

# Super Science High school Onuma Environmental Research

~Preparation classes~

A cross-curriculum class among biology, world history and English communication

**Aim** Before students visit Onuma, they will learn about Onuma while they study each subject and become motivated to learn.

**Students** 240 1<sup>st</sup> grade students

**Period** June 8<sup>th</sup> – June 22<sup>nd</sup>

**Teacher** Biology: Junji SEKIZAKI World history: Koji OMURA • Takashi KOMATSUZAKI  
English communication: Asuka KOSHIMIZU • Hiroshi TSURUKI • Keisuke KIMURA

<Biology>

## ●Contents

<Various creatures and ecosystems>

### 1. Various vegetation and transitions

- Various vegetation around us
- Forest vegetation's layered structure and various light environment
- Deciduous and evergreen trees
- The relationship between vegetation and soil

### 2. Vegetation's transition

- The first transition
- Vegetation's mechanism
- Climax
- The second transition

<Biomes and their distribution>

### 1. Climate and biomes

### 2. Land biomes

- Climate factors
- Japanese biomes

<Ecosystems and preservation>

### 1. The ecosystem and energy flow

- Ecosystem's structure
- Generating thermal energy by biogenic
- Energy flowing through the ecosystems

### 2. Substance's circulation in the ecosystem

- Carbon's circulation
- Nitrogen's circulation
- Lakes' and ponds' eutrophication



## <World History>

### ●Content

1. Geographical learning: Onuma's formative process
  - Mt. Komagatake's eruption and a dammed lake
2. The origin of places names
3. Historical learning: Introduction of Onuma sources
  - Ezo traveler's journal and Ezo diary
  - Takeshiro MATSUURA's achievement
4. Civics: The establishment of Ramsar Convention
  - Ramsar Convention
  - The present situation of Onuma's industrial development and environmental problems
5. Geographical learning: Nanae's industry and Gaertner's achievement

## <Communication English>

### ●Content

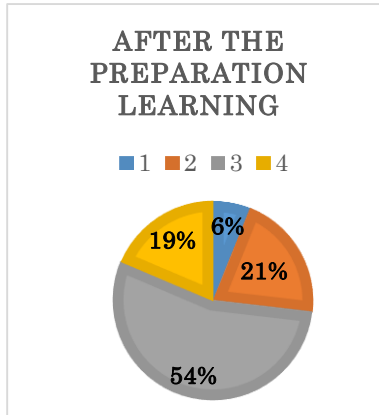
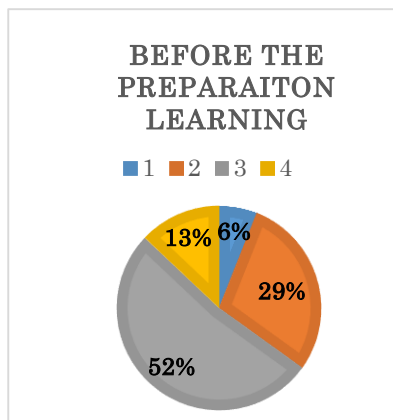
1. Onuma Research
  - There are five categories:
    1. Nature(plants and animals)
    2. Geography and Geology
    3. History
    4. Sightseeing
    5. Food
  - Using website and other subjects' handouts
2. Preparation for presentations
  - Writing about each topic
  - Making posters
  - Practicing pronunciation with grammar checks
3. Presentation about Onuma
  - Giving presentations
  - Questions and answers in English



●The result of Onuma's learning questionnaire results

Q1. What do you think of learning about Onuma(park)?

1. I'm not interested. 2. I'm not so interested. 3. I'm interested. 4. I'm very interested.

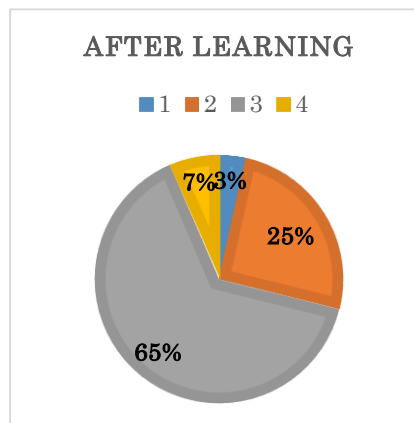
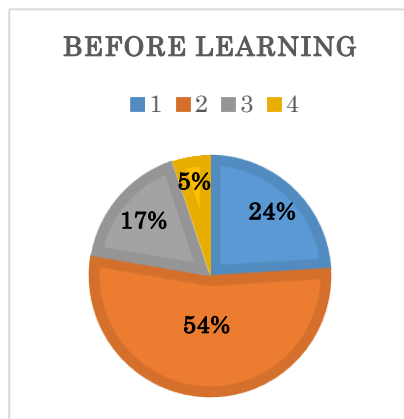


When comparing student attitudes before and after learning. We can see a slight increase in student interest. We may say that the it was useful for increasing students' motivation.

