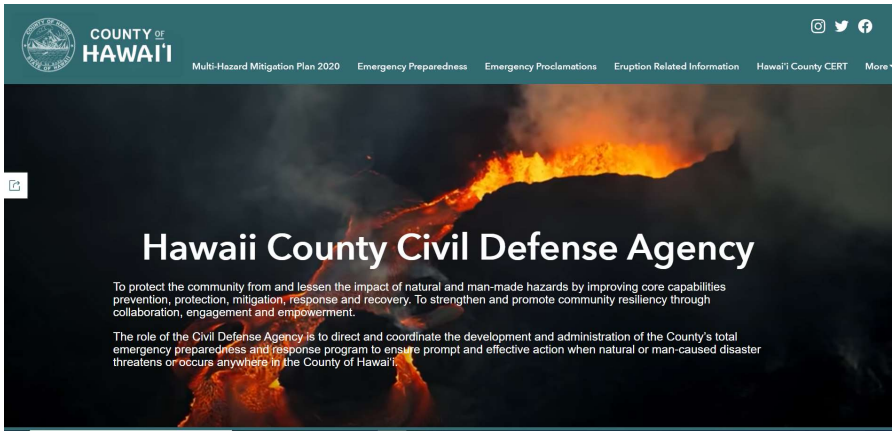
The work of HCCDA to better integrate and leverage GIS into emergency management operations also happened to coincide with the start of the COVID-19 pandemic. During the initial stages of the pandemic, HCCDA was asked to provide the public with up-to-date information on various COVID-19 resources. As a result of these ongoing efforts, the

County of Hawai'i was one of the first in the state to stand up an ArcGIS Hub to support COVID-19 operations and response. Creating and managing a hub site based on the ArcGIS Online platform provided an excellent opportunity to further expand numerous skillsets.

https://www.hawaiicounty.gov/coronavirus

In addition to deploying ArcGIS Hub, ArcGIS Survey123 and Operations Dashboard were integral to many HCCDA COVID-19 operations. During inter-island travel quarantine, Survey123 was used to create a public facing survey to submit critical infrastructure and same day medical quarantine exemption requests. Internally, an operations dashboard was used to view the survey data and complete the request process. While inter-island travel quarantine was in effect, HCCDA processed over 50,000 exemption requests. Although inter-island travel quarantine no longer exists, a similar survey and dashboard process was setup to facilitate event requests for gatherings above the State and County size restrictions.

As a result of the COVID-19 response efforts, HCCDA is continuing to expand the integration of ArcGIS Hub into the County of Hawai'i Website to better manage other disasters. The current HCCDA main webpage was recently switched to an ArcGIS Hub and will soon include links to other hub sites for hurricane, tsunami, earthquake, and wildfire. Additionally, HCCDA has built numerous web applications using ArcGIS Online, Survey123, Operations Dashboard, and Experience Builder. As we look to the future, GIS and its wide array of applications will become the main management tool used for emergency response, public notification, and real-time decision making.



