Maine-Aomori Sister-State Advisory Council

October 10-17, 2010 Delegation to Aomori, Japan

Left to Right: Kathryn Miller, Sue Plummer, Adam Lee, Sue Jones, Daniel Martinez, Chris Davis, Sue Inches, Ian Bricknell, First Lady Karen Baldacci, Governor Shingo Mimura, Mike Burke, Dale McCormick, Hugh Cowperthwaite, Lisa Adams, Sally Baughman, Don Hudson

Energy, Fisheries and Education:

Shared Challenges Create Shared Opportunities

Maine Aomori Sister State Advisory Council
2010 Delegation to Aomori

October 10 - 17, 2010

Introduction

Fifteen MASSAC delegates with expertise in energy, fisheries and education and representing universities, government, non-profit organizations and business participated in the 2010 delegation to Aomori, Japan. They shared the hope of furthering the Maine-Aomori relationship and promoting projects related to their various fields of interest. The official visit arranged by the Aomori prefectural government was followed by a two-day cultural tour of Aomori sponsored by the Aomori UNESCO Association. The Delegation's complete schedule can be found at **Attachment A**.

In preparation for the working meetings in Aomori the delegates formed a fisheries team, an energy team and an education team[1] each of which communicated with the prefecture in advance of the trip to help more closely define their areas of inquiry and to make the time with their counterparts in Aomori as productive as possible. The entire delegation met twice in advance of departure to discuss the goals of the trip, to participate in cultural training and to build relationships among the delegates. The Governor's office provided significant support for the delegation through Senior Policy Advisory Karin Tilberg who provided guidance and information on state policy on energy and fisheries and assisted in identifying those in and outside of government who could contribute to the mission of the delegation. At MASSAC's request invitations to participate in the delegation were issued by Jane Lincoln, the Governor's Chief of Staff. The Maine Office of Tourism provided financial support for the Maine Reception in Aomori.

This report is the record of the meetings, site visits and cultural events in Aomori, the conclusions reached by the delegation about opportunities for collaboration and exchange and proposed next steps. MASSAC has captured in an Action Plan a summary of the opportunities the delegates identified for Maine-Aomori projects. MASSAC has submitted the Action Plan to the Aomori Prefecture for its assessment of the feasibility of the proposed projects. A copy of the Action Plan can be found at **Attachment B.**

[1] Fisheries team: Hugh Cowperthwaite, Ian Bricknell, Chris Davis, Sue Inches, Don Hudson
Energy team: Dale McCormick, Adam Lee, Sue Jones, Sue Inches, Don Hudson, Daniel Martinez, Mike Burke
Education team: Karen Baldacci, Sue Plummer, Lisa Adams, Kathryn Miller, Sally Baughman

Maine-Aomori Sister-State Advisory Council 2010 Delegates

Karen Baldacci, First Lady of Maine; Delegation Leader
Lisa Adams, Delegation Coordinator; Past Chair, MASSAC
Sally Baughman, President, Friends of the Blaine House
Ian Bricknell, Ph.D., Director, Aquaculture Research Institute, Libra Professor of Aquaculture Biology, School of Marine Sciences, University of Maine
Mike Burke, Chief Executive Officer, Community Concepts, Inc.
Hugh S. Cowperthwaite, Fisheries Project Director, Coastal Enterprises, Inc.
Chris Davis, Ph.D., Executive Director, Maine Aquaculture Innovation Center
W. Donald Hudson, Ph.D., President Emeritus, Chewonki Foundation; Representative, Gulf of Maine Council on the Marine Environment; Trustee, Midcoast Redevelopment Authority
Sue Inches, Director of Policy, Maine State Planning Office; Vice-Chair, Coastal Enterprises, Inc.
Sue Jones, President, Community Energy Partners
Adam Lee, Chair, Efficiency Maine Trust; President, Lee Auto Malls
Daniel Martinez, Ph.D., Professor, Applied Energy Laboratory, University of Southern Maine
Dale McCormick, Director, Maine State Housing Authority
Kathryn Miller, sister and travel companion to the First Lady
Sue Plummer, Executive Assistant to the First Lady