Q2. How much do you know about Onuma's nature?

(geography, plants, animals, ecosystem, water quality, ect)

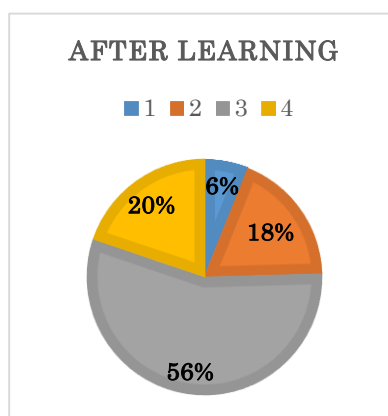
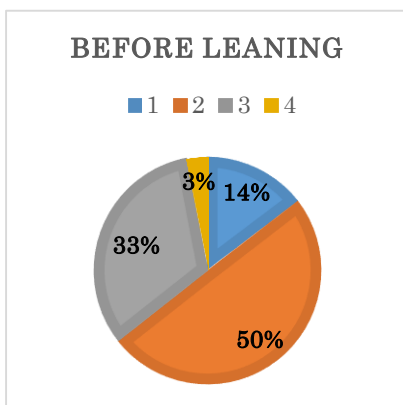
1. I don't know anything. 2. I don't know much. 3. I know something. 4. I know a lot.



Before the preparation classes, leaning 78% of students answered 1 or 2 but, through basic biology and English communication classes, students could learn about Onuma's ecosystems geographical and geological features. They understood Onuma's nature more deeply.

Q3. How much do you know about Onuma's specialties?

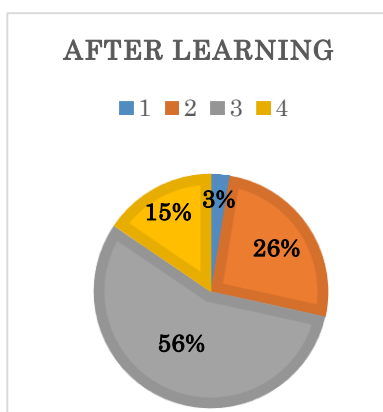
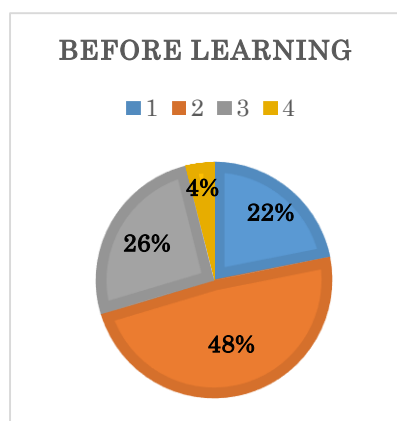
1. I don't know anything. 2. I don't know much. 3. I know something. 4. I know a lot



Before the preparation classes 64% of students answered either 1 or 2, but through communication English class, they researched them and gave their presentations about the specialties. As a result, they could understand Onuma and around its surrounding environs' specialties.

Q4. How much do you know about Onuma's history?

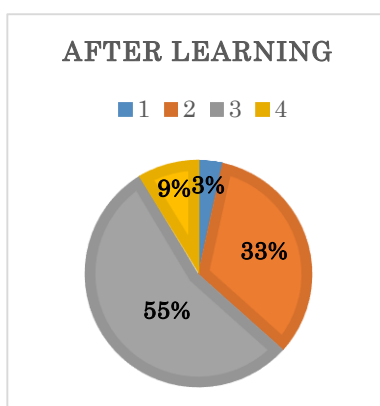
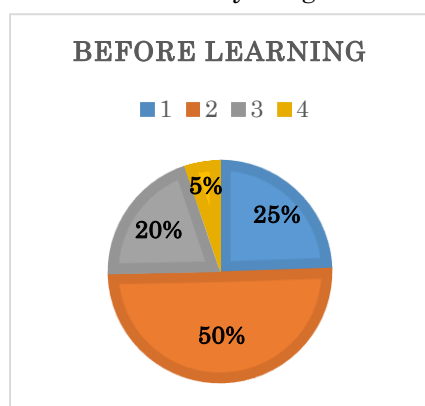
1. I don't know anything. 2. I don't know much. 3. I know something. 4. I know a lot.