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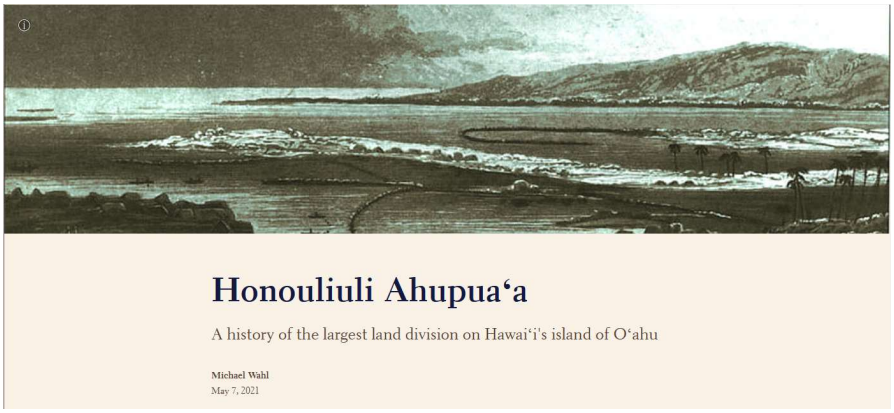
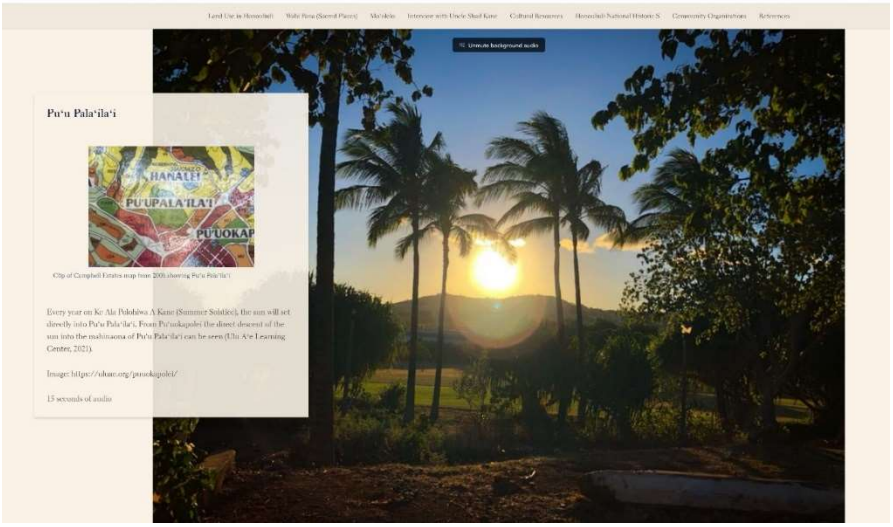
Honouliuli Ahupua'a Story Map

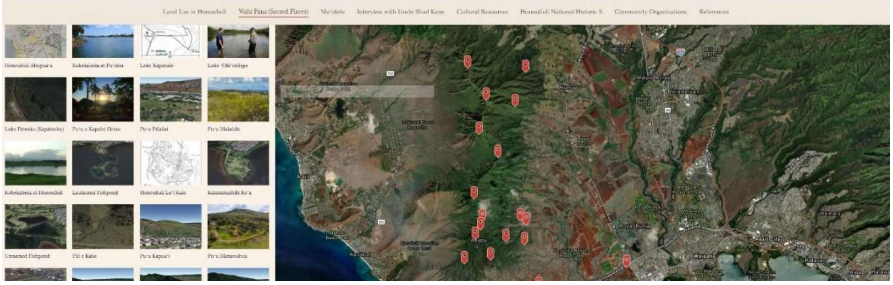
Mike Wahl, State of Hawai'i DLNR, State Historic Preservation Division



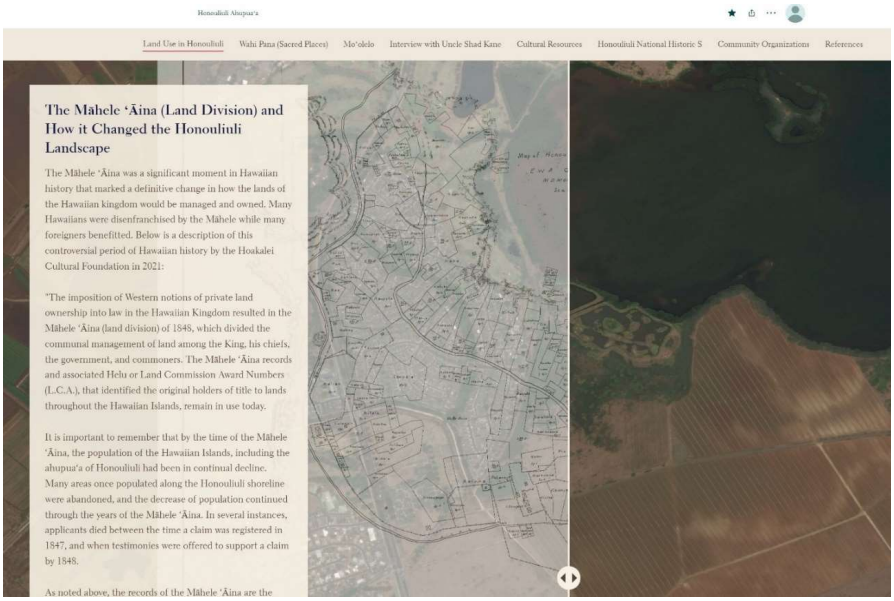
The ahupua‘a is a division of land in Hawai‘i that was once mapped by the ali‘i to provide resources from mauka to makai for all the people within. The borders of this ancient land division system are still in use today to mark political boundaries and communities throughout Hawai‘i. The largest ahupua‘a on the island of O‘ahu is Honouliuli in the ‘Ewa moku (district). Honouliuli is where many important events in Hawaiian history have taken place and due to the fast pace of development in this area there is a push from cultural practicioners, Native Hawaiian Organizations, academic scholars, and local residents to preserve the cultural history of this significant place.



