

# **Environmental Education in Aquariums in Japan**

## **L'éducation à l'environnement dans les Aquariums japonais**

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### **ABSTRACT**

The important role of Aquariums is becoming increasingly focused on environmental education. An aquarium or zoological garden can be an excellent way of stimulating people to develop their awareness and thinking about ecology, nature and a wide variety of environmental issues. This study aims to clarify the role of Aquarium by surveying the actual status of environmental education among aquariums in Japan, and comparing it with the other museums' categories, ecology and science centers and so on. We sent out questionnaires to 78 Aquariums and the other 514 kinds of Museums in Japan, and received answers from 39 aquariums and 234 from other institutions. In the questionnaire, we asked about the contents of their exhibitions and associated activities, the facilities' physical condition, organization, allocation of specialist staff, cooperation with other institutions, etc., as supportive activities for environmental learning. From those results, it is obvious that Zoological Gardens and Aquariums are generally active, and have more environmental programs than the other kinds of museums. Other characteristics of Aquariums are pointed out: specifically, aquaria are currently focused on children and sometimes become the focus of science class from local schools. But it would be preferable for those facilities to be used not only by children as an educational facility, but also by adults for environmental learning.

### **RESUME**

Le rôle important que joue actuellement l'Aquarium est plus axé sur l'éducation à l'environnement. L'Aquarium ou le Jardin Zoologique peut inciter les visiteurs à développer une conscience et à réfléchir sur l'écologie, la nature et sur une multitude de problématiques environnementales. Le but de cette étude est de clarifier le rôle de l'Aquarium dans ce domaine en examinant la situation actuelle de l'éducation à l'environnement dans les Aquariums japonais et en la comparant avec d'autres catégories de musées, centres écologiques, centres scientifiques, etc. Nous avons donc envoyé des questionnaires à 78 Aquariums et 514 autres Musées au Japon, et nous avons obtenu des réponses de 39 Aquariums et de 234 autres structures. Dans le questionnaire, nous posons des questions sur le contenu des expositions et la nature des activités, les conditions et les moyens de mise en œuvre, l'organisation, la mise à disposition de personnel spécialisé, la coopération avec d'autres institutions, etc., tous ces aspects étant abordés sous l'angle de l'éducation à l'environnement. Le résultat de cette enquête indique qu'en général, les Parcs Zoologiques et les Aquariums sont plus actifs et ont beaucoup plus de programmes environnementaux que les autres Musées. D'autres caractéristiques ressortent de cette étude. Actuellement, les Aquariums ciblent leurs programmes de sensibilisation sur les enfants et sont moins souvent utilisés par des élèves de niveau supérieur. Il serait pourtant souhaitable que l'Aquarium en tant qu'outil d'éducation à l'environnement soit aussi utilisé plus souvent par des adultes pour ce type d'apprentissage.

## INTRODUCTION

Today creating a sustainable society has become an increasingly important focus for all Japanese. A learning environment, based on educational facilities, is needed more than ever before. Facilities of this kind are expected to contribute to developing people's awareness and encouraging them to think about environmental issues. Among these facilities, the aquarium clearly has an important role for environmental education, through its live animals as a medium and its exhibits.

This study aims to clarify the role of Aquariums as a reference for a survey of the actual situation of environmental education in Japanese Aquariums.

## METHODS

We carried out a survey to clarify the actual situation of environmental education among aquariums throughout Japan, comparing them with other categories of Museums. The method involved mailing a questionnaire to the 592 Museum facilities sampled, including 78 Aquariums. As Table 1 shows, we received replies from 39 Aquariums and from 234 other Museums (total 273 facilities). The response was 50% for Aquariums, from 35 to 63% for other facilities, with an overall average of 46%.

	general museum	natural history museum	science museum	local museum	zoological garden	aquarium	botanical garden	total
number surveyed	41	58	56	171	94	78	94	592
responses	26	26	29	72	48	39	33	273
response rate	63.4%	44.8%	51.8%	42.1%	51.1%	50.0%	35.1%	46.1%

Table 1: Number of facilities in this survey

With the aim of clarifying support for environmental learning, we asked facilities about the content of their exhibition and activity programs, their organization, allocation of special staff for environmental education, cooperation with other institutions, and so on.

