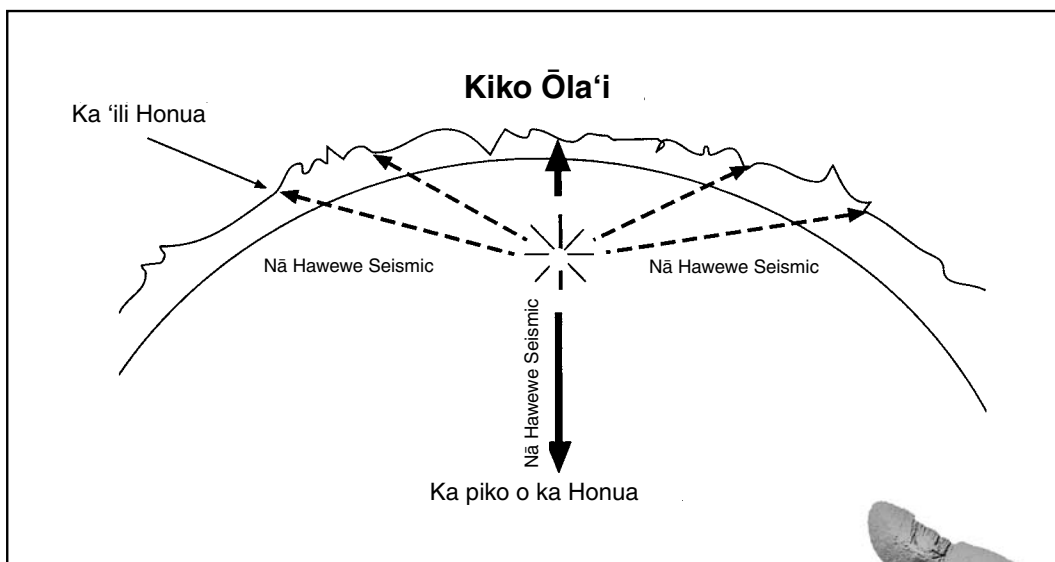


Ke Huli I Ke Kiko Ōla'i

'Ōwehe Laulā:

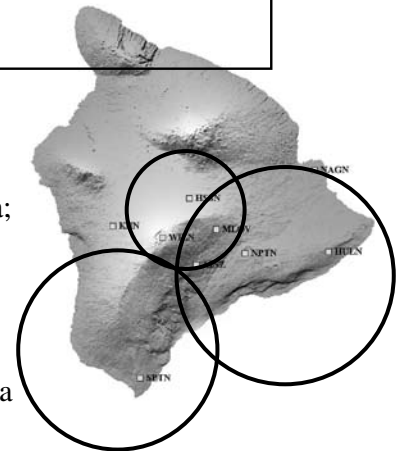
Ho'okumu ka ne'e 'ana o ka pelemaka i loko o ka lua pele i nā ōla'i. Kupu mai nā ōla'i ma lalo o ko ka Honua 'ili honua. Hiki i nā kānaka 'epekema ke huli i ke kiko ōla'i (epicenter) o ke ōla'i e ka huli 'ana i ka mamao o ke kiko ōla'i a me 'ekolu mau (seismometers). 'O ke kiko ōla'i kahi ma ka 'ili honua ma luna pono o ka ho'okumu 'ana o ke ōla'i (e nānā ma ka pakuhi ma lalo nei). Ma kēia ha'awina e ho'ohana ana nā haumāna i ka 'ike mai nā mīkini ōla'i (seismographs) i Hawai'i no ka huli 'ana i ke kiko ōla'i o kekahi ōla'i kokoke i ka lua pele 'o Mauna Loa.



Nā Pahuhopu:

E a'o ana ka haumana:

- e huli i nā mīkini ana ōla'i (seismographs) ma ka palapala 'āina;
- pono 'ekolu mau mīkini ōla'i no ka huli 'ana i ke kiko ōla'i (epicenter) o kekahi ōla'i;
- e heluhelu a ho'ohana i kekahi palapala 'āina pālākiō (map scale); a me
- e ho'ohana i kekahi 'ūpā kāpō'ai a me ka 'ike mai ka mīkini ana ōla'i e huli i ke kiko ōla'i o ke ōla'i.