In 2020, a digital preservation project funded by the National Park Service, and conducted through the Hawaii-Pacific Islands Cooperative Ecosystem Studies Unit under Task Agreement number P16AC01702 was undertaken by students, instructors, and researchers at the University of Hawai‘i, West O‘ahu (UHWO). The project was led by Associate Professor of Anthropology, Dr. Christy Mello, to gather information from historic newspaper articles, books, maps, and interviews for the creation of an online exhibit and Esri Story Map that would bring the audience on a digital tour of the ahupua‘a and inspire an appreciation for the people, places, and history of Honouliuli.



Michael Wahl, HIGICC Secretary, was hired by UHWO to create the Honouliuli Story Map using information collected by academic researchers and the cultural resources GIS data derived from the Department of Land & Natural Resources - State Historic Preservation Division. The Story Map highlights the significant dates, people, and places of Honouliuli starting from the time Hawaiians first landed their canoes on the shores and large flightless birds roamed the ancient karst landscape to the time when paniolos (cowboys) rode their horses through large tracts of ranch lands that eventually became large sugarcane fields and housing tracts.

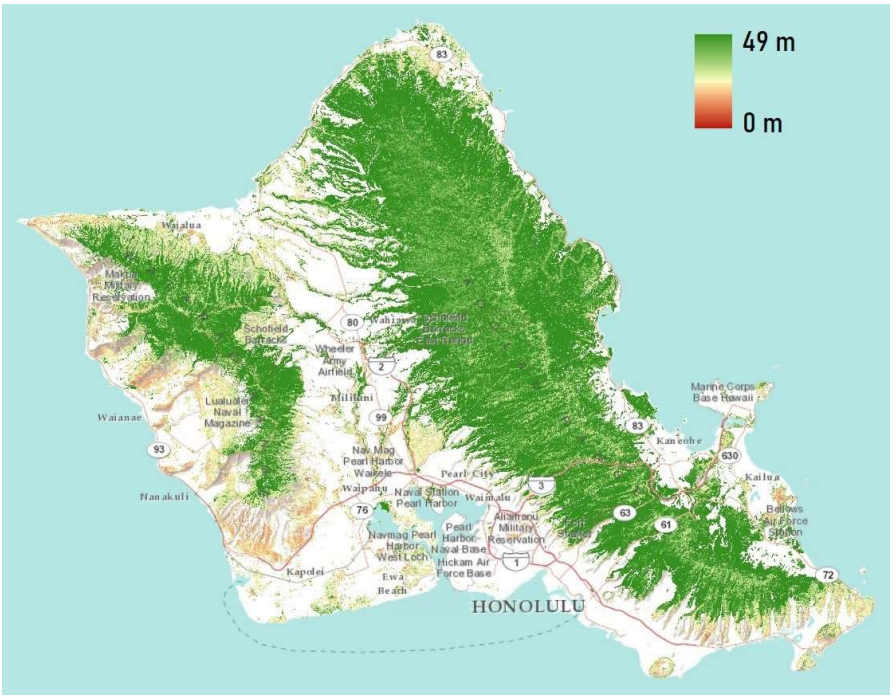


The Honouliuli Story Map starts with a look at the different types of land use throughout time and how much has changed since the Māhele ‘Āina in 1848 divided the lands and allowed foreigners to own property and begin large-scale industrial, agricultural, and ranching ventures. The landscape was forever altered by water being diverted for sugar cane fields, cattle hooves trampling on native vegetation, railroads crossing centuries-old trail networks, the clearing or repurposing of ancient walls and ceremonial complexes into animal enclosures, the bombing of O‘ahu by Japan in 1941, and the occupation of Honouliuli and Pu‘uloa by the United States military. The story continues with a look at the wahi pana (sacred sites), the mo‘olelo (stories and songs), the cultural resources that have been identified by archaeologists and historians, and an interview with local cultural practicioner and Park Ranger of the Kalaeloa Heritage Park, Uncle Shad Kane.

