



The waste problem in the forests of Mount Takao

BWS Survey

18th January 2023

MGGE7850: Economic Valuation of The Natural Environment

Professor Tsuge

Michael Murawski, Group Forest 1

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Survey Site



Mount Takao (高尾山)

- 3 million visitors per year *(increasing)*
- 1,500 unique plant species
- 1.5 hours from Yotsuya Station
- National Park with 7 hiking trails



Survey Site



Mount Takao (高尾山)

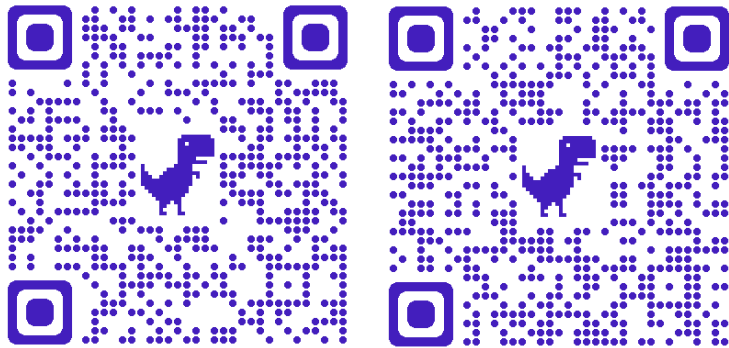
- 3 million visitors per year *(increasing)*
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- 1.5 hours from Yotsuya Station
- National Park with 7 hiking trails



"There is a limit to how much volunteers can do" - Mount Takao Base Camp Interviewees

Survey Methodology (1)

- 5-year time frame (2018 – 2022)
- 2nd Jan – 10th Jan 2023
- Min. 40 data points per participant
- Best-Worst Scaling (BIBD Design)



Mount Takao Waste Survey
(English)

高尾山廃棄物調査
(日本語)



Behavioral
Questions



Best-Worst
Scaling

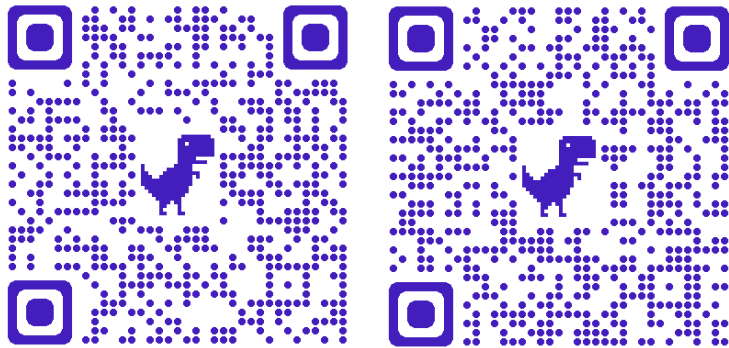


Survey-taker
background

	Questions	Variable	Measurement
1	How many times have you visited Mount Takao within the last five years?	General	Numerical
2	Did you purchase any food or drinks before your hike(s)?	Individual Behavior	Binary
3	Throughout the hike, how much waste were you carrying with you?	Individual Behavior	Multiple Choice
4	Did you want to dispose of your trash at Mount Takao directly or take it home?	Individual Behavior	Binary
4.1	Assuming you intended to take your trash home, were you less motivated to make purchases knowing you will be carrying the waste for a longer period of time?	Individual Behavior	Binary
4.2	Assuming you intended to dispose of your waste locally, could you find trash cans?	Individual Behavior	Binary
4.3	Assuming you intended to dispose of your waste, does a guide or map detailing the nearest disposal locations motivate you to carry your waste to the next trash can?	Individual Behavior	Binary
4.4	Assuming you intended to dispose of your waste, do you think more opportunities to dispose of trash will be useful to visitors?	Individual Behavior	Binary
5	During your hike, did you see litter on the ground?	Waste experience	Binary
5.1	If yes, please specify the quantity	Waste experience	Multiple Choice
6	Does the amount of waste at Mt. Takao negatively impact your experience?	Behavioral change	Binary
7	Would you be motivated to clean up existing trash left on the ground if you knew the next disposal opportunity was nearby?	Behavioral change	Binary
7.1	If yes, how often?	Behavioral change	Numerical
8	Would you be motivated to clean up other existing waste on the mountain for a discount at local stores?	Behavioral change	Binary
9	Would a reward or compensation motivate you to dispose of your trash properly?	Behavioral change	Binary

