

IMPACT #13 BAT-HARVESTER INTERACTION

SUPPLEMENTARY SITE CHARACTERIZATION

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GENERAL SITE INFORMATION

Local Site Name: <u>Tan Lap Comm., Huu Lung Distr., Lang Son province</u>	PREDICT Site Name: <u>W-Bac Giang Lang Son - Huu Lung</u>	Alternate Site Name:
Survey Date (YYYY-MM-DD): <u>2018-12-28</u>	Surveyor(s): <u>P. Pham T. Bich Ngoc, Nguyen Van Long</u>	
Start Time (hh-mm): <u>09:10</u>	End Time (hh-mm): <u>09:30</u>	
Site Latitude (degrees-decimal min):	Site Longitude (degrees-decimal min):	GPS Uncertainty (degrees-decimal min): <u>21, 59.13 : 106, 21.90</u>
Site Type (circle one): <input checked="" type="radio"/> Cave <input type="radio"/> Farm <input type="radio"/> Other	Is Site Access Controlled? (circle one): <input checked="" type="radio"/> Yes <input type="radio"/> No If yes, what kind? (circle one): <input checked="" type="radio"/> Fenced <input type="radio"/> Permit <input checked="" type="radio"/> Other: <u>Metal gate</u>	
Farm Site Only: A) What kind of tree(s) do bats roost in? <ul style="list-style-type: none"> • _____ • _____ • _____ B) Is an artificial roost present in trees? (circle one) <input type="radio"/> Yes <input type="radio"/> No	Cave Site Only: Height of the cave at entrance: <u>20</u> m Height of the cave at harvesting area: <u>50-150</u> m To what degree does light penetrate cave to guano area? (select one) <input type="checkbox"/> 0 – 20% <input checked="" type="checkbox"/> 21 – 50% <input type="checkbox"/> 51 – 80% <input type="checkbox"/> 81 – 100% To what extent does water cover the cave area? (select one) <input checked="" type="checkbox"/> Little to none (0-20%) <input type="checkbox"/> Some (21-50%) <input type="checkbox"/> Most or all (51-100%) What is the ease of navigation into the cave? (select one) <input type="checkbox"/> Walk in, open area <input type="checkbox"/> Some difficulty walking, lower parts requiring ducking <input checked="" type="checkbox"/> <u>There is a man-made entrance</u> <input type="checkbox"/> Difficulty navigating, crawling required	
Approximate Area of Guano-Covered Area (select one): <input type="checkbox"/> < 50 m ² <input type="checkbox"/> 50 – 100 m ² <input type="checkbox"/> 100 – 500 m ² <input type="checkbox"/> > 500 m ² Approximate Depth of Guano-Covered Area (select one): <input type="checkbox"/> < 5 cm <input type="checkbox"/> 6 – 10 cm <input type="checkbox"/> 11 – 30 cm <input type="checkbox"/> 30 cm	Are bats present when guano is being harvested? (circle one) <input type="radio"/> Yes <input type="radio"/> No	
Approximate Size of Bat Roost (select one): <input type="checkbox"/> < 50 <input type="checkbox"/> 51 - 200 <input checked="" type="checkbox"/> 201- 1,000 <input type="checkbox"/> > 1,000 (specify <u>m²</u>)		

HARVESTER INFORMATION

Number of Harvesters: <u>>10 (upto 30 harvesters)</u>	Number of Non-Harvesters in Guano Exposure Area (check all that apply, #)
Approximate Age Range (yrs): <u>30-60</u>	