Aomori Prefecture Hosts

Shingo Mimura, Governor of Aomori Prefecture
Takeshi Ebina, Vice Governor of Aomori Prefecture
Yoshihito Shibutani, Deputy Director General, Department of Commerce, Industry and Labor
Kan Kosaka, Director, International Relations Division, Department of Commerce, Industry and Labor
Hajime Sato, Executive Senior Chief, International Relations Division
Koji Nishiya, Executive Senior Chief, International Relations Division
Shigeru Chiba, Senior Chief, International Relations Division
Hitomi Tenma, Senior Staff, International Relations Division
Yasunori Kitagawa, Senior Staff, International Relations Division
Takutoshi Ichinohe, Senior Staff, International Relations Division
Zachary Bass, Coordinator of International Relations, International Relations Division
Ryota Ishida, Part-time worker, International Relations Division
Mutsuko Tamai, Staff, CLAIR Aomori Prefecture Branch

Aomori UNESCO Association Hosts

Toshikatsu Wakikawa, Chair
Naomichi Fujikawa, Vice Chair
Kojuro Wada, Director General
Iruma Ono, Counselor
Yukio Saito, Counselor
Toshiaki Demachi, Counselor
Teruaki Suzuki, Counselor
Takao Sato, Auditor
Katsuko Sasaki, Auditor
Hajime Uchiyama, Director
Chiyoshi Ookubo, Director
Hiroshi Kudo, Director
Tetsuko Kudo, Director
Akihiro Shiotani, Director
Asako Takaya, Director

Etsuko Takaya, Director
Noriko Nagayama, Director
Yukihiro Nishiduka, Director
Noriko Hatakeyama, Director
Masahiko Matsuda, Director
Mariko Munakata, Director
Teruko Yokokawa, Director
Masaharu Hosoya, Director
Fumio Ichinohe, Member
Kimi Osanai, Member
Hisako Ono, Member
Shigeko Kawamura, Member
Sekino Kudo, Member
Eiichi Kubota, Member
Makiko Kubota, Member
Hidejiro Goto, Member
Tsutomu Shikanai, Member
Tamiko Tonai, Member
Takashi Hasegawa, Member
Yumi Hasegawa, Member
Seizo Furusawa, Member
Eiko Furusawa, Member
Yoshio Maeta, Member
Yoshio Wajima, Member
Kinuko Suzuki, Member
Hajime Yoneda, Member
Takeshi Nishimura, Member
Yayoi Fujikawa, Member
Noriko Wada, Staff
Kyoko Mizushiri, Staff
Hayato Mizushiri, Staff

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EDUCATION REPORTS

Toshiki Sawada "Ai-Momo" Exhibition

by Lisa Adams

Saturday, October 9, 2010 at the K2 Atelier, Roppongi, Tokyo

From Maine:
Lisa Adams
From Tokyo:
Momoko Sawada, Aiko Sawada, Setsuko Sawada

\Ai-Momo Exhibit

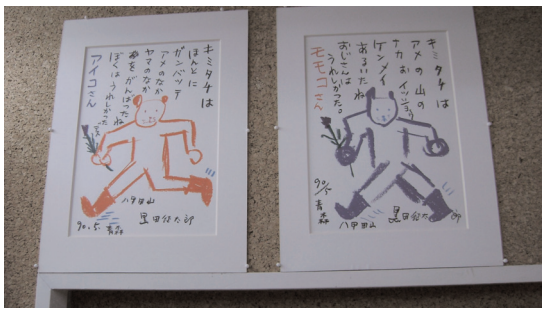
Background

First Lady Karen Baldacci initiated a Maine-Aomori collaborative book project which came to be known as "*Hello From the Other Side of the World*" to be written and illustrated by Scott Nash of Maine and Toshiki Sawada of Aomori and Tokyo and intended to introduce the children of Aomori and Maine to one another's cultures. Sadly, Toshiki Sawada passed away in April 2010. In anticipation of the fall delegation to Japan, MASSAC, Mrs. Baldacci, Scott and Nancy Nash created a memorial book that included as much of *Hello* as had been completed as well as a description of the project and the happy memories of the relationship between Sawada-san and his many friends in Maine.