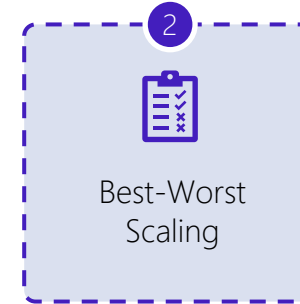
Survey Methodology (1)

- 5-year time frame (2018 – 2022)
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Mount Takao Waste Survey
(English)

高尾山廃棄物調査
(日本語)



	Questions	Variable	Measurement
1	How many times have you visited Mount Takao within the last five years?	General	Numerical
2	Did you purchase any food or drinks before your hike(s)?	Individual Behavior	Binary
10	What is your gender? Please select the appropriate answer	Gender	Multiple Choice
11	What is your country of origin?	Origin	Textual
12	Which age range do you belong to? Please select the appropriate answer	Age	Multiple Choice
13	Please select your highest completed educational achievement	Education	Multiple Choice
14	Do you currently pursue a job?	Occupation	Multiple Choice
15	What is your gross annual income? Please select one of the following ranges	Income	Multiple Choice
16	Please insert the name of the city or town you currently reside in and the number of years or months that you have been staying there	Geography	Textual Numerical
17	Do you regularly engage in one or more of any of these free time activities?	Hobby	Multiple Selection
18	Did you participate in any kind of environmental volunteer activities during the last five years?	Volunteer	Binary
18.1	How many days per year do you participate in those volunteer activities? Please insert a numerical value only (e.g., 4 in case of 4 days)	VolunteerTime	Numerical
19	Did you make any monetary contribution to any environmental volunteer activities during the last five years?	Contribution	Binary
19.1	How high were your monetary contributions to environmental volunteer activities during the last five years? discount at local stores?	ContributionAmount	Textual Numerical
9	Would a reward or compensation motivate you to dispose of your trash properly?	Behavioral change	Binary

Survey Methodology (2)



Best-Worst Scaling



Increase number of rubbish bins



Take-waste-home campaign



Provision of waste maps



Waste backpack system



Professional mountain waste collector



Camera-based monitoring



Collectibles

1. Please select your (most) favourite and least favourite answer. *

Take-waste-home camp... Camera-based monitori... Waste backpack system

Most Favourite

☐☐☐

Least Favourite

☐☐☐

...

7. Please select your (most) favourite and least favourite answer. *

Professional mountain ... Provision of waste maps Camera-based monitori...

Most Favourite

☐☐☐

Least Favourite

☐☐☐

Classic BWS
Pre-set replies

BIBD Design
7x iterations
à 3 options

Survey Process



Snowball sampling



Instagram

Direct Messages,
Story Postings
Re-sharing



Line

Direct Messages
Group Messages



E-Mail

Personal contacts



Facebook

Direct Messages
Group Messages



Messenger

Direct Messages
Group Messages

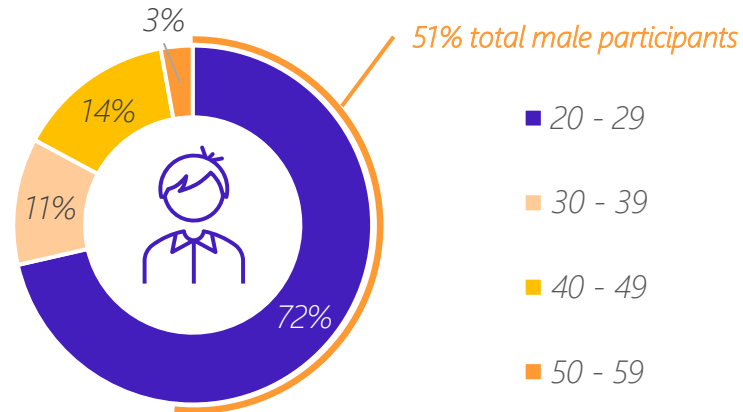


WhatsApp

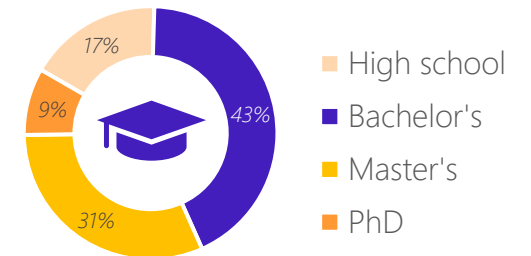
Direct Messages
Group Messages
Story Posting

Respondent Structure (N = 35)