Origin of Harvesters (check all that apply, #) <input checked="" type="checkbox"/> Local <u>>10</u> (all) <input type="checkbox"/> Seasonal _____ <input type="checkbox"/> Other (origin: _____, number: _____)	<input checked="" type="checkbox"/> Children <u>unknown < students from local</u> <input checked="" type="checkbox"/> Locals <u>>2</u> (mostly young adults) <input type="checkbox"/> Tourists _____ <input checked="" type="checkbox"/> Other <u>visitors from outside</u>												
Duration of Time Harvester Spends in Guano Exposure Area (estimate of range, minutes per person): Low: _____ minutes Typical: <u>300</u> minutes High: <u>360</u> minutes	Duration of Active Harvesting (estimate of range, minutes per person): Low: _____ minutes Typical: <u>180</u> minutes High: <u>300</u> minutes												
Frequency of Harvesting (select one): <input checked="" type="checkbox"/> Daily <input type="checkbox"/> Weekly (____ times per week) <input type="checkbox"/> Monthly (____ times per month) <input type="checkbox"/> Annually (____ times per year) <input type="checkbox"/> Holidays only Per Person (Low / typical / high) Once every ____ / ____ / ____ (days/weeks/month)	During which months is guano harvested? (select all that apply) <input checked="" type="checkbox"/> Jan. <input checked="" type="checkbox"/> Feb. <input checked="" type="checkbox"/> Mar. <input checked="" type="checkbox"/> Apr. <input checked="" type="checkbox"/> May <input checked="" type="checkbox"/> Jun. <input checked="" type="checkbox"/> Jul. <input checked="" type="checkbox"/> Aug. <input checked="" type="checkbox"/> Sep. <input checked="" type="checkbox"/> Oct. <input checked="" type="checkbox"/> Nov. <input checked="" type="checkbox"/> Dec. <u>✓: the peak harvesting months</u> Season of Harvest (select all that apply) <input checked="" type="checkbox"/> Wet <input checked="" type="checkbox"/> Dry <input type="checkbox"/> Shoulder Are there limitations to guano harvesting? (select all that apply) <input checked="" type="checkbox"/> Bat migration elsewhere <u>in some period of the year</u> <input type="checkbox"/> High water levels <input type="checkbox"/> Other <u>local people often hunt bats without permission</u> <u>it's difficult to have vest the guano on the cave</u>												
Method of Collection (select all that apply): <input checked="" type="checkbox"/> Shoveling <input checked="" type="checkbox"/> Sweeping <input type="checkbox"/> Use of hands only <input type="checkbox"/> Other: _____	List of Activities around Site (select all that apply): <u>steep walls</u> <table style="width: 100%;"> <tr> <td><input checked="" type="checkbox"/> Harvesting</td> <td><input checked="" type="checkbox"/> within guano exposure area</td> </tr> <tr> <td><input checked="" type="checkbox"/> Packaging</td> <td><input checked="" type="checkbox"/> within guano exposure area</td> </tr> <tr> <td><input checked="" type="checkbox"/> Storing</td> <td><input checked="" type="checkbox"/> within guano exposure area</td> </tr> <tr> <td><input checked="" type="checkbox"/> Selling</td> <td><input checked="" type="checkbox"/> within guano exposure area</td> </tr> <tr> <td><input type="checkbox"/> Drying</td> <td><input type="checkbox"/> within guano exposure area</td> </tr> <tr> <td><input type="checkbox"/> Other</td> <td><input type="checkbox"/> within guano exposure area</td> </tr> </table>	<input checked="" type="checkbox"/> Harvesting	<input checked="" type="checkbox"/> within guano exposure area	<input checked="" type="checkbox"/> Packaging	<input checked="" type="checkbox"/> within guano exposure area	<input checked="" type="checkbox"/> Storing	<input checked="" type="checkbox"/> within guano exposure area	<input checked="" type="checkbox"/> Selling	<input checked="" type="checkbox"/> within guano exposure area	<input type="checkbox"/> Drying	<input type="checkbox"/> within guano exposure area	<input type="checkbox"/> Other	<input type="checkbox"/> within guano exposure area
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<input type="checkbox"/> Drying	<input type="checkbox"/> within guano exposure area												
<input type="checkbox"/> Other	<input type="checkbox"/> within guano exposure area												

GUANO INFORMATION

How much guano is being collected per person? (select / fill in one of the following):

☐ _____ kilograms per _____ (day/week/month)

☒ 4-5 bags per day (day/week/month). Approximate size of bags 20 (L/other kg)

☐ Other measurement: _____

How much guano is being collected overall, estimate? (total at site, select / fill in one of the following):

☒ 3000 kilograms per year (day/week/month)

☒ 40 bags per day (day/week/month). Approximate size of bags 20 (L/other kg)
(in the peak harvesting season)