## EDUCATIONAL ACTIVITIES AND ENVIRONMENTAL EDUCATION

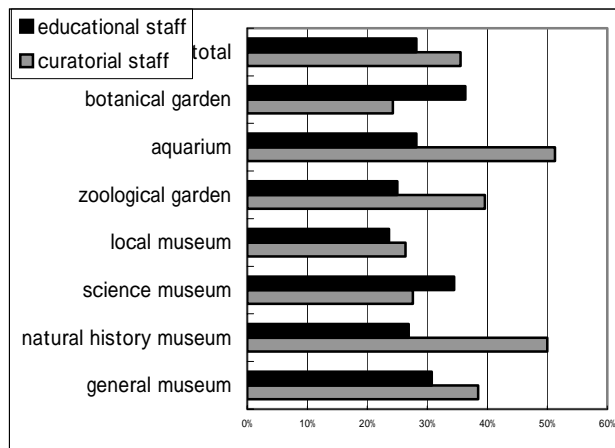


Fig. 1: Special staff

The graphs in this section show the condition of educational staff among Aquariums and other facilities, the use of special staff for environmental education, and the respective numbers of part-time and full-time staff.

Fig.1 shows the ratios of educational staff and curatorial staff hired in environmental education in each type of facility. According to this survey, the overall staff rates concerned with environmental education are high among Aquariums and Natural History Museums. There are also larger numbers of Aquariums and Natural History Museums with special curatorial staff taking part in environmental education than among other categories of Museums.

Fig.2 shows the average numbers of special staff in each category of facility, divided between part-time and full-time staff. Generally, few facilities employ full-time staff for the purpose of environmental education. The number of Zoological Gardens with full-time staff is slightly greater than the other facilities. In terms of part-time staff, large numbers of Aquariums and Zoological Gardens have special staff compared to other facilities.

Thus, the proportion of Aquariums with staff in charge of environmental education is higher than in any other Museum category.

Generally speaking on the basis of the above results, it can be said that Aquariums and Zoological Gardens have more staff to look after environmental education than do other facilities.

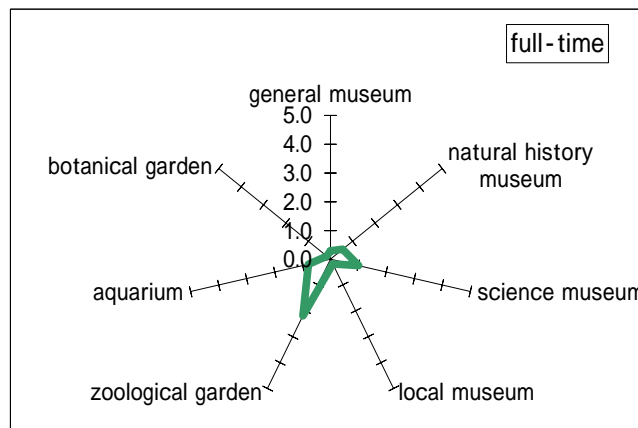
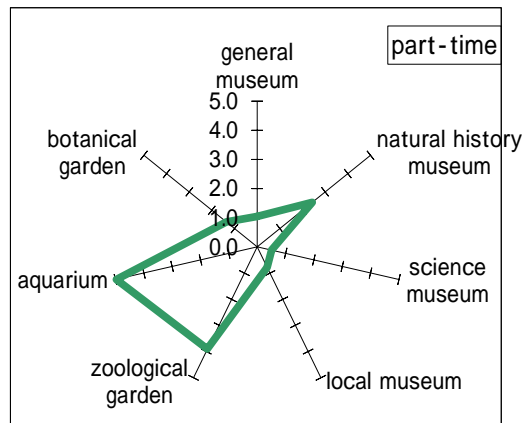


Fig. 2: Average numbers of special staff in each facility (full-time / part-time)

### ENVIRONMENTAL EDUCATION PROGRAMS

It is difficult to comment generally on the contents of environmental education, but a questionnaire was devised listing seven themes. All the facilities were also asked what activities they carried out and the names of their programs.

The seven themes of environmental education programs are the following:

1. Global Environmental Issues (*e.g.* global warming, ozone hole, etc.)
2. Garbage, Waste Matter, Recycling
3. Resources & Energy Issues
4. Protection of the Natural Environment, Ecosystem Protection, Biodiversity
5. Social Issues (food issues, disputes, nuclear development, etc.)
6. Landscapes, Local Environment, Preservation of the Historical Environment
7. Other items

## Examples of titles of environmental education activities

From the aquariums' responses, we selected some themes of special programs as illustrations.