Before learning 70% of students answered 1 or 2, but in world history and English communication classes, they researched and gave their presentations. As a result, they could understand better Onuma and its environs' history.

Q5. How much do you know about Onuma's geography?

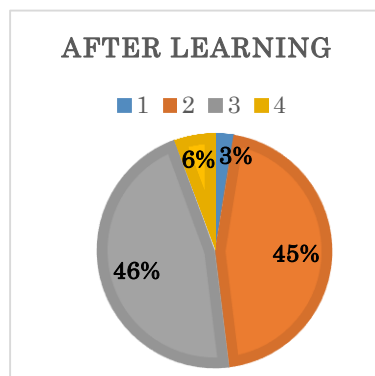
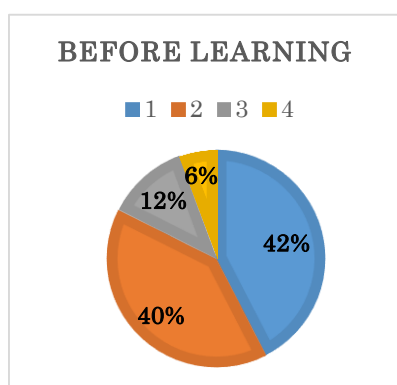
1. I don't know anything. 2. I don't know much. 3. I know something. 4. I know a lot.



Before the preparation classes 75% of students answered either 1 or 2, but through each subject, students learned about Onuma's geographical features. However, when compared with other categories, geography is a little more difficult. Therefore, they had a low level of understanding in this category. .

Q6. Can you introduce Onuma to foreign people in English?

1. No, I can't. 2. I can introduce it briefly. 3. It depends on fields and contents. 4. Yes, I can.



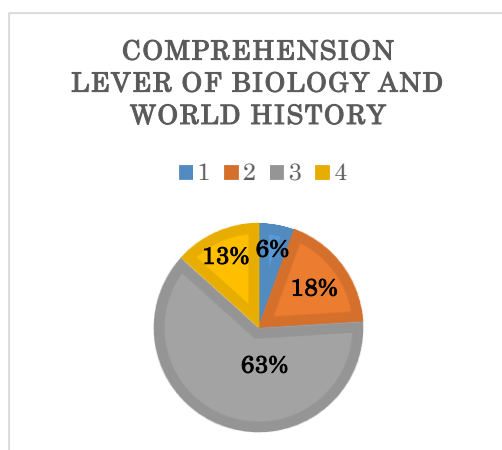
Before preparation classes, 82% of students answered either 1 or 2, in this case, over 40% students answered 1. A lot of students had difficulty introducing Onuma in English.

Students had only 2 weeks from deciding their topics to giving their presentations. However, they cooperated with their group members and gave great presentations.

After their presentations, around half of them answered 3 or above.

Q7. Did you understand the preparation classes' basic biology and world history?

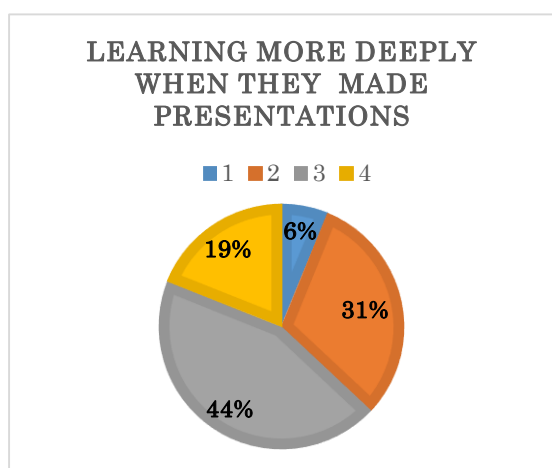
1. No, I didn't. 2. I didn't understand it well. 3. Yes, I did. 4. Yes, I understood well



In both basic biology and world history classes, about 80% students understood the contents of the Onuma's preparation classes. We can say that students understood what they should learn in Onuma and realized the things that they wanted to learn. They referred to this knowledge when they made their presentation in English class.