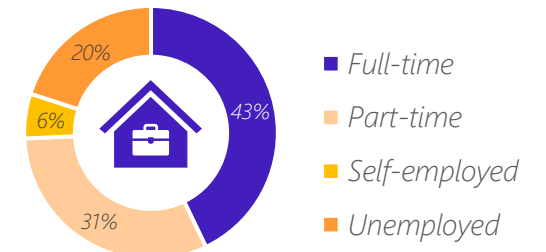
Respondents by age



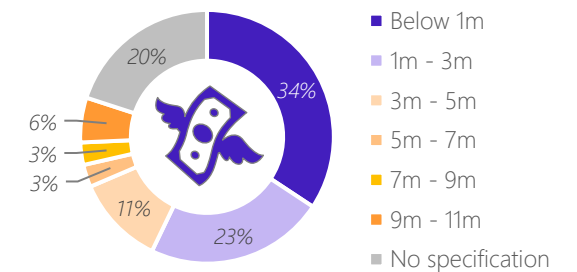
Education



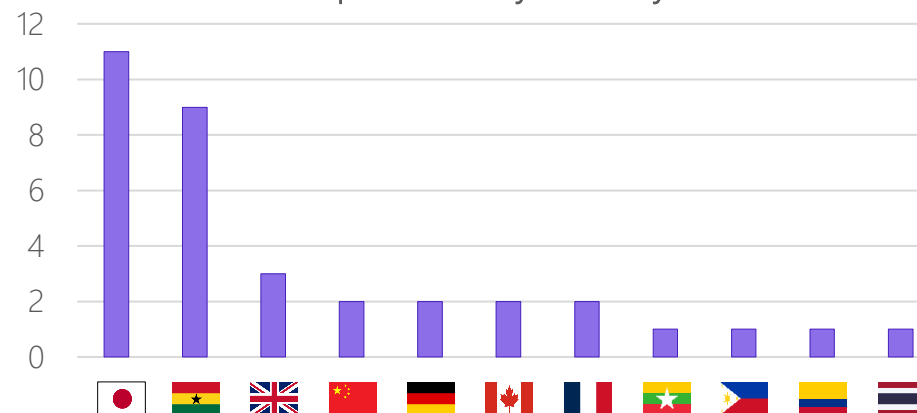
Occupation



Annual Salary (in JPYm)



