



Collaborative removal of an invasive alien aquatic weed
by volunteering university students
in collaboration with multiple stakeholder groups
around Lake Biwa, Japan

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Hello, My name is Haruka Tsujino.
I'm a third year student at Kansai university, and I belong to the NPO named IVUSA.
This time, I will talk about the Collaborative removal of an invasive alien aquatic weed around Lake Biwa Japan.

Introduction of IVUSA

International **V**olunteer **U**niversity **S**tudent **A**ssociation



Community revitalization



International cooperation



Disaster relief



Child education support



Environmental protection

- Established in 1993
- **80** universities
- **2500** university students

First of all, I would like to introduce IVUSA.

There are about 80 universities and 2500 university students all over Japan, and they are engaged in activities divided into five fields.

This time, I will talk about the environmental protection field.

About *Ludwigia grandiflora* subsp *Hexapetala*



- Introduced from South America
- Explosive growth and propagation



- It propagates from the roots and stems
→ Necessary to carefully remove them by hand.

Ludwigia grandiflora subsp *Hexapetala* (hereinafter, called “water primrose”) is an amphibious weed introduced from South America. In spite of its bright yellow flowers, water primrose is characterized by explosive growth and propagation. It also propagates from the roots and stems. Thus, it is necessary to carefully remove them by hand.

Water primrose was first discovered in Akanoi bay in 2009.



It was first discovered in Akanoi bay, Moriyama City, Shiga Prefecture in 2009.

Bad influence



- ① Damage to ecosystems.
- ② Damage to the reedbed emergent vegetation plantations.
- ③ Negative impacts on cruising and commercial fisheries.

The water primrose causes mainly 3 bad influences.

First, damaging to ecosystems like competitive exclusion of native plants and habitat degradation for native aquatic animals.

Second, damage to the reedbed emergent vegetation plantations.

Finally, negative impact on cruising and commercial fisheries.

1. 2009-2013

**Background of the starting
removal activities of the aquatic weeds**

2. 2014-2018

**Our large-scale removal activities,
government's mechanical removal and
patrol monitoring**

3. 2019-

**Collaboration between government and
local people to extermination**

Today, we would like to introduce three outlines of collaborative efforts in Lake Biwa.
First, from 2009 to 2013, Background of the starting removal activity and form the removal project in Moriyama City

Background of starting the removal activity



Removal of the weeds was
hard work.



Most people involved were
elderly fishermen and NPOs.

We want to protect Lake Biwa by Power of youth!

In March 2013, when some IVUSA students participated in activity to remove water primrose. The removal activity is hard work and most people involved were elderly fishermen and NPOs. They got a strong sense of crisis and planned a removal activity from the desire that "we want to protect Lake Biwa by the power of youth".

Form the removal project for water primrose



- **More than 90%** of water primrose in Lake Biwa was distributed in Akanoi bay in Moriyama city.
- The local people also had **a sense of crisis.**



Form the removing project with

- Environmental NPO
- Moriyama City government
- Fisheries cooperative
- IVUSA

The aim of restoring the rich ecosystem in Akanoi Bay

In June 2013, More than 90% of water primrose in Lake Biwa was distributed in Akanoi bay in Moriyama city.

And the local people also had a sense of crisis.

Then, 4 stakeholders , an environmental NPO, Moriyama city government, Fisheries cooperative, and IVUSA student collaborated to form “Water Primrose Removal Project”.

The removal activities had been planned with the aim of restoring the rich ecosystem in Akanoi Bay,

Removal activities in 2013



- ① In the first year, removal activities were carried out **5 times**.
- ② Total of **261 people** participated

Forming a cooperative system with stakeholders and tried to carry out efficient activities and accumulated know-hows.

In the first year, removal activities were carried out 5 times, with a total of 261 people participating. We formed a cooperative system with stakeholders and tried to carry out efficient activities, and we accumulated know-hows.

Collaboration system



NPO

- Regularly activities
- Connecting regions and government



Fisheries

- Providing information of grow status
- Transporting it by ship



Government

- Incineration in the disposal facility



IVUSA

- Providing manpower
- Establishing public relations

Here is a collaboration system in Moriyama City.

The Local environmental NPO takes the role of hub in the region. They hold regular activities and connect regions and governments.

Fisheries provide information such as the grow status of the water primrose, and transport it by ship.

