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Aloha!

Is it just me, or is 2016 flying by?! I hope this letter finds you in good spirits and health!

I am pleased to report that there has been positive movement on a number of fronts at the legislature, including all of the issues which my office marked as a priority at the beginning of the year: resources to combat mosquito-borne illnesses, \$500,000 for a feasibility study for a new hospital in West Hawaii, and funding for our public schools, in addition to some movement on the discussion of individual wastewater management systems, including alternatives to septic systems such as cesspools in

non-sen<mark>sitive areas and comp</mark>osting systems.

Enclosed is an update on a number of issues, which I hope you find useful. What's inside:

- Pages 2-3: Legislative recap of the 2016 laws and budget;
- Page 4: Issues that are still "Works in Progress";
- Pages 5-8: Latest news and research on Dengue and Zika;
- Page 8: Community updates.

It is my honor and privilege to serve and represent you. Please do not hesitate to contact me if I can be of any assistance. **Mahalo!**

Richard began



Left: Discussing priorities for the new session with Governor Ige on Opening Day. Center: The House Committee on Health welcomes Rep. Tina Liebling of Minnesota; Right: Hearing concerns about smoking from West Hawaii student advocates on "Kick Butts" Day.



E-SUBSCRIBE

One of my goals this year is to establish a more expedited way of being available to you.

I know we all receive many email requests, but if you would consider subscribing to my ecommunications, it would really help me to both **update** you and **get your opinion** on a more timely basis.

I need you as a sounding board and hope this method of communication will enable us to dialogue more effectively.

To sign up, please email my office at:

repcreagan@capitol.hawaii.gov

Representative Richard Creagan Hawaii State Capitol, Room 331 Honolulu, HI 96813



Left: Hosting a meet-and-greet with the Hawaii State Rural Health Association, in which lawmakers were briefed on the unique healthcare needs of our rural areas and existing and potential solutions. Mahalo to Jessie Marques and her team from Ka'u for making the trip to O'ahu. Right: Cross section of an 'ōhi'a, showing the dark, radial staining of the fungus on the outer ring of the cut trunk. Fungus begins like a single "finger" growing into the sapwood (the cells that move water from the roots to the leaves). Eventually the fungus grows around the entire ring of sapwood and cuts off the tree's water flow, which is why we see trees die so quickly.

2016 Legislative Recap

Listed below are just a few of the bills approved by the legislature this year. To review their complete language, please search the bill number (ex. SB2659) on our legislative website, www.capitol.hawaii.gov. For any assistance, please feel free to contact my office.

Agriculture

Industrial Hemp Pilot Program (SB2659)

Establishes a pilot program which allows for the cultivation of industrial hemp and the distribution of its seed in Hawaii for hemp research. Appropriates \$425,000 for two full-time positions in the Department of Agriculture (DOA) and administrative costs.

Invasive Species Spread Prevention (HB1050)

Addresses the interisland spread of invasive species by (1) requiring the DOA to undertake management activities, such as developing a tracking database, increasing the priority of inspections, and developing and coordinating interisland quarantine activities, (2) appropriating \$1 million for facilities to marshall and treat commodities prior to movement from Hawaii Island, and (3) conducting a financial and performance audit of DOA's Plant Quarantine Branch.

Rapid 'Ōhi'a Death (HB2675)

Continues pathology research efforts to protect ohia trees by appropriating \$300,000 for research to combat rapid 'ōhi'a death. (see photo above)

Organic Foods Production Tax Credit (HB1689)

Reduces the burden on small farmers seeking the costly, but necessary, certifications and inspections required to be certified organic by establishing an Organic Foods Production Tax Credit. Applicable to taxable years beginning after December 31, 2016 and ending on December 31, 2021; up to a maximum of \$50,000 per qualified taxpayer.

Transportation

Interisland Ferry Study (SB2618)

Requires and appropriates funds for the Department of Transportation to conduct a feasibility study on the establishment of an interisland and intra-island ferry.

Moped Safety (HB1753)

Improves public safety by strengthening regulations regarding mopeds, including requiring registration, number plates, and annual certificates of inspection.

"Saddle Road" Speed Limit (SB2375)

Maintains traffic safety by bringing uniformity to speed limits, and establishes maximum speed limits along various portions of the Daniel K. Inouye Highway on Hawaii Island. Increases the speed limit of a certain portion of the highway to 60mph.