- On Theme 1: Global Environmental Issues – An exhibition entitled “Global quantity of water”.
- On Theme 2: Garbage, Waste Matter, Recycling – An exhibition on “Trash swallowed by sea turtles or whales”, teaching the danger of thoughtlessly discarded garbage
- On Theme 3: Resources & Energy Issues – “Energy-saving” is an important educational theme in daily life, but only one Aquarium had an exhibit on this theme.
- On Theme 4: Protection of the Natural Environment, Ecosystem Protection, and Biodiversity

Many programs, for instance, exhibits on “Salmon and the food chain”, and activities such as “Saturday School in *KAIYUKAN*”, “Night Tour” of an aquarium, and special exhibitions with “Animals protected by the Washington Treaty”, and “The birth of life”

- On Theme 5: Social Issues - No activities in Aquariums concerned this theme. Programs could be devised, for example, concerning the food chain of marine life and so on. Unfortunately, as far as this survey shows, no Aquarium in Japan has tried this yet.
- On Theme 6: Landscapes, Local Environment, and Historical Environmental Preservation-

Exhibitions entitled “*Chitosegawa River* is the birthplace of salmon”, “A salmon-based culture and its manifestations”, requiring a special knowledge of a limited area.

Table 2 shows the numbers of programs carried out at the different facilities. The most active Aquarium programs come under theme 4: “natural environment”. This theme is also taken up by other Museums, but the aquarium industry is most active. Science museums have active programs not only under theme 4 but also under themes 2 and 3.

	general museum	natural history	science museum	local museum	zoological garden	<b>aquarium</b>	botanical garden
Theme 1	-	2	5	1	-	3	3
Theme 2	1	3	8	2	2	8	2
Theme 3	2	3	8	-	-	1	1
Theme 4	15	16	7	16	31	25	15
Theme 5	-	1	-	-	1	-	-
Theme 6	4	3	3	11	3	3	3
Theme 7	1	3	4	2	2	1	-

Table 2: Number of environmental education activities

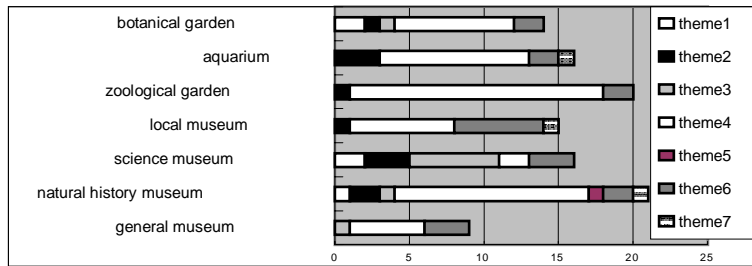


Fig. 3: Panel exhibits

The most active type of facility is the Natural History Museum and aquariums are only ranked third. Aquariums have more programs on theme 2, in particular, compared with Zoological Gardens.

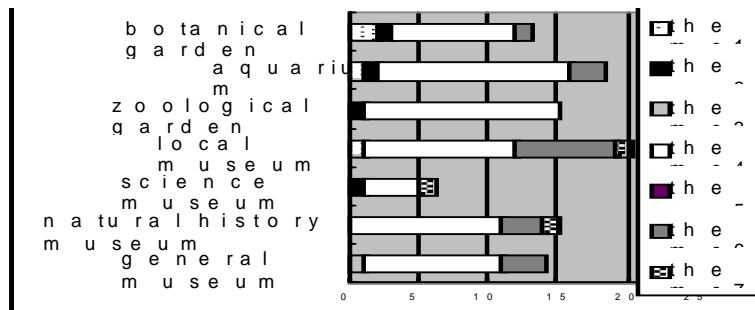


Fig. 4: Lectures

Environmental education lectures are actively carried out in aquariums and local museums. On the basis of the survey conducted by the Japanese Association of Museums in 1992, it was shown that aquariums have very poor educational lectures compared to other museums (in 1996 at the 4th Congress in Tokyo). But in the area of environmental education, aquariums are very active with their programs.