Respondents by Country



Results

0.37

visits per year

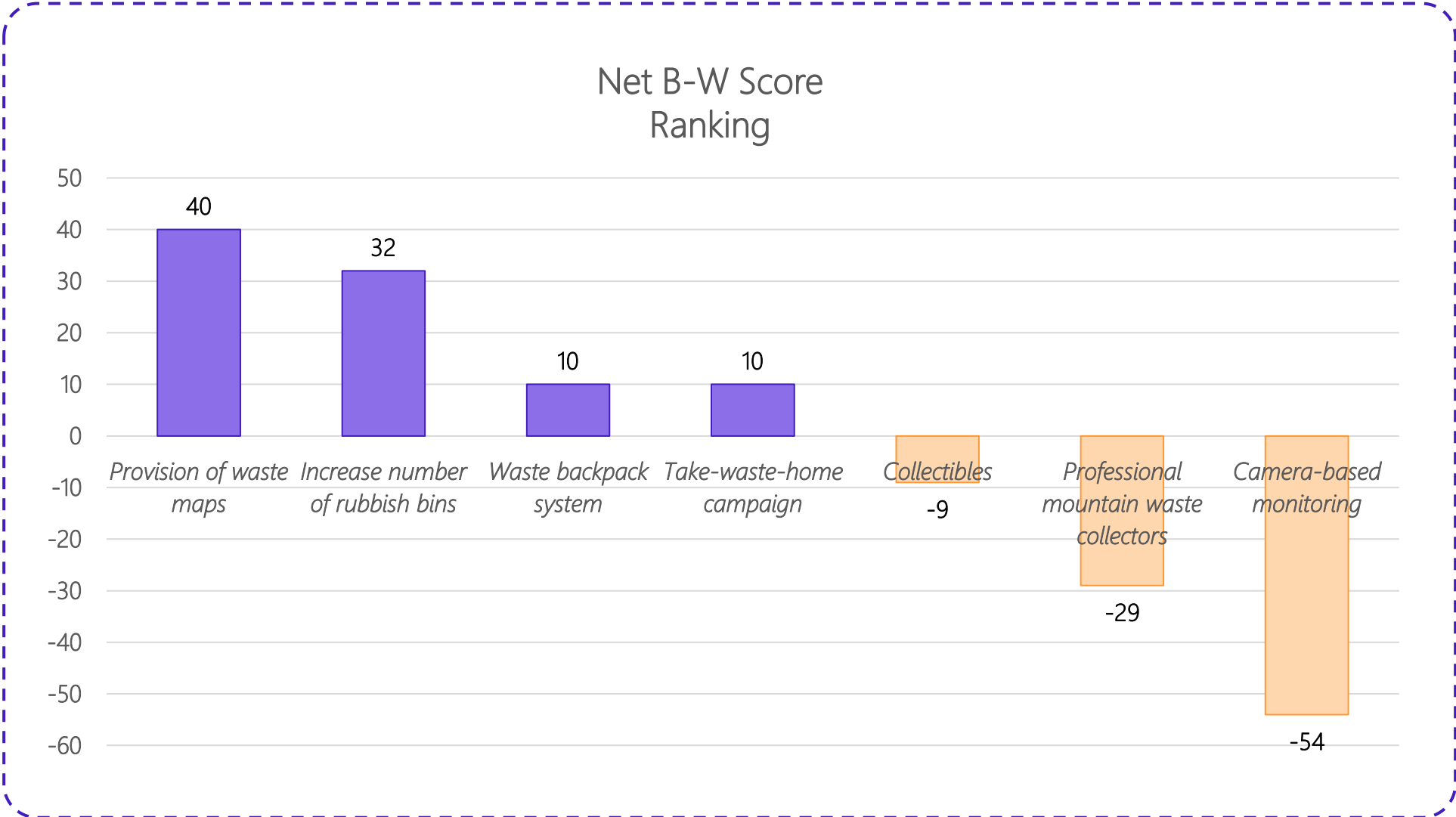
60%

witness waste

only 40%
affected negatively

46%

take waste home



Results

0.37

visits per year

60%

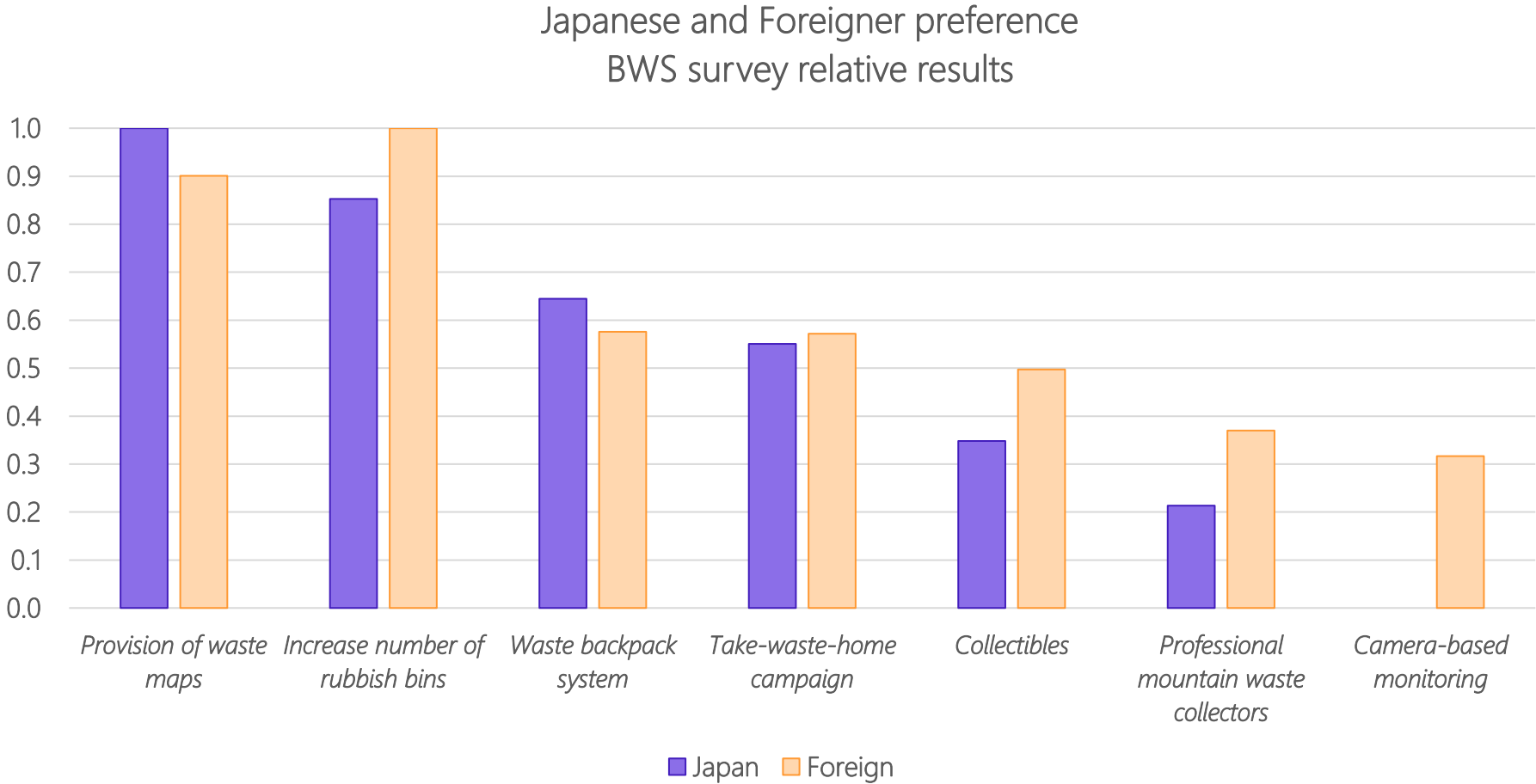
witness waste

only 40%

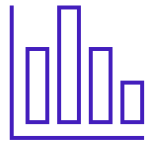
affected negatively

46%

take waste home



Conclusion



Take-Away's

- Exploratory results indicate expected cultural differences
- Yet significant similarity in sub-set results
- High rate of first-time visitors and foreigners



Limitations

- Limited sample diversification and small size
- Interpretation restricted

2023年2月「第141回高尾山GREEN CLEAN作戦」蛇滝～吊り橋コース

開催日

2023.02.04(土)

開催時間

08:40～15:20

集合場所

高尾駅北口
地図を見る

開催概要

毎月第一土曜日に月替り異なるコースで高尾山に上り、午前中は自然観察、午後は高尾山頂や登山道に落ちているゴミを拾います。2月は「蛇滝～吊り橋」コース：高尾駅北口→バス→駒木野バス停→小仏川遊歩道→蛇滝～4号路（吊り橋）～もみじ台→高尾山頂～1号路→高尾山口駅です。冬の山についている高尾山は上り山頂からの景色を楽しみ、東京湾にそそぐ多摩川源流域のゴミを拾います。



高尾山「蛇滝～吊り橋」コース

Karte Satellite

開催場所

高尾山「蛇滝～吊り橋」コース

集合時間

08:40

参加費

500円

事前予約