Health

CARE Act (HB2252) Caregiver Advise, Record, Enable

Supports caregivers by requiring hospitals to adopt and maintain written discharge policies in which each patient can designate a caregiver, and each patient and caregiver can participate in the discharge planning, and receive instruction related to after-care needs prior to discharge. According to AARP, there are about 154,000 people in Hawaii who are voluntarily taking care of a family member or friend.

Composting Toilets (SB2583)

Mandates the counties to approve the installation and use of composting toilets in areas that are inaccessible to municipal wastewater systems, thereby benefiting the people living in those communities and the health and welfare of the State as a whole.

Medical Marijuana Omnibus (HB2707)

The cannabis dispensaries are rolling out. One small note of progress in regards to production centers is that while greenhouses are not yet permissible, translucent or transparent roofs have been added, which will allow for the utilization of natural sunlight.

Governor Ige has until June 27, 2016, to notify the legislature of any bills he intends to veto. Veto deadline itself is July 12, 2016.

Budget Highlights

Hawaii Island secured more than \$381 million in Capital Improvement Project monies (fiscal years 2016-17), in addition to \$8.5 million for nonprofit organizations via Grant-in-Aid funds. Large sum infrastructure improvements for West Hawaii include:

- \$126 million for KOA airport improvements
- \$55 million for a new Kona **Judiciary Complex**
- \$15 million for Highway 130 repair

Appropriations specific to our community are at right.

Milolii Community Enrichment Historical Center \$800,000

Build and complete the center, with funding granted via the Hawaii County Economic Opportunity Council.

Konawaena High School

\$335,000

Design and construction for lighting system replacement and scoreboards in gymnasium.

Hawaii Community College at Palamanui

\$300,000

Plans, construction and equipment to create additional office space and storage.

Na'alehu Elementary School

\$290,000

Construction to address repair and maintenance campus-wide, including repairing and resurfacing wood hallways.

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\$150,000

Design and construction for walkway lighting.

Kona Pacific Charter School

\$171,000

Kona Historical Society

\$150,000

Victories for Healthcare

University Teaching Hospital; Feasibility Study (HB1700 Budget)

There is growing support for a new University Teaching Hospital at a site near Keahole Airport. This would be a center of excellence with training for primary care specialties such as pediatrics, internal medicine, family practice, psychiatry and obstetrics/ gynecology. It is envisioned as the anchor of an islandwide medical education and medical system. One concrete evidence of support is that \$500,000 has been approved for a feasibility study. I look forward to collaborating with the John A. Burns School of Medicine (JABSOM), the Department of Health and the community on a project that has the potential to bring healthcare on the Big Island to a new greatly improved level.

Sepsis Awareness Day (HCR141/SCR106)

Sepsis is a potentially lethal condition caused by the bodies extreme immunologic reaction to a serious infection. If not recognized early and treated aggressively, it is often fatal. It causes over 200,000 deaths in the United States annually. This resolution that approved September 13 as Sepsis Awareness Day, and the month of September as Sepsis Awareness Month, honors the tireless efforts of former Republican State Senator Fred Rohlfing to promote awareness of the condition that caused the untimely death of his beloved wife Patty Rohlfing.



Hawaii Medical Association's Legislator of the Year

I was honored to be recognized by the Hawaii Medical Association as the 2015 Legislator of the Year. Pictured here is a beautiful koa bowl I was presented for my efforts to support appropriate care statewide for physical and mental illness. Mahalo HMA!

Funds for Vector Control Branch (HB1700 Budget)

Funding for at least 20 additional positions including entomologists in the Vector Control Branch of the Department of Health should help ensure an adequate response to the vector mediated illnesses such as Dengue and Zika.

Hawaii State Hospital (HB1700 Budget)

The Hawaii State Hospital is the place where seriously mentally ill patients often have to turn. It has been overcrowded to the point that it can house only the criminally insane. The new \$160 million building will expand the Hospital's capacity and hopefully provide an additional place of refuge and treatment for some of our non-criminal severely mentally ill patients.