Ai-Momo Exhibit Wall

Summary

Lisa met Aiko-san and Momoko-san and their mother Setsuko-san at the Toshiki Sawada Ai-Momo Exhibition which chronicled Sawada-san's career as well as his family life. The exhibit included his books, magazines, CD covers, paintings, textiles, pottery, and other artwork. One wall was dedicated to the illustrated correspondence between Sawada-san and his twin daughters when they were young and he often worked late or rose early and missed seeing them. In the



Aiko-san and Momoko-san cards from Toshiki-san

Aiko-san and Momoko-san at exhibit

letters he would ask them about their days, tell them stories, and sometimes create mathematical problems for them to solve. Also included were wonderful portraits of Aiko-san and Momoko-san as well as a pair of chairs he had made for them. The exhibit also included work by Aiko-san who is also an artist, a copy of the pre-publication brochure of "*Hello From the Other Side of the World*", and a small drawing of a face on a piece of bark Sawada-san had collected in Maine. The visit to the exhibition was bittersweet in that it created a fuller picture of a marvelously talented and lovely man, but reaffirmed the magnitude and reality of our loss.

Lisa took Aiko-san and Momoko-san to a nearby lunch where talk turned to the possibility of a visit to Maine. Aiko-san longs to return to the site of many happy memories of time with her father while Momoko-san would like to see Maine for the first time and come to know the place and people that inspired her father to participate in the Hello project. They felt that an April visit might work best for their work schedule.

Next Steps

- Communicate with Aiko and Momoko about a spring visit.
- Work with Scott and Nancy Nash and others to create an itinerary for their visit.
- Begin preparations for the visit.

Presentation of Memorial Books to Aiko Sawada and Momoko Sawada

by Lisa Adams

Sunday, October 10, 2010 at Café Renoir, Ueno, Tokyo

From Maine:
Karen Baldacci, Sue Plummer, Kathryn Miller, Sally Baughman, Lisa Adams
From Tokyo:
Momoko Sawada, Aiko Sawada

Karen with Aiko and Momoko and memorial book

We met Aiko-san and Momoko-san at the Park Side Hotel in Ueno at 10 a.m. and made our way to Café Renoir where we enjoyed a coffee and pastry together. Karen presented *Hello, A Story of Friendship*, the book created by MASSAC and Scott and Nancy Nash in tribute to Sawada-san's memory, to Aiko-san and Momoko-san. It was a lovely but sad moment as they read the tributes that had been written by Scott, by Lisa and by Karen to their father. They loved the photographs and the illustrations and the design of the books. It felt as though we had accomplished what we hoped: impressing upon Sawada-san's family how deeply

Sally, Kathy, Karen, Lisa, Aiko and Momoko in front of the Shinobazu pond

we were moved by the experience of knowing and working with him and how committed we remain to the kind of intercultural exchange that relationship reflected. After coffee, we explored a corner of Ueno Park, the Shinobazu Pond, where the lotus blossoms had faded and in their place were lovely seed pod that small birds alighted on and set to swaying as they flew off. It was sad to say good-bye to Sawada-san's daughters, but their interest in a spring visit to Maine made the farewells a little easier.

Board of Education Meeting

by Lisa Adams

Tuesday, October 12 at the Aomori Prefectural Offices

From Maine:

First Lady Karen Baldacci, Sue Plummer, Lisa Adams

From BOE:

Superintendent Miyako Hashimoto; Teacher Consultant, Senior High School Group, Shigeru Shirahama; Teacher Consultant, Senior High School Group, Shinji Shishikura; Deputy Director, Schools and Education Division, Toshihiko Nishiya; Assistant Language Teacher, Abidemi Bankole

Education meeting at table

Background

Due to the timing of the delegation in the midst of the academic year, the educators in Maine who are most involved in the Maine-Aomori academic exchanges were unable to join in the trip to Aomori. Fortunately, an Aomori delegation had been in Maine in the week immediately preceding. MASSAC President Steve MacDougall arranged a meeting between Aomori representatives, including Shishikura-san, and the Maine Department of Education to discuss the challenges and opportunities related to the exchange relationships between Maine and Aomori. A copy of the minutes of that meeting is found in **Attachment C**.