Q8. Did you learn more deeply about biology and world history's previous learning when you gave your English presentations?

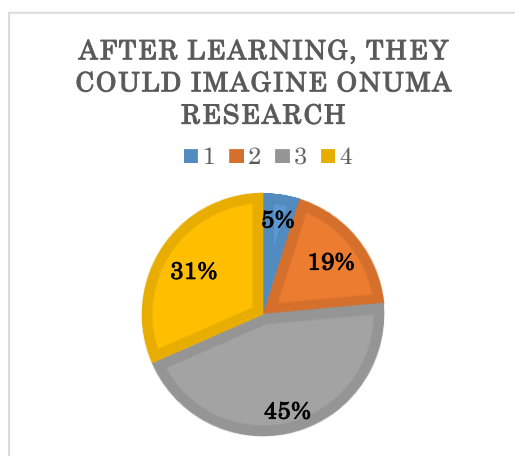
1. No, I didn't. 2. No, I didn't learn much. 3. Yes, I did. 4. Yes, I learned a lot.



63% of students answered either 3 or 4. In their presentations, two of the five categories were "food" and "sightseeing". Therefore, the students who presented on these two topics aren't coherent with biology and world history. Therefore, some students may think that they couldn't make use of this subject's learning.

Q9. Did you imagine Onuma environmental research through the previous learning?

1. No, I didn't. 2. No, I didn't imagine well. 3. Yes, I did. 4. Yes, I could imagine well



Nearly 80% students could learn about Onuma more deeply and thought why they learned about it. They also clearly thought about what they would learn in Onuma. However, a quarter of students answered 1 or 2. This is the assignment for the next preparation classes.

●A reflection on the Onuma Environmental research's preparation classes and cross-curriculum classes among biology, world history and English communication classes.

This was the first attempt at the above activities. Therefore, we couldn't describe the plan on our syllabus and consider our teaching plans well. For the next cross-curriculum class, we should discuss our teaching plans with not only teachers who have a cross-curriculum class but also first grader's teachers and SSH committee teachers. If so, we will be able to critically analyze our curriculum and improve the content. In addition, we should improve the way of evaluating our students' achievements and share the method with all teachers.

As far as we analyzed the data, according to the preparation classes' effects, we think that students are able to learn about Onuma and transmit their knowledge in English. We should consider the previous learning level and its content in detail at the next cross-curriculum class.