Left: With Ann Bosted prior to a meeting with the Governor's Chief of Staff regarding proposed solar development in Ranchos. Middle: Discussing the new cesspools rules in a feature by Hawaii Public Radio. Right: With Kay Howe, graduate student/researcher focusing on rat lungworm at the Daniel K. Inouye College of Pharmacy.

Works in Progress

Solar Development in Ag Districts (HB2636)

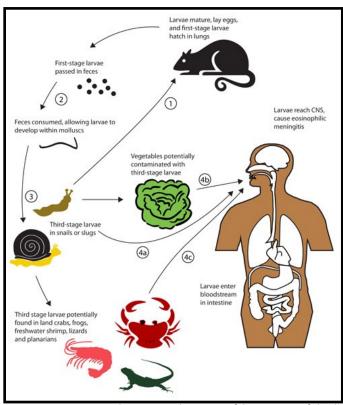
A large company has sought to place a commercial-level solar project throughout Hawaiian Ocean View Ranchos. With community input we crafted a bill to try and stop this project. With the help of a number of legislators including Nicole Lowen, Lorraine Inouye and Clift Tsuji, we were able to fight the bill forward through multiple committees in both houses. It was supported by the full House and Senate, but died on the last day of the session in conference. We hope to bring back a similar measure next year. In the meantime, we have had very productive meetings with the Consumer Advocate Jeffrey Ono and the Governor's Chief of Staff Mike McCartney, spearheaded by the tireless efforts of Ann Bosted, with support from her community team. We are hopeful the PUC will stop this project.

Individual Wastewater Management

In much of the Big Island it is unlikely that there will be sewage systems in the foreseeable future because of the low population density. Individual wastewater systems range from the traditional outhouse to more modern systems such as cesspools, septic systems, modern composting toilets, and new innovative (but expensive) aerobic systems. It is acknowledged that in sensitive areas near the coast and bodies of water or streams, systems such as cesspools should not be allowed, however, due to overflow problems, septic systems have not proven completely better. In March 2016, Governor Ige signed new rules that prohibit the construction of new cesspools. I in partnership with 10 other neighbor island legislators asked the Governor to hold off on approving those rules without further discussion, but that effort was unsuccessful. However, a bill was passed this year (SB2583) which mandates the counties to allow composting toilets, which will offer an inexpensive and environmentally sensitive alternative. With this new legislation I believe that innovatively designed cesspools which act as composting systems (without the need of removing the compost) could be allowed. Homelessness is a major problem and providing a more affordable system could help get people into homes.

Rat Lungworm Disease (HB2223/SB2516)

Rat lungworm disease is an often serious, disabling and sometimes lethal parasitic disease caused in Hawaii by *Angiostrongulus cantonensis*. It is transmitted by a complex cycle involving rats and slugs and snails. The vast majority of cases in the state of Hawaii to date have occurred on Hawaii Island, and in particular the Puna area. The most serious form invades the central nervous system, particularly the brain, and can cause death and severe disability. I worked with Senator Russell Ruderman and other legislators to solicit funding from the legislature for urgent research, lab testing and education initiatives. Dishearteningly we received no funding, but we will continue to fight in the interim and in our next session for this issue that is killing and disabling more and more people each year.



Rat lungworm cycle courtesy of the University of Florida.





Fighting Mosquito-Borne Illnesses

Dengue

As of May 2016 there have been no new cases of dengue on Hawaii Island confirmed since March 17.

It appears this latest outbreak may be over or may soon end. What brought this outbreak, which was recognized in September 2015, and has so far had 264 confirmed cases, to an end, if this is the end?

It is likely that the decreased rainfall during the first 4 months of 2016 was a strong contributing factor. Another factor was the strong involvement of the Hawaii County Civil Defense Agency led by Daryl Oliveira, the Hawaii Department of Health, the Hawaii Dengue/Zika Awareness Facebook group, and the thousands of homeowners who helped to remove mosquito breeding sites around their homes.

We were very fortunate that this outbreak did not cause any deaths, and we should be thankful for that. If there are no new cases, this outbreak is over, but we will be examining what we did to see how we could perhaps improve our response to the almost inevitable next outbreak.