The Story Map then focuses on the Honouliuli National Historic Site (Honouliuli POW & Internment Camp) and the impact it had on the people and history of Hawai'i. Multiple archaeological field schools were conducted at this historic monument by UHWO and the students and instructors give us their impressions of the work they did and how it affected their lives. It concludes with a look at the cultural organizations doing work in Honouliuli, giving the audience an opportunity to help preserve the history and perpetuate the cultural practices of Hawaiians in Honouliuli. If you are interested in learning more, then please click on these links and enjoy: Honouliuli Story Map & UHWO Exhibit.

30-m Spatial Resolution Forest Height Map Released

Prof. Qi Chen, PI, HawaiiView (https://hawaiiview.org/)



HawaiiView is pleased to release the 30-m spatial resolution forest height map for the island of Oahu (https://hawaiiview.org/data/l2fhm/), predicted using Landsat-8 cloud-free mosaic (https://hawaiiview.org/data/himacc/) and calibrated using airborne lidar data.

The forest height map is unique in that 1) it is continuous, instead of categorical (e.g., the existing USGS products (https://landfire.gov/version_download.php)), and 2) it was calibrated using massive airborne lidar data.

The forest height map can fill in a critical data gap for understanding the roles of Hawaiian forests in a wide range of applications, including carbon sequestration, biodiversity conservation, hydrological cycling, etc.

Please help distribute it to those who might be interested. I also appreciate any feedback you might have for the dataset. For more information, please visit https://hawaiiview.org/data/l2fhm/.

COVID19 and Ship Noise

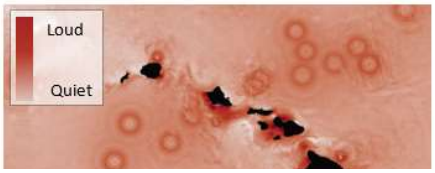
Sarah Rosenthal

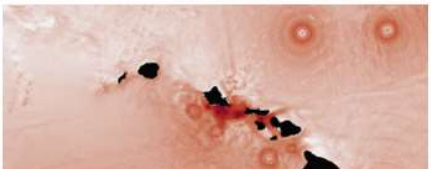
Underwater acoustic communication is essential to the survival of many marine animals. Many sea mammals have evolved highly extraordinary hearing and complex voices to take advantage of how far sounds can reach underwater and to compensate for the limited visibility. The ability for these animals to hear and communicate meaningful signals allows them to detect family members and predators, hear echoes from prey, socialize, find breathing holes in ice, and even develop properly at a cellular level.

However, human impact, such as shipping traffic, marine construction, or seismic exploration has greatly added to what once was only natural amounts of underwater noise. These anthropogenic contributions to the soundscape, when loud enough and in the right pitches, can be heard across the entire global ocean, leaving few places where animals can escape for a moment of peace and quiet. The relentless, persistent noise pollution can cause permanent physical and mental fatalities for many species. While there is no consistent global map of ocean noise, one monitoring station in the Pacific Ocean shows that noise in the ocean has doubled in intensity every 10 years from the 1960s to the 2000s.

Historically, opportunities for controlled studies involving anthropogenic noise pollution are rare. Yet, last year, Covid19 quieted the waters of shipping lanes across the world. As whale watching tours, fishing boats, and cruise ships were put to rest in their slips and moorings, acousticians were given a rare opportunity to isolate the impacts of shipping traffic from the natural background underwater noise. This can be thought of as a control-impact study that allows scientists to acoustically "see" what a big difference could be made by small changes in shipping traffic.

Spatial models of ocean noise were produced using automatic identification system (AIS) vessel traffic, ocean temperature, and salinity data as inputs. Visual analytics available in ArcGIS Pro provided a way to visualize and understand these changes. The maps below show a comparison between shipping traffic around the Hawaiian Islands between March 2019 and 2020.





Noise from shipping traffic in March 2019 (left) compared to March 2020 (right).

The differences in shipping traffic noise from the years above show a slight decrease in 2020. However, to a humpback whale this slight difference may mean the difference in the survival of her offspring (i.e. it may help her detect killer whales that would predate on her calf). One difficult question that biological acousticians seek to answer is whether increases in anthropogenic noise will be something that a species can adapt to before it is too late. Studies like the ones during the global shutdown of Covid19 and other situations have begun to be documented by the International Quiet Ocean Experiment (IQOE). Data collection, analysis, and sharing of educational resources can help this type of marine pollution to be recognized by a broader audience. Similar to other environmental issues, there is ample evidence to move forward with proactive solutions to noise pollution.