Nā Pane I Ka Pepa Ha'awina Haumana:

Ka 'Ikepili Kālailai: 1. Aia ka Seismometer AINZ kokoke i ka lua pele 'o Mauna Loa

Ka Hopena: Inā pololei ka 'ikepili i palapala 'ia i nā seismograph 'ekolu, aia ke kiko ōla'i o ke ōla'i ma ka seismometer AINZ kokoke i ka lua pele 'o Mauna Loa. E oko'a ana nā pane 'ē a'e.

- Nā Nīnau Hou A'e: 1. d) Kahi ma ko ka Honua 'ili honua ma luna pono o ke ōla'i i ho'okumu 'ia
2. 'Ekolu a 'oi.
 3. 'A'ole. E 'oko'a ana nā wehewehe.

Ke Huli I Ke Kiko Ōla'i

Nā Pono Ha'awina:

- Ka 'ūpā kāpō'ai (drawing compass) (ho'okahi i nā haumāna pākahi)
- Nā Pepa Ha'awina Haumana: "K Huli I Ke Kiko Ōla'i"

Ke Ka'ina Hana Ha'awina:

1. E ho'omaka i kēia ha'awina me ka wehewehe 'ana i ka ho'onui 'ana o ka nupa pelemaka i loko o ka lua pele ma muli o kēia, 'owā ka honua puni o ka nupa pelemaka a laila ho'okumu i mau kuekueni i kapa 'ia nā ōla'i. Hiki i kēia mau ōla'i ke lūlū i ka honua, 'o ia nō ke kumu no ka hāne'e 'ana i nā hale, a hiki nō ke ho'omaka i nā pō'ino 'ē a'e e like me nā hāne'e mauna, ke kai e'e, a me nā 'āholo. Ho'ohana nā kākāka'e epekema i kēia 'ike i palapala 'ia e nā (seismometers) e huli i ke kiko ōla'i o ke ōla'i. 'O ke kiko ōla'i kahi ma ka 'ili honua ma luna pono o ka ho'okumu 'ana o ke ōla'i.
2. E kāka'ahi i nā 'ūpā kāpō'ai (compass) a me nā Pepa Ha'awin Haumana: "Ke Huli I Ke Kiko Ōla'i." E noi i nā haumāna e heluhelu a kūkākūkā i Ka Nīnau Ho'ā'o a me Ka 'Ike Hou A'e. E noi i nā haumāna e ho'okō i ka māhele kuhiakau ma ka pepa ha'awina ma mua o ka ho'ohana 'ana i nā 'ūpā kāpō'ai. E ho'oma'ama'a i nā ka'ina hana me nā haumāna a hō'ike pehea e huli ai i ke kahahānai (radius) o ka 'ūpā kāpō'ai. Pono e ho'ololi i ka mamao mawaena o ka penikala a me ka mea 'oi'oi no ka huli 'ana i ke kahahānai.
3. E noi i nā haumāna e ho'okō i nā Pepa Ha'awina Haumana: "E Huli I Ke Kiko Ōla'i." E ho'omaopopo iā lākou e pane i nā nīnau ma ka 'ao'ao hope loa.
4. Ke pau nā haumāna a pau i ka ha'awina e noi i nā haumāna 'o ka wahi hea ke kiko ōla'i.
5. Pono nā haumāna a pau e wehewehe aia ke kiko ōla'i ma ka 'ao'ao o ka seismometer AINZ.



Cultural Tie

`Ope`ape`a, or the Hawaiian bat, is the only terrestrial mammal native to Hawai'i. Bats, as well as dolphins and whales, use echo location to navigate and find food. They send out high-pitched sounds that bounce off objects, creating an echo that returns to the bat. Bats can detect the shape, size and location of objects with great accuracy.