There are four independent serotypes of dengue and an individual can contract all four. While an episode with one serotype is rarely lethal, an infection with a second serotype can be much more serious. This outbreak was caused by Dengue-1 so individuals who were infected should be cautious about going to an area with serotypes 2, 3 or 4. While a vaccine is now available it is not clear what role it will play in the United States. It will probably play a role in limiting the number of cases coming into our country.

Zika

Zika is the name of a virus in the flavivirus family. Other members of that family are the dengue viruses, yellow fever virus, West Nile virus, and Japanese Encephalitis virus. Zika is also classified as an "arbovirus" which is short for arthropod borne viruses. The arthropods of major importance as disease vectors are mosquitoes and ticks. The most historically important of the arthropod spread viruses is the yellow fever virus which had a high mortality in the past, but is now largely controlled by an effective yellow fever vaccine.

Zika virus was first identified in the Zika forest in Uganda,

where it was recovered from the blood of a sentinel primate in 1947. Only rare evidence that the disease could affect humans was accumulated from countries in Africa and Asia. In these early sporadic cases it was observed that Zika was predominantly a very mild disease often with inapparent symptoms. Common symptoms were dengue-like, albeit less severe, and include fever, muscle aches (myalgia), headache, a maculopapular rash, and conjunctivitis.

Zika appeared more of a curiosity than a serious illness, with only a total of 14 cases documented by viral isolation, until the sudden outbreak of an epidemic in the Pacific islands of Yap in 2007. Only 108 confirmed or probable cases were identified, but serological tests done after the epidemic revealed that probably 5,000 of the 6,892 residents of Yap had been infected for an attack rate of over 70%.

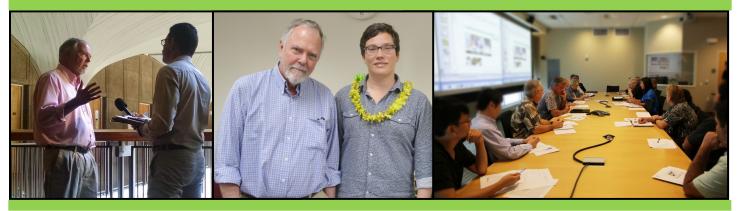
It is apparent from these statistics and findings elsewhere that fewer than 1 in 4 Zika infected individuals will have enough symptoms to even know they have been infected. Thus, it will be very difficult to control an outbreak as cases and potentially infectious individuals cannot be identified reliably.

The suspected mosquito vectors were various species of Aedes mosquitoes. A retrospective study of a 2007 outbreak in Gabon showed that Zika virus was likely transmitted by Aedes albopictus (the tiger mosquito). The likely culprit in Brazil however is thought to be the Aedes aegypti (the yellow fever mosquito).

The Brazil outbreak started in 2014 and is ongoing. Estimates of the numbers of people infected to date (they stopped counting individual cases) are up to 5 million.

Because of these huge numbers they are seeing thousands of cases of a complication that is relatively rare. Microcephaly is evidenced by small head size at birth due to infection of the brain with the Zika virus which has crossed the placenta. There are also eve anomalies and other anomalies, but the virus seems to be neurotrophic and homes in on the brain and continues to replicate in the fetus's brain, even after the virus is cleared from the mother's blood and also from the blood of the fetus. In Brazil it is estimated that 1 out of 100 women who are infected with Zika in the first trimester of their pregnancy will have a fetus or baby with microcephaly.





Left: News interview during the height of the dengue outbreak. Middle: With Dr. Emilie Bess of SpringStar, manufacturer of mosquito ovitraps. I hosted Dr. Bess in a legislative briefing to educate lawmakers on how to best protect and empower their communities from outbreaks. Right: Attending a dengue roundtable discussion at the John A. Burns School of Medicine, organized and facilitated by Congresswoman Tulsi Gabbard.

Other studies, however suggest that fetuses in over 20% of pregnancies can be affected. That huge difference has to be resolved.

Another very worrisome discovery is direct person to person transmission sexually. A number of cases of sexual transmission have now been documented. The virus has been found in the semen of one man over 60 days after he recovered from an acute attack of Zika. The virus has also been found in urine and in saliva. While it is not clear. whether kissing can transmit the disease it seems like a possibility that will need to be further explored.