Summary

In the meeting with Superintendent Hashimoto-san, Mrs. Baldacci asked for Hashimoto-san's continued support for the education exchange programs between Maine and Aomori, emphasizing that the programs are at the heart of the Maine-Aomori Sister-State relationship and that the exchanges create the foundation on which we build improved international relationships. Mrs. Baldacci emphasized Maine's interest in the increased use of technology to keep teachers and students connected throughout the year, the potential for teachers to share

Education meeting with Hashimoto-san

best practice to improve student learning, student volunteerism, and the need to help students understand the value of higher education. In turn, Superintendent Hashimoto noted how impressed the prefecture had been over the past 5 years with Mrs. Baldacci's heartfelt interest and support for the exchange programs. She thanked her for her warm welcome of Aomori students to Maine. Superintendent Hashimoto expressed the desire of the Department of Education to build a framework to assure sustainable exchanges and encouraged that Maine and Aomori work hand-in-hand to deepen their relationship despite the challenges. Mrs. Baldacci also informed Hashimoto-san of a letter request from the University of Maine to extend its formal exchange relationship with Hirosaki University.

Next Steps

- Work with the prefecture on the use of technology to stay in touch with educators and students between exchange visits

FISHERIES REPORTS

AUGA Fish Market

by Hugh Cowperthwaite, Fisheries Project Director, Coastal Enterprises, Inc.

Tuesday, October 12, 2010 at AUGA Festival City Shopping Center

From Maine:
Chris Davis, Ian Bricknell, Sally Baughman, Kathryn Miller, Hugh Cowperthwaite
From Aomori:
Shigeru Chiba, Takutoshi Ichinohe, Christy Bahr, CIR from Aomori City Board of Education

AUGA crab

Summary

The group walked to the AUGA Market, which is a lively fish market located in the basement of the AUGA Festival City shopping center. The market consists of tightly packed rows of vendors selling all sorts of fish, seafood, vegetables and prepared foods. The local seafood is freshly brought in from Aomori Port and we learned that the AUGA facility was built about 10 years ago to bring the city together and prevent further sprawl. In addition to the fish market in the basement, there are 8 upper floors of AUGA - there are a few floors of shopping (women's and men's clothing, 100 yen shop), a computer lab for free use, and 3 floors that make up the Aomori City Public Library (which offers some of the best views of the city). AUGA stands for "Attraction Upbeat Gusto Amusement". AUGA, in the local Tsugaru dialect also means "Let's get together" or "Let's meet up". The logo was designed to look like the Aomori Prefecture. Red represents apples, green represents nature, blue represents the sea and orange represents festival. A floor plan of the building shows the different merchants as selling fresh fish and other products. Two older fish markets (one that was located in this spot, different building) and a market from another area of Aomori joined together to create the market in AUGA. The members of the older market all sport a laminated picture/drawing of a woman's face. This "Mama" represents family businesses that were part of the original group that was at this site prior to AUGA being built. The majority of the market (37%) is now owned by Aomori City. Some changes are being seen in the items being sold in the market. Cod and whale are two species that have significantly decreased in their availability in recent years.

AUGA shellfish

AUGA squid and fish

Species for sale

Sea urchin, Trout, Rockfish, Arabesque greenling, Scallops, Shrimp, Pistol Shrimp, Welk, Horse Mackerel, Mackerel, Lefteye flounder, Righteye flounder, Pacific Bluefin Tuna (caught primarily near Oma on the Shimokita peninsula), Japanese amberjack, Young Japanese amberjack, Salmon, Shark,

Dogfish, Pacific Saury, Sailfin Sandfish, Cod, Sea Cucumber, Young Striped Beakfish, Thornhead, Pacific Herring, Bonito, Filefish, Fox Jacopever, Golden culttlefish, Abalone, Baby clams, freshwater clams and mussels, hair crab, king crab, Angler fish/Monkfish/Goosefish, North Pacific Giant Octopus. Some other items that are sold include: Salted Salmon Roe, Walleye Pollack Roe, Cod Roe, Thick wakame leaves, Oysters, Turban Shell, Sea Pinapple, Sea Squirts, dried fish and Nebuta Tsuke, which is a mixture of herring roe, dried squid, seaweed/kelp, Japanese radish, and soy sauce.