Ke Huli I Ke Kiko Ōla'i

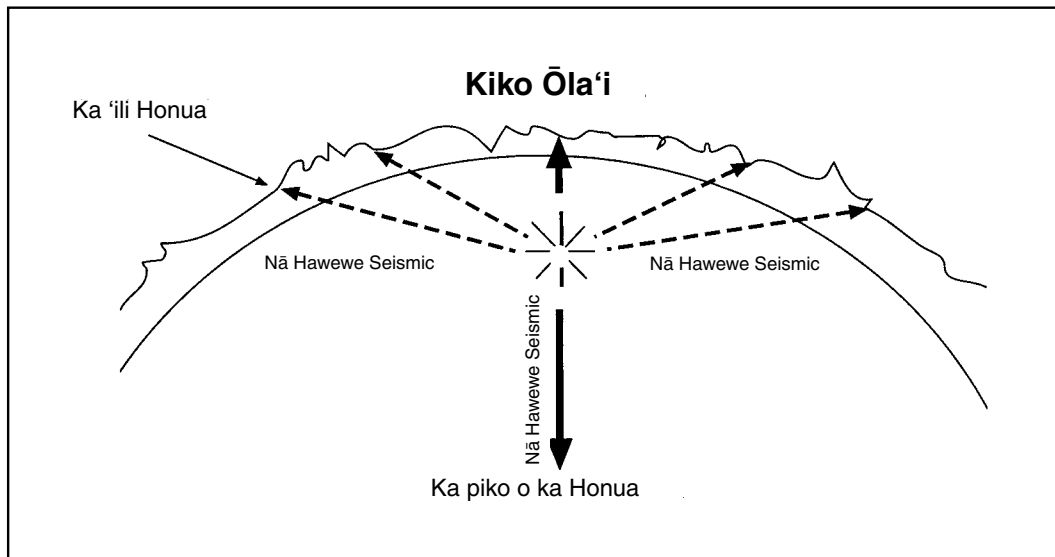
Ka Nīnau Ho'ā'o:

Eia na'e ka 'ikepili seismic, aia i hea ke kiko ōla'i o ke ōla'i?

Ka Wahi Seismograph I Hawai'i	Ka Mamao Mai Ka Wahi Seismograph I Ke Kiko Ōla'i
Humu'ula Sheep Station (HSSN)	26 km
South Point (SPTN)	47 km
Heiheiahula (HULN)	53 km

Ka 'Ike Hou A'e:

Hiki i nā kānaka 'epekema ke ho'ohana i nā hawewe P a me nā hawewe S e huli i ka mamao i ke kiko ōla'i o kekahi ōla'i. O ke kiko ōla'i kahi ma ka 'ili honua ma luna pono o ka ho'okumu 'ana o ke ōla'i (e nānā ma ka pakuhi ma lalo nei).



No ka huli 'ana o ke kiko ōla'i o kekahi ōla'i, pono nā kānaka 'epekema e 'ike i ke kumu o nā hawewe P a me nā hawewe S i palapala 'ia ma kekahi seismograph. Hō'ike kēia pakuhi i nā mamao o ke kiko ōla'i i palapala 'ia e nā seismometers 'ekolu i Hawai'i.

Ke Kuhiakau:

1. E ho'okō ke kuhiakau ma lalo nei.

Inā pololei ka 'ikepili i palapala 'ia i nā seismograph 'ekolu, aia ke kiko ōla'i o kekahi ōla'i ma ka _____.