While the findings in fetuses are extremely disturbing, and while most cases of Zika in children or adults are either inapparent or relatively benign, there have been severe medical problems associated with Zika infections. The most common is Guillan-Barre' syndrome, which is an autoimmune disease directed against the peripheral nervous system. The target may be the nerve axon membrane or the myelin sheath, but an acute paralytic neuropathy develops in both cases. The incidence of Guillan-Barre' syndrome after Zika infection, based on the epidemic in French Polynesia, is 1 per 4,000 or .24 per 1000. There were 42 cases of Guillan-Barre' syndrome in French Polynesia.

There have been rare cases of other neurologic disorders in adults and even rarer deaths due to bleeding disorders.

It seems very unlikely that a Zika virus vaccine will be forthcoming for at least 2 years and it is equally unclear how widely it would be used in the United States.

The most at risk island in this state is Hawaii Island due to its widespread Aedes aegypti. Puerto Rico has had over 600 cases to date and the CDC is estimating that perhaps 25% or 600,000 cases might be possible there, due in part to its high population density. The lower population density on Hawaii Island seemed to be protective during the recent dengue outbreak and it could be hoped that it would also help in a Zika outbreak, but increasing rather than decreasing vigilance will be crucial.

Chikungunya

Chikungunya is a third vector borne disease that deserves some attention. It is an arthropod borne virus (arbovirus) and has as its principle vectors worldwide Aedes mosquitoes, predominantly Aedes aegypti and Aedes albopictus. It is however not a flavivirus, as are dengue and Zika, but is in the genus Alphavirus in the family Togaviridae. It is a positive stranded RNA virus as is dengue and Zika and has a similar size (about 12,000 nucleotides). While there was an outbreak in the Republic of the Marshall Islands in the summer of 2015, there have not been any outbreaks detected in Hawaii.

The nucleic acid PCR test currently used in Hawaii tests simultaneously for dengue, Zika and chikungunya so any outbreaks are likely to be detected.

While in most outbreaks Aedes aegypti was the known or suspected vector, there was a huge outbreak on Reunion Island (250,000 cases in a population of 750,000) in the Indian Ocean in which Aedes albopictus was the vector. A genetic change in the virus was thought to have been responsible for the increased competence of *albopictus*. There were rare deaths in the Reunion outbreak related to encephalitis, more predominant in older patients, and the major sequelae was also predominant in elderly, presenting as a disabling arthritis that persisted for several years.

Chikungunya could be a problem in Hawaii if the Reunion variant came here as it could use *albopictus* as a vector. Oahu, with its dense population of people, and with albopictus could have a large outbreak. As long as the triple test is used any outbreak is likely to be detected quickly.

Mosquito Control

There are two species of mosquito that are present on the Big Island that are thought to be important vectors of dengue and Zika.



Aedes aegypti, also known as the yellow fever mosquito, is a predominantly day-biting mosquito which is very adapted to humans and tends to live in and around dwellings. Aegypti can breed in very small amounts of water and lays its eggs near the water line. It is best controlled by getting rid of breeding sites near houses. An important additional control is using mosquito traps which if used appropriately can reduce mosquito populations by 90%.

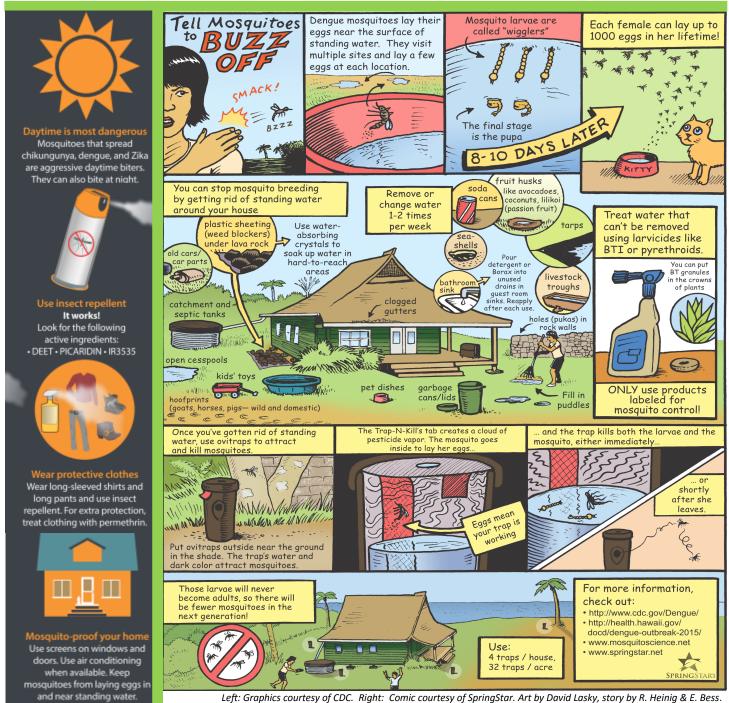
Aedes albopictus, also known as the tiger mosquito, is similar to Aedes aegypti but will also use other animals and birds as blood sources, so it is not as dependent on human sources and can survive in the forest.