### ACTIVITY PROGRAMS IN AQUARIUMS IN JAPAN

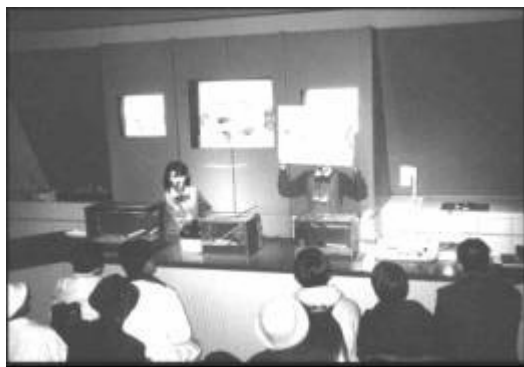


Photo 1: Marine Instructor

As examples, we would like to introduce some cases of environmental education activity programs among aquariums in Japan.

**\*Worksheet designed like a game**

A worksheet is one of the basic tools in education. *Joetsu Shiritsu Aquarium* uses a worksheet designed like a game, which immediately touches children's hearts and increases awareness in beginners.

**\*Demonstration by marine instructor (Photo 1)**



Photo 2: Workshop

Demonstration is also a popular educational method. As well as biological education, environmental education can also be carried out through the medium of demonstration. This photo shows an activity in *Umino Nakamichi Kaiyo Seitai Kagakukan*, an aquarium that has special staff members with an educational role, called "marine instructors".

**\*Miyazu energy science center (Photo 2, 3)**



Photo 3: Facilities at the Miyazu energy science center

This do-it-yourself workshop entitled “Making your own aquarium” and held at the *Miyazu Energy Science Center* is a basic educational activity that teaches children how to begin keeping fish. It is a gateway to a deeper understanding of the living environment of fish and animals.



Photo 4: Outdoor “salmon-watching” school

A number of facilities are grouped together on the site of the Science Center, including an Aquarium, an exhibition hall, a touch pool, a glasshouse conservatory, a wind-power generator, a solar-power plant, and two model houses and a solar house. The aquarium-centered activity also includes an energy-saving educational program.

**\* Toyohiragawa River Activities (Photo 4)**

*Toyohiragawa Sake Shiryokan* has some special programs concerned with salmon, for instance, a “salmon-watching” course and a project for “stocking salmon fry”. Both these continuous programs are effective in getting children to understand the chronological point of view.

**\*Practice “Taking salmon roe” (Photo 5)**





Photo 5: Taking salmon roe

*Chitose Salmon Aquarium*, a special Museum for salmon, also offers experimental programs, for example, the practice program on “harvesting salmon roe”, which teaches children about the structure of a fish’s body and how to participate in conservation.

**\*Culture of Indigenous people -learning through salmon-**



Photo 6: Field work as “Little explorers”

The *Chitose Salmon Aquarium* also has programs for understanding the culture of indigenous people depending on salmon for food and clothing. A great deal can be learned about life and culture through the river ecosystem as symbolized by salmon.

**\*Little explorers (Photo 6)**

This photo shows an outdoor activity at *Biwako hakubutsukan*, a regional museum that includes an aquarium. The aquarium also has a research program for local children within the regional area.

**\*Field survey by local people**

Local people led by *Biwako hakubutsukan* took part in the survey in their area and made a sample map of certain kinds of fish. It is important to note that the research projects in which local people participated have encouraged them to conserve their local environment.

## CONCLUSION

The results of this survey are as below:

1. Aquariums and Zoological Gardens have larger numbers of staff in charge of environmental education than other facilities.
2. Aquariums are mainly engaged in activities concerned with the natural environment, but a few aquariums are also trying to broaden their programs into other fields of environmental education.
3. Generally, Aquariums and Zoological Gardens are active, and have more programs than the other kinds of Museums.

On the basis of the survey results, we would make the following comments and proposals about the future of environmental education in aquariums in Japan.

1. The ultimate purpose of environmental education is to enable people to acquire attitudes and skills that will support a sustainable community.
2. Today, Japanese aquariums are playing the role of facilities that enhance children's awareness and knowledge. But they need to become more functionally oriented and motivate people to participate directly in environmental actions.
3. For this purpose, aquariums should connect with other types of facilities, *e.g.* recycling centers, energy centers and other learning environments.

## REFERENCES

- NISHI, G., OHARA, K. et al. 1996.- Educational Activities at Aquariums in Japan-. *Proceedings of the Fourth International Aquarium Congress*. Tokyo. 169-172 pp.
- ASAI, N., OHARA, K., et al., 2000.- Planning of Facility for Environmental Learning-. *Summaries of Technical Papers of Annual Meeting, AIJ*. pp. 132-133.