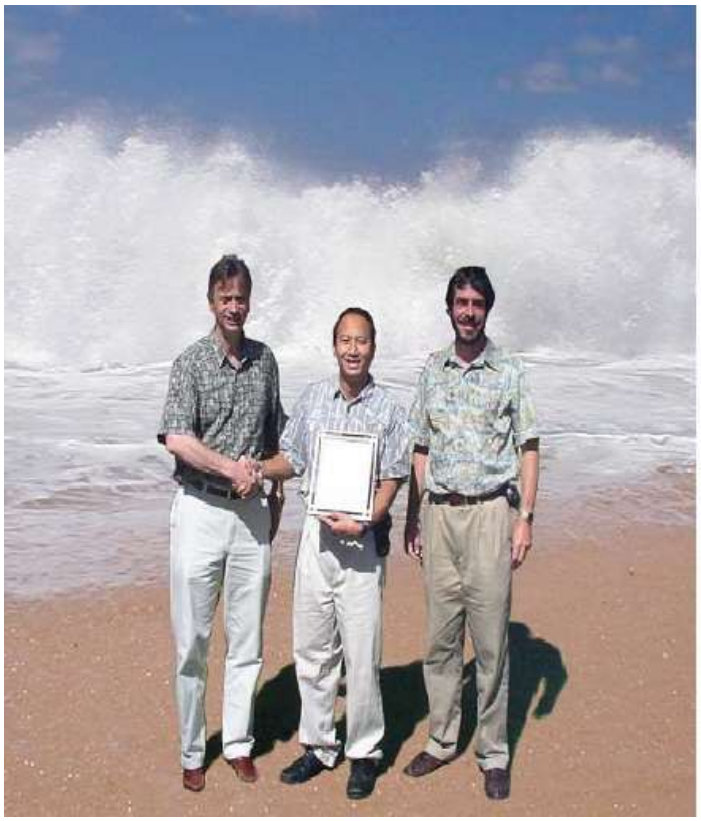
To ready more about this study and why it matters for marine animals, please visit the story map by Applied Ocean Sciences.

Goro Sulijoadikusomo

Tom Giguere, Project Mgr/GIS Consultant

One of HIGICC's founding members, Goro Sulijoadikusumo, passed away unexpectedly on August 18. He was a long-time employee with the Hawai`i Department of Transportation and had a long association with the HIGICC. Goro, together with our other founding members, was instrumental in pursuing our 501(c)(3) non-profit status in order to establish legal standing and recognition of the organization. In addition to being a founding board member, he was our first treasurer, and was there at the very beginning, when early meetings were held at the Manoa Innovation Center, and the ideas for putting our interest in data sharing and love of mapping and GIS into action were just being formed. He also helped to facilitate the formation of a true statewide

being formed. He also helped to facilitate the formation of a true statewide council by arranging to hold later meetings at the Honolulu International Airport, which enabled neighbor island representatives to more readily participate and fly to Oahu without having to rent a car, drive/fight traffic to the meeting location and then find and pay for parking. There would sometimes even be "after meeting sessions" for some informal discussions and camaraderie held at one of the Airport establishments (remember, this was pre-9/11). His service to the HIGICC, in helping to do the hard work to obtain non-profit status, serving as a board member, and serving as treasurer truly show the extent of his dedication to the group.



Goro enjoyed participating in our biennial GIS conferences, which have been high points for all of us. Great memories with Goro include attending our first conference at the Hilton in Kahala, which kicked off to the raucous recording of "Start Me Up" by the Rolling Stones (thanks, Ken Schmidt!) and the "Mission Impossible" opener at a later conference. Through the years, Goro helped with HIGICC's important work, including the Hawai`i I-Plan for Spatial Data, an FGDC spatial metadata grant, and Data Discovery Days.

Goro and his wife Lisa most recently participated in the 20th year anniversary celebration for the founding of the HIGICC. It was great to see Goro there, with so many of the other founders, reminiscing and celebrating their success.

Unfortunately, Goro passed away on August 18, 2021, doing what he loved, surfing at "Fours" on a big wave day. His contribution to the HIGICC is long-lasting… he will truly be missed.

Mahalo to our Sponsors!

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