Two additional species that are of slight concern are a third daybiting mosquito Aedes japonicas, also known as the rock-pool mosquito, and a night-biting mosquito Culex quinquefasciatus, also known as the southern house mosquito. Culex is certainly a

vector for West Nile virus, which is a flavivirus as is Zika and dengue, and in the laboratory culex can propagate Zika virus, but there is no evidence to date that culex was a factor in the Brazilian Zika outbreak.

The consensus is that *Aedes aegypti* is the vector of principal concern for spread of Zika as well as for dengue, but that albopictus was the principal vector for the 2001 Maui dengue outbreak and is appeared to be responsible for an outbreak of Zika in Gabon. That is important because even if aegypti was eradicated on the Big Island we could still be vulnerable to dengue and likely to Zika outbreaks.

Control of aegypti has been helped by the reduction in breeding sites resulting from the Hawaii Dengue/Zika Awareness Facebook Group and the Department of Health. The mosquito traps made by Springstar and homemade traps likely helped



from page 7.... substantially. It appears most likely that the low rainfall in the first four months of 2016 was perhaps the deciding factor in the dengue outbreak possibly ending.

A similar, smaller, and at the time undocumented outbreak of dengue occurred in 1994 on the Big Island and stopped by 1995 with no control effort. That outbreak was most likely stopped by a markedly lower rainfall in 1995.

Currently there are plans to deploy many thousands of larger (5 gallon) traps in Puerto Rico which Springstar is manufacturing for the CDC. If those traps are successful there, they could be deployed on the Big Island. Two other methods of control are using mosquitoes infected with special strains of a bacteria named Wohlbachia, which has been successful in Australia, or

the use of sterilized or GMO mosquitoes. The use of GMO mosquitoes might not be acceptable for now in Hawaii and tests elsewhere will need to be evaluated. I think that there should be a goal to eradicate *Aedes aegypti* on the Big Island.

I recently attended a presentation on Rat lungworm disease by a number of schools from Hawaii Island. The students had been trapping and collecting slugs and snails in their school gardens. I think a similar effort could be made for mosquitoes and a new project "The Invasive Mosquito Project" has been recently launched which intends to do a national survey of mosquito species using students. We will post more information when available on the Hawaii Dengue/Zika Awareness Facebook Page.

Community Updates

Congrats to Konawaena Girls Basketball!

Congratulations to the Wildcats' Girls
Basketball team for winning a consecutive
State Championship! We are all proud of you
and commend you for your hard work on and
off the court!

No New Moorings at Keauhou Bay

The Department of Land and Natural Resources will no longer pursue increased moorings at Keauhou Bay. After considering public input on the proposal, DLNR will select the "no-action" option in a draft EA for the proposed Keauhou Bay Offshore Moorings project, which would have replaced nine existing offshore moorings with up to 16 new offshore moorings. Big THANK YOU to everyone in the community for attending meetings, submitting comments, and persevering!



With Senator Kaialii Kahele and Councilmember David bringing back the Malolo to Milolii. Kai is following in his father Gil's footsteps successfully and I am honored to work alongside him.



Senator Gil Kahele 1942 - 2016

When I first joined the legislature, there was one person in particular who truly stood out from the crowd; someone who went above and beyond to welcome me to the capitol.

Gil took the time to show me the ropes personally, to talk with me, to mentor me. He was a true friend, and I looked up to him, as I continue to do today.

May we continue to honor this leader who truly embodied aloha by striving for justice, righteousness, generosity, and love in all we do.

Mahalo, Gil. A hui hou.