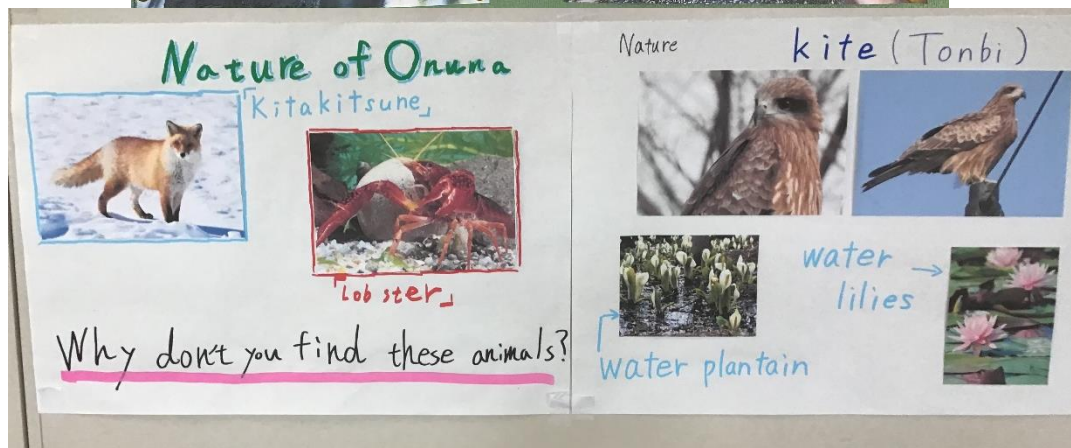
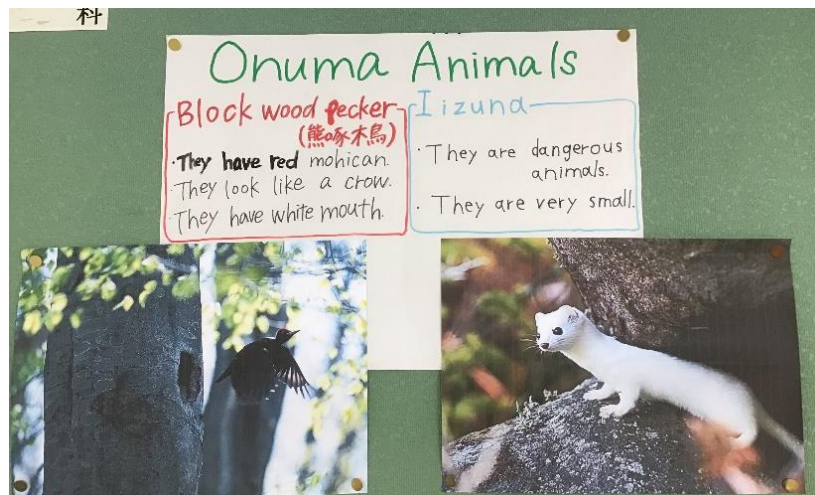
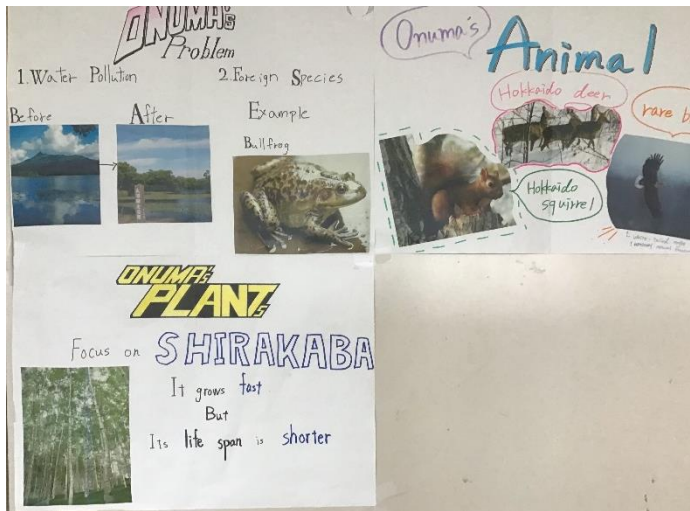


# Super Science High School Onuma Environmental Research

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~Students made posters when they gave presentations~


## ●Onuma's nature



## ● Onuma's geography

# ONUMA's Geography


### Water



『Aoko』

Phytoplankton  
Between September and October

### Land




1131 m high  
Mt. Komagatake

Area 5.3 km<sup>2</sup>  
Max. water depth 12.2 m  
Ave. water depth 4.7 m

# Onuma's Geography


- personal history
- size
- location
- The Ramsar Convention

### Onuma




area 5.3 km<sup>2</sup>  
circumference 24 km  
depth 12.2 m


### Mt. Komagatake



SL (Steam Locomotive)  
Hakodate Onuma




## Geography of Komagatake



1100m 1700m

<< Sunaharatake >>  
<< Kengamine >>  
<< Sumidamori >>

## Geography of Onuma




Onuma Konuma Junnai


The area of Onuma is the biggest of all lake.

	Area	Water Depth	
		Maximum	Average
Onuma	5.31 (km <sup>2</sup> )	12.2	4.7
Konuma	3.8 (km <sup>2</sup> )	5.5	2.3
Junnai	0.8 (km <sup>2</sup> )	4.6	3.0

## Komagatake's eruption



Komagatake has erupted many times.  
Ohhhhhh!! It's dynamic!!







In 1929 eruption

## ~ Onuma's climate ~

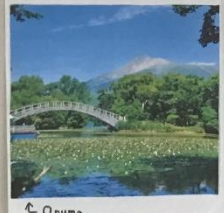
Temperature

Summer: Doesn't go 30 degrees.  
Winter: Goes to minus 10 degrees.

It's 100 meters above sea level.