The government incinerates the removed water primrose in the disposal facility.

We, IVUSA, are providing manpower, and establishing public relations activities. In this way, we cooperate with various stakeholders.

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Second, I will talk about the situation from 2014 to 2018.

Social situation of water primrose measures in 2014



【In March】

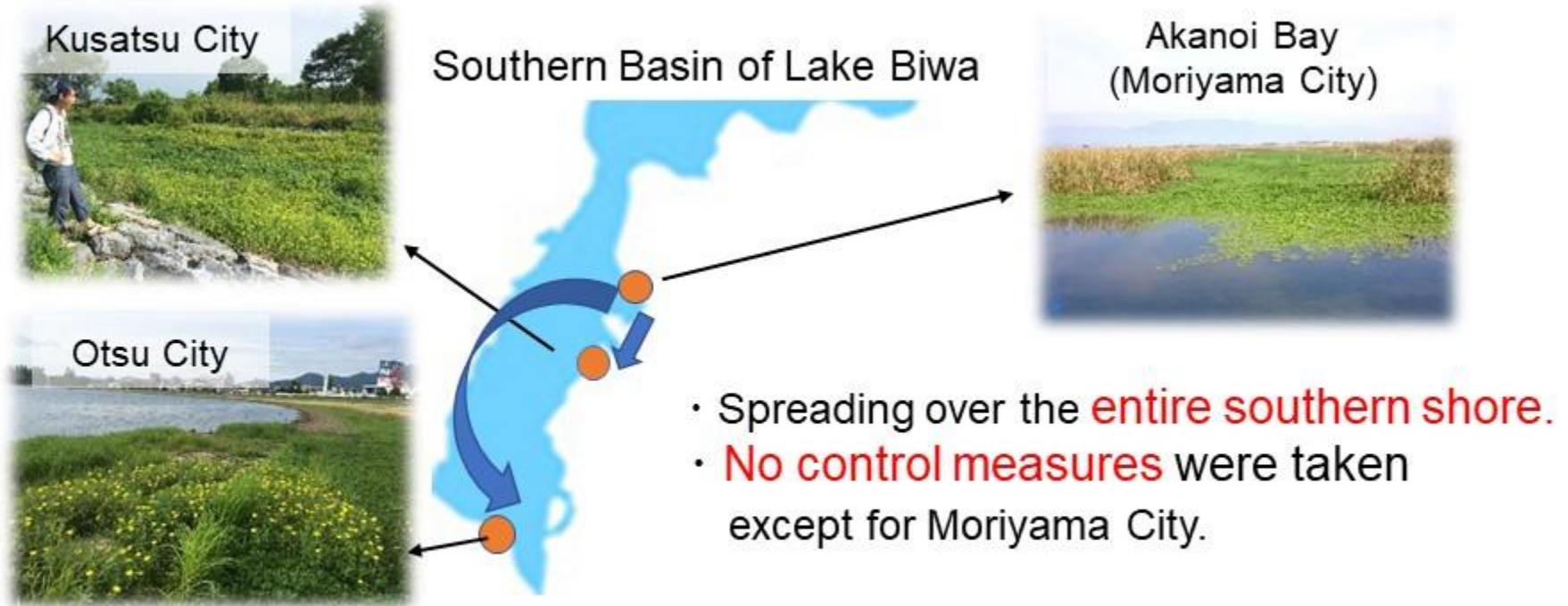
The Council for Controlling Invasive Aquatic Plants in Lake Biwa was established, in which IVUSA was invited to join.

【In June】

It was assigned as Designated Invasive Species stipulated in Invasive Alien Species Act by Ministry of the Environment.

Continuing efforts up to 2013 ,
in March 2014, the Council for Controlling Invasive Aquatic Plants in Lake Biwa was established, in which IVUSA was invited to join.
In June, It was assigned as Designated Invasive species stimulated in Invasive Alien Species Act by Ministry of the Environment.

Spread of water primrose in 2014



In September 2014, we planned a large-scale removal activity across Otsu, Kusatsu, and Moriyanama Cities for 3 days

Water primrose spread to the entire southern shore.
However, no control measures were taken except for Moriyanama City.
Therefore, in September 2014, IVUSA, planned and carried out a large-scale removal activity across Otsu, Kusatsu, and Moriyanama Cities for 3 days.
About 600 students participated.