☐ Other measurement: _____

Is guano fresh or dry at time of collection? (circle one) Fresh Dry <u>(Mixed): Fresh and Dry</u>	Approximate Bat Species Contribution of Guano (species, %) <ul style="list-style-type: none"> • <u>Cynopterus sp.</u> _____, <u>20</u> % • <u>Pipistrellus sp.</u> _____, <u>10</u> % • <u>Taio</u> _____, <u>10</u> % • <u>migrating bats</u> _____, <u>60</u> % • _____, _____ %
Guano Usage (select all that apply): <input checked="" type="checkbox"/> Own use <input checked="" type="checkbox"/> Storage on-site <input checked="" type="checkbox"/> Selling for local use <input checked="" type="checkbox"/> Selling for non-local use <input type="checkbox"/> Processing <input checked="" type="checkbox"/> Packaging to sell off-site Notes (e.g. where guano is sold to, if guano is sold directly, livestock grazing on guano-fed crops, etc.): <u>They're mostly selling the guano for</u>	

bonsai tree farms or decorative tree farms/owners

• _____, _____ %

PROTECTIVE PRACTICES AND EQUIPMENT

How many harvesters are wearing some form of Personal Protective Equipment (PPE)?

(select all that apply / number of harvesters at time of observation /

% range estimates of harvester population wearing PPE at low, typical, and high ends):

	Number of Harvesters	low (%)	typical (%)	high (%)
Gloves	<u>>10</u>	<u>30</u>	<u>45</u>	<u>100</u>
Mask	<u>>5</u>	<u>30</u>	<u>45</u>	<u>25</u>
Makeshift mask made of cloth	<u> </u>	<u> </u>	<u> </u>	<u> </u>
Goggles	<u> </u>	<u> </u>	<u> </u>	<u> </u>
Shoes	<u>>10</u>	<u> </u>	<u> </u>	<u>100</u>
Clothing specifically for harvesting	<u>>10</u>	<u>0</u>	<u> </u>	<u>100</u>
Other (specify): <u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>

Are any of the following practices observed?

(check all that apply, # of harvesters,

% estimates of total population low, typical, high):

	#	low	typ.	high
<input type="checkbox"/> Washing of shoes afterwards	<u> </u>	<u> </u> %	<u> </u> %	<u> </u> %
<input type="checkbox"/> Washing of feet afterwards	<u> </u>	<u> </u> %	<u> </u> %	<u> </u> %
<input type="checkbox"/> Washing of hands afterwards	<u> </u>	<u> </u> %	<u> </u> %	<u> </u> %
<input checked="" type="checkbox"/> Washing of body afterwards	<u> </u>	<u> </u> %	<u> </u> %	<u> </u> %
<input type="checkbox"/> Other <u> </u>	<u> </u>	<u> </u> %	<u> </u> %	<u> </u> %

Are any of the following tools used?

(check all that apply, # of harvesters,

% estimates of total population low, average, high):

	#	low	typ.	high
<input checked="" type="checkbox"/> Shovels	<u>>10</u>	<u> </u> %	<u> </u> %	<u>100</u> %
<input checked="" type="checkbox"/> Spades	<u>>10</u>	<u> </u> %	<u> </u> %	<u>100</u> %
<input checked="" type="checkbox"/> Brooms	<u>>10</u>	<u> </u> %	<u> </u> %	<u>100</u> %
<input type="checkbox"/> Hands only	<u> </u>	<u> </u> %	<u> </u> %	<u> </u> %
<input type="checkbox"/> Other <u> </u>	<u> </u>	<u> </u> %	<u> </u> %	<u> </u> %

Availability of clean water for washing? (circle one):

Yes

No

Observed number of harvesters washing: 0

Estimate of all harvesters washing (% range):

Low (%) Typical (%) High (%) 100

Availability of soap for washing? (circle one):

Yes

No

Observed number of harvesters using soap: 0

Estimate of all harvesters using soap (% range):

Low (%) Typical (%) High (%) unknown

Is footwear restricted due to religion? (circle one): Yes

No

OTHER COMMENTS, GENERAL OBSERVATIONS, PHOTOS

1. The cave has 2 entrances: the upper entrance for bats only
the lower entrance with metal gates
2. The peak harvesting season lasts around 6/12 months, but the harvesters still can harvest the guano everyday due to the guano left over on the cave wall

3. The guano mostly comes from the migrating bats. The guano from local bats is sticky and wet, so it's hard to be harvested.

4. The harvesters usually take a bath in near by streams after harvesting

5. There are 5 main bat species in the cave:

- the migrating bats, up to 60% population.
 - the fruit eating bats: *Cynopterus* sp.
 - the mosquitoes eating bats: *Pipistrellus* sp.
 - *Laio*
- local bats {