Contact Information

www.auga.co.jp/com/index.php

Jin Fishing Net Co., Ltd.

by Hugh Cowperthwaite, Fisheries Project Director, Coastal Enterprises, Inc.

Tuesday October 12, 2010 in Aomori City

From Maine:
Hugh Cowperthwaite, Chris Davis, Ian Bricknell, Kathryn Miller, Sally Baughman
From Aomori:
Shigeru Chiba, Takutoshi Ichinohe, Christy Bahr, CIR from Aomori City Board of Education
From Jin Fishing:
Isao Jin, Chairman; Keita Jin, Managing Director, Toshio Hanada, Executive Director; Yukiko Mikami, Trade Section

Summary

Jin Fishing Net Co.

Jin Fishing Net Co., Ltd. has been in operation for about 70 years. They have been making nets for 45 years (since 1965). We met with Isao Jin who is the Chairman, Representative Director, his son Keita Jin who is the managing Director, Toshio Hanada who is the Executive Director and has been working with scallops for 35 years and Yukiko Mikami who is the Trade Section representative and handles all the paperwork for the company. There is also another brother Yuichi Jin - President, who was abroad and not present at the site visit. They described 2 ways of growing scallops in Japan: 1) hanging baskets and 2) scattering them on the bottom. Jin Fishing Net Co. has been creative with their R&D and has developed several patents over the years including a cylindrical basket net design that stays closed due to the weight of the scallops in the nets resting on the material. At one time these nets were individually sewn shut by hand after they were opened, a process that is very time consuming. In Mutsu Bay, most fishermen will put 8-14 lantern nets on each line that is suspended (it really depends on the overall depth of the water). Scallop

Jin Fishing displaying net

culture is very economical and scallops do not require feeding, they simply feed on plankton in the water column. Cultured scallops grow faster than wild scallops and can be graded and cleaned constantly to assure the scallop access to a stable food supply. The meats of cultured scallops are large and tasty. Scallops can be harvested within a couple of years for specialty markets but some growers choose to grow them larger (for up to three years).

In February and March, spat begin to float in the water column and will do so for ~40 days before they settle out. They do not use hatcheries and rely on wild spat recruitment for their spat. When asked about scallop diseases, they indicated that environmental conditions (water temperature, turbidity, salinity etc) are more of a concern to the industry rather than diseases. Worth noting is the fact that this past summer they have had unseasonable warm weather which has caused a lot of scallops to die off and poor growth for this year. At a time of year when many harvesters would usually be harvesting, cleaning scallops or changing to larger nets, many of the fishermen are delaying these procedures until later in the fall to try to maximize their growing season before winter sets in. We asked what a good set would be in a spat collection bag and they said ~30-40K spat per bag. In Maine we were lucky if we were able to collect 1-7K spat per bag (significantly lower).

Jin Fishing Net Co's nets are currently all manufactured in China and Viet Nam. Up until 16 years ago, all the nets were manufactured in Japan. They have 20 employees in Japan, 150 in Viet Nam and 400 in China. They have a few other competitors in Japan who make similar net products for the scallop industry. We asked how much a typical full-time fishermen could earn in a year and how much a typical part-time fishermen could earn in a year. This was a tough question to answer but they said many fishermen are part of a family business…so there may be a father, sons and grandfather all working the same lease site for the family business. A typical family's annual business income would be ~140K US dollars.