Large-scale removal activity in 2014



- ① **600 students** participated in this activity.
- ② **120t** (area of **6,000m²**) of water primrose was removed.
- ③ Reported in the newspapers and broadcasted in TV.

As a result, a total weight of 120 tons and area of 6,000m² of water primrose was removed.

This activity was also reported in the newspaper and broadcasted on TV.

Through these efforts, the sense of crisis regarding the water primrose was shared with the society,

Strengthening measures against water primrose



From 2014, the local Council started mechanical removal



From 2016, the local Council started the patrol monitoring, following mechanical removal in particular

From 2014, the local Council started mechanical removal, and From 2016, the local council started the patrol monitoring, following mechanical removal in particular. Furthermore, volunteer activities have been continuously carried out in collaboration with local stakeholders in each region.

Large-scale removal activity in the southern part of Lake Biwa had been carried out until 2018



This large-scale removal activity in the southern part of Lake Biwa had been carried out every year until 2018, and this large-scale activity could be carried out in collaboration with various stakeholders including the local governments, environmental NPOs, and fisheries cooperatives.

Huge aquatic weed community

Large-scale communities



Mechanical removal by Government

Removal by manpower.

Reed plantation.



NPO

Floating spawning beds.



Fishermen

Floating spawning beds.



Companies



IVUSA

Temporary storage for drying.



Incineration



After removal

Patrol monitoring by government



Patrol monitoring by local people



As we proceeded with our activities, we clarified the division of roles.

Huge aquatic weed communities are removed by mechanical removal by the government.

Local NPO, Fishermen, Companies, and IVUSA collaborate and remove the water primrose in the reed plantation and the floating spawning beds where they can take advantage of manpower.

In addition, the government provides a temporary storage for drying water primrose and then incinerates it in the disposal facility. After the removal, the government and local people carry out patrol monitoring to prevent the regeneration of large communities.

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Third, from 2019, Collaboration between government and local people to extermination.

The growing situation in Takashima City in 2019



- ① A large propagation was confirmed in the reed plantation in Takashima City.
- ② Considering the danger of spreading throughout Lake Biwa.
- ③ Urgent removal by intensive manpower was required.

Large-scale removal activity was planned and carried out for three days.

In 2019, a large propagation was confirmed in the reed plantation in Takashima City.
Considering the danger of spreading throughout Lake Biwa,
Urgent removal by intensive manpower was required.
Large scale removal activity was planned and carried out for three days.

Large-scale removal activity in 2019

- ① Total of **302 people** participated
- ② **7.2t** (area of **950m²**) of water primrose was removed
- ③ Introduced in 5 Media



← The Governor of Shiga Prefecture encouraged us!

In this activity, Total of 302 people participated.
A total weight of 7.2 tons and area of 950m² of water primrose was removed.
and this activity was introduced in five media.
The Governor of Shiga prefecture encouraged us.

Expanding range of activities



- Local people and IVUSA have regularly carried out removal activities 4 or 5 times a year in collaboration to extermination.
- IVUSA leads and instructs other participants through our accumulated knowledge.

Many individuals of water primrose were growing in the reed plantation areas and in the floating spawning beds.