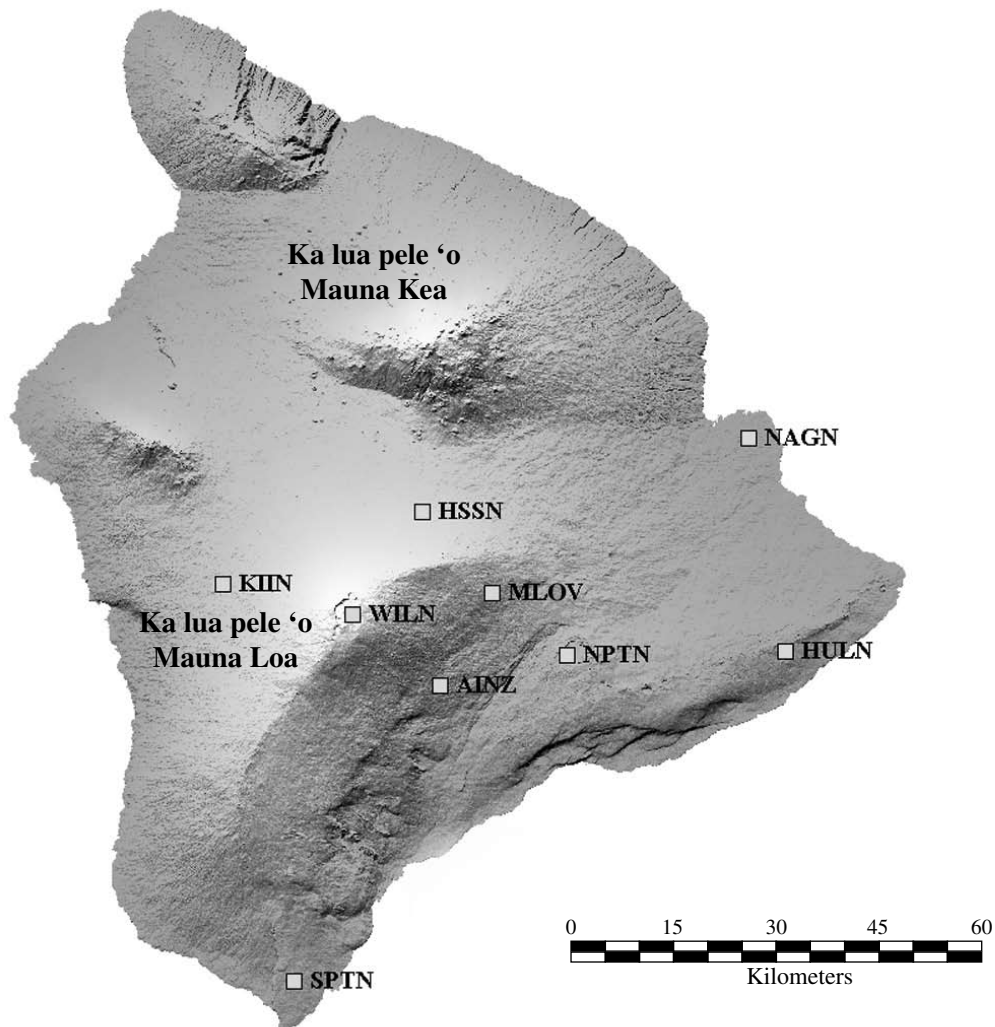
Ke Huli I Ke Kiko Ōla'i

Kā Pono Ha'awina:

Ka 'ūpā kāpō'ai (drawing compass)

Ke Ka'ina Hana Ha'awina:

1. E ho'ohana i ka palapala 'āina pālākiō (map scale) e pa'a i ke kahahānai o ka 'ūpā kāpō'ai. E ho'olikelike ka mamao mai ka Seismometer HSSN i ke kiko ōla'i. Aia kēia 'ike o ka mamao ma ka 'ao'ao mua i ka pakuhi.
2. Ma hope o ka pa'a 'ana o ke kahahānai o ka 'ūpā kāpō'ai, e kau ka 'ūpā kāpō'ai mea 'oi'oi ma ka huinahālike kahi e hō'ike i ka Seismometer HSSN. E kahaki'i i ka pō'aiapuni o ka Seismometer HSSN.
3. E hana hou i nā anu'u 1 a me 2 no ka Seismometer SPTN a me ka Seismometer HULN.
4. Ke pau i kēia ha'awina, pono 'ekolu mau pō'ai i kahaki'i 'ia ma kou palapala 'āina, ho'okahi pō'ai puni i nā seismometer pākahi. 'O ke kiko ōla'i o kekahi ōla'i kahi e hui pū nā pō'ai 'ekolu.



Ke Huli I Ke Kiko Ōla'i

Ka 'Ikepili Kālailai:

1. Ma hea e hui pū 'ai nā pō'ai 'ekolu ma ka palapala 'āina?

Ka Hopena:

E kākau i kou hopena ma ke 'ano he hōpuna 'ōlelo ma nā laina ma lalo nei.

E hō'ōia a hō'ōia 'ole 'ia kou kuhiakau? E wehewehe i kou pane.

Nā Nīnau Hou A'e:

1. He aha lā ho'i ke kiko ōla'i o kekahi ōla'i?
- a) Kahi o ka (seismometer) e palapala mua i ko ka ōla'i mau hawewe P.
 - b) Kahi o ka (seismometer) e palapala mua i ko ka ōla'i mau hawewe S.
 - c) Kahi i loko loa o ka pāpa'a Honua i ho'okumu ka ōla'i.
 - d) Kahi o ko ka Honua 'ili honua ma luna pono o ka ho'okumu 'ana o kekahi ōla'i.
2. 'Ehia mau (seismometers) a me nā mamao kiko ōla'i e pono ai no ka huli 'ana o ke kiko ōla'i o kekahi ōla'i? _____
3. Ho'okumu nā lua pele i nā ōla'i i nā manawa a pau? Pehea 'oe e 'ike ai?