必要です:2023/1/9以降申込みフォーム
<https://ssl.form-mailer.jp/fms/06a3e529695620>

雨天の場合

決行

持参するもの

屋敷、飲み物、防寒着、雨具、常備薬、保険証、感染予防品、トング

ホームページ

<http://www.forest-tokyo.org/>

備考

高尾駅北口8:40集合です。北口を出た所で参加受付（参加費支払い、資料配布）、受付後8:32発、8:52発小仏行きバスに分乗します。駒木野バス停で下車し、小仏関所跡公園で開会式を行い、7～8名の班に分かれて出発します。小仏川遊歩道から蛇滝、吊り橋のある4号路を渡ってもみじ台まで登って屋敷です。屋敷後高尾山頂や登山道に落ちているゴミを拾いながら高尾山口駅まで下ります。

小雨決行です。本格的な雨や雪（降水量1mm/時を超える）の子供時及び登山道に積雪がある時は中止で、前日夕方に参加申込書に連絡します。

募集は40名程度で、出発後は班等の団体行動です。（森林インストラクター東京会、高尾山GREEN CLEAN作戦担当 横田幹夫）

問い合わせ

当イベントに関するお問い合わせは以下の開催団体ページよりお願いします

開催団体

FIT 高尾山グリーンクリーン作戦



<https://blueshipjapan.com/event/12300>

Sources:

Page 1

<https://pixabay.com/photos/mt-fuji-japan-mt-takao-mount-takao-4751462/>

Page 3

Map excerpt from G

<https://alco-group.co.jp/>

<https://www.gotokyo.or.jp/>

<https://www.ces-net.org/>

<https://jac1.or.jp/info/>

Page 6

https://en.wikipedia.org/wiki/Mount_Takao

Page 8

<https://blueshipjapan.com/>

Thank you for your attention!

Any comment, question or criticism would be
highly appreciated!