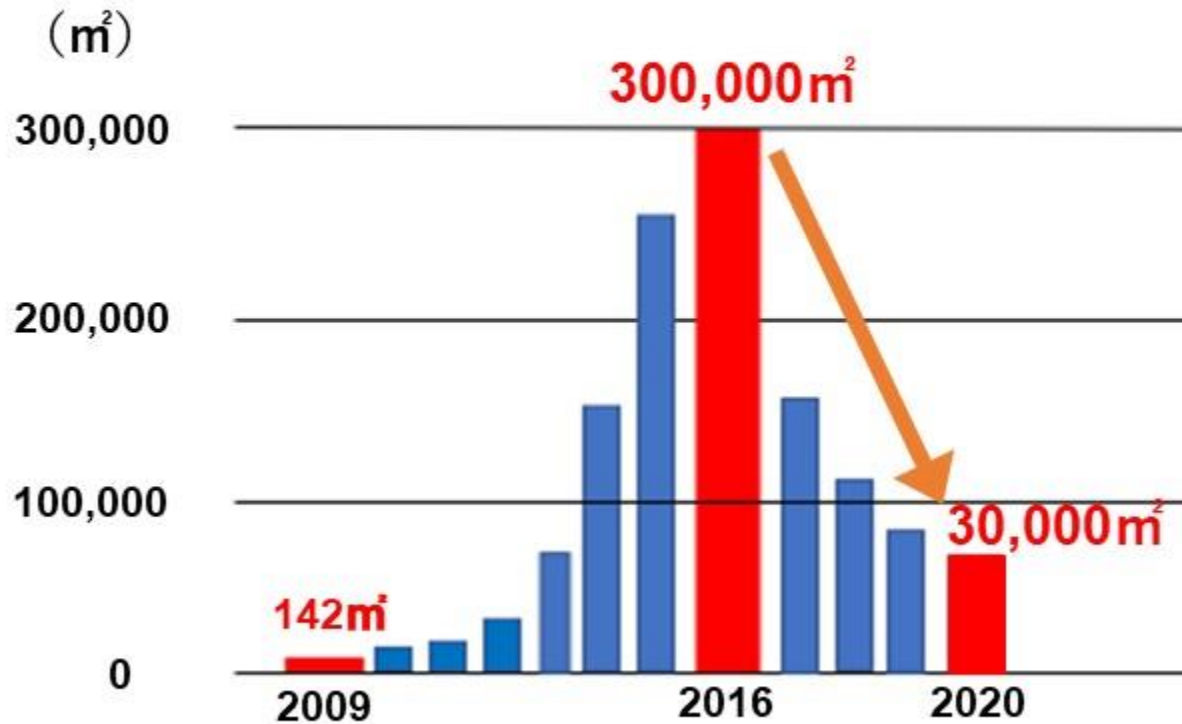
Local people and IVUSA have regularly carried out removal activities 4 or 5 times a year in collaboration to extermination.

These days, the more awareness of water primrose is rising, the more participants of companies and individuals are increasing.

IVUSA leads other participants during removal activities

by making use of the knowledge such as how to distinguish and remove water primrose, which was gained through a lot of activities so far.

Transition of growing area of water primrose



By the efforts so far, the area of the lake surface covered with this water primrose resulting in a marked decrease to about 30,000 m² by the end of fiscal year 2020.

Activity Organization Structure of IVUSA ①

Role of Biwako Specialized Team of IVUSA



Collecting distribution information



Conducting a field survey with the government



Conducting a field survey by IVUSA students

We collect distribution information of water primrose from the parties concerned, conduct a field survey, and decide the activity location.

Next, I will introduce what kind of organizational structure in which IVUSA carries out removal activities. First, Biwako Specialized Team of IVUSA collect distribution information of the water primrose from the parties concerned, conduct a field survey, and decide the activity location.

Activity Organization Structure of IVUSA ②

★Leader



(1)Strategy-
Planning



(2)Adjustment



(3)Logistics



- After deciding the place of activity, with the leader of the activity at the top, it will be divided into 7 roles.
- 1, Strategy planning : makes a plan of the activity contents and thinks about an efficient work method.
 - 2, Adjustment : adjust the schedule, removal range, temporary storage, transportation, and disposal.
 - 3, Logistics : secure of transportation, meals, and preparation, and manage the activity schedule.

Activity Organization Structure of IVUSA ③

(4) Publicity



(5) Finance



(6) Membership-management



(7) Aid



4, Publicity : take photographs, send out SNS, and make presentations on forums to gain understanding of society

5, Finance : make a budget plan for activities, and acquiring applications for grants, aiming to carry out more strategic activities.

6, Membership management : the role of managing the student participants and improving the motivation of them by holding study sessions

7, Aid : prevent and prescribe injuries

In this way, we carry out systematic activities and contribute to social problems.

Challenges for the future

- Final message from IVUSA

1. It is necessary to share the basic knowledge for all generations to raise awareness.
2. Early detection and removal are important.
3. Coordination with stakeholders through clarification of respective roles enables to detect and remove earlyly.

Lastly, I would like to tell you about this issue of water primrose as a future issue. In order to solve the water primrose problems,

First, it is necessary to share the basic knowledge for all generations to raise awareness .

Second, early detection and removal are important.

Third, Coordination with stakeholders through clarification of respective roles enables to detect and remove water primrose earlyly.

We will make continuous efforts toward the extermination of this water primrose.

Let's do our best together. Thank you for listening.