## GEOGRAPHY



Onuma

most deepest 12.2 meter  
average 4.6 meter



## ●Onuma's history


# Onuma History

**Onuma National Park** **Mt. Komagadake**

1890 people started to live in Onuma.

1900 Started fish farm

1906 Started Onuma traditional festival.



Edo periodo in 1640  
**Big Eruption Of Kanei**  
before 1700m → after 1130m  
Like Mt. Fuji

WAKASAGI  
Carp

SHOWA 4  
SHOWA 14  
HEISEI 8  
2008 11/9

# Komagatake's history

The Development near Onuma Park Square

People start living fishing activities

Important person Hideo Ukita

## Onuma Park's History

In 1921 Provincial Onuma Park Was completed.

In 1958 Provincial Onuma Park became Onuma Quasi-National Park.

## Origin of Onuma's name

Polo means "great"

To means "lake"

# Onuma's History



**Mt. Komagatake**

Erupted four times

1640

Takeshiro Matsuura

I named "Hokkaido"

# Onuma's History

Miyazaki Jubei  
Miyazaki hotel

Ukita Hideo  
a farm  
Onuma park  
Onuma park station

Onuma park station

a popular sightseeing area

## Onuma's Beautiful Nature

1640 Komagatake erupted.

Wow! Beautiful nature.

## Komagatake's eruption

Third eruption

Do you know that Onumapark is the New Three Views of Japan?

onumapark

Komagatake (now)









## ● Onuma's sightseeing

### Onuma Kosui Festival

In July  
Events: Tama Nagashi, Fireworks, etc.  
× This year × (Because Corona virus is spreading)

#### Other activities

Camp Cycling Zip line  
Sogway horse riding

### Onumainfall

Great run and walk!  
More than 2,000 people participate.  
It's a lot of fun.

Food Festival!  
Apple in Morino, Tareko in Shikake,  
Konda, Houte ... etc

### Winter

Stunt cabbage  
Mt. Komagatake is seen.  
Time to bloom is until  
the late May and early June.  
Pleasure boat view  
Ice statues  
Wakasagi fishing  
You can enjoy wakasagi fishing  
And you can Kai an

### Fishing Bait on Ice

Fee: grown up → 600 yen  
child → 300 yen  
kindergarten → no money

### Snow & Ice Festival

Big slide  
Ice statue

### Canoe

We can ride in a canoe. Onuma's mountain view is very beautiful. It's very nice!

### Onuma Mizu Matsuri

shed a lantern

### Onuma's great run walk

Beautiful!!  
Present!!

### Sen no kaze ni natteru place of birth

Mt. Komagatake  
A symbol of Onuma

### The snow and ice celebration

Jumbo slides  
The snow statues and ice statues

### Onuma Kosui Festival

- traditional
- Summer event
- fireworks

### Onuma Park

beautiful view  
hot spring & pool  
mountain NICE  
forest  
lake

### Green pia

### in Onuma

# SIGHTSEEING

### Race

The ice cut from Onuma lake

### Snow festival

### Yamakawa boku jyo

Menu:  
Soft cream  
shoke  
milk coffee  
Yogurt



● Onuma's food

### Junsai



We can make junsai into miso soup, nabe, and vinegared food.

We can buy junsai at Miyazaki Koya.



### Carp



### KOINODARAI

Unique texture  
Smell



### Wakasagi (Japanese Smelt)



10~15cm


Tsuribori Park



## Food of Onuma

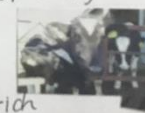
### <Holstein Cow>

Characteristic  
Taste of the beef is light




### <Jersey Cow>

Characteristic  
Taste of the milk is very rich



### <Onuma Japanese Black Cow>

Characteristic  
Taste of the beef like black cow



### Animals



Ezo deer



Red Fox



Ezo Squirrel

### Birds



Oruri



Ojirowashi

### Plants

o Special Flower  
<Mizubasho>



o Big Tree  
<Beech>



It lives in the water.

It lives about three hundred years.

### Fish



White-spotted char



Carp

New Three Views of Japan

### Hakodate Onuma Cow

- Soft red meat.
- Sweetness from fat.





### ~JunSai~

This is Junsai.

Very slimy

Junsai's leaf is like a lotus leaf




### Yanaka Ranch's foods.



Full blend soft



Provolahe

### Onuma's fish

Wakasagi Raft



Carp