Recommendations

It would be worth exploring the potential for a cultured Maine scallop industry again. The group that visited Japan in 1999 came here with a mission to learn about scallop aquaculture. Since their visit, there was an effort in Maine to collect wild spat to attempt to mock the wild spat collection efforts in Mutsu Bay. Maine did not have nearly the high spat counts that occur in Mutsu Bay. It appears that Maine will need to focus on a hatchery reared scallop spat. We would like to follow up with some of the people in Maine who were part of the 1999 group to learn about where they ended up with the wild spat collection project. It seems that with the further decline in Maine's commercial fisheries there is even greater reason to explore the potential of this marine resource again.

Next Steps

- Call a meeting with Dana Morse, Marsden Brewer, Chris Davis, Ian Bricknell, Hugh Cowperthwaite and other relevant parties to revisit this project and see if there is still potential.

- Chris Davis to show and share the nets he was given at the upcoming Northeast Aquaculture Conference and Expo (NACE).
- Chris will also test the scallop nets to see how scallops grow in the Damariscotta River.
- Follow up with Jin Fishing Net Co., Ltd. to thank them for the demonstrations and encourage them to keep in touch with us as we will with them.

Contacts:

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Aomori City, Aomori Prefecture, Japan
030-0131
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Fax 81-17-738-4013
www.jin-fn.co.jp

Isao Jin—-Chairman, Representative Director
Keita Jin—-Managing Director keita@aomori-net.ne.jp
Yuichi Jin—-President (not present during site visit)
Toshio Hanada—-Executive Director
Yukiko Mikami—-Trade Section

Mutsu Kaden Tokki Co., Ltd

by Ian Bricknell, Ph.D., Director, Aquaculture Research Institute School of Marine Sciences University of Maine
Hugh Cowperthwaite, Fisheries Project Director, Coastal Enterprises, Inc.

Wednesday, October 13, 2010 in Mutsu City

From Maine:
Ian Bricknell, Chris Davis, Hugh Cowperthwaite, Sally Baughman, Kathryn Miller
From Aomori:
Amy Miller, Mutsu City CIR; Shigeru Chiba
From Mustu Kaden Tokki:
Hiroaki Sugiyama, President; Mitsuru Sugiyama,

Summary

The delegation was met by Hiroaki (Hiro) Sugiyama, the founder and president of Mutsu Kaden Tokki Co. Ltd. Mr. Sugiyama gave us a wonderful welcome and introduction to the company, and he was congratulated by us all on the effort he had put into making us feel welcome. Mr. Sugiyama grew up in a family business environment that focused on repairing household appliances (refrigerators,

Mutsu Kaden Tokki visit

Hirokaki Sugiyama, Founder and President

toasters etc.) When the cultured scallop industry started to grow in Mutsu Bay, the family business adapted and started to focus on designing and building machines to assist the industry.

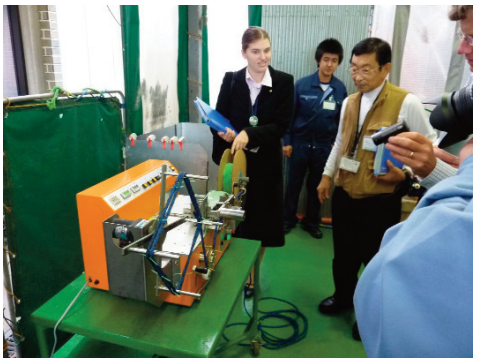
Mr. Sugiyama gave a PowerPoint presentation that outlined the history of the company and its main product lines. Mutsu Kaden Tokki Co. Ltd is a small family business (run out of a large garage) and was founded 28 years ago, initially to make scallop pins for rope culture. The company has since branched out to design and manufacture equipment to handle mass volumes of scallop aquaculture that primarily use the "ear hanging" technique of raising scallops with a view to making the aquaculture of scallops more profitable. The "pins" are like small plastic needles that penetrate a rope, anchor themselves in the rope and then two scallops can be attached to each pin (which has a barb on each end), to keep the scallops attached. The scallops then grow, attached to the rope as they are suspended freely in the water column. They manufacture 8-10 different pin sizes to accommodate the different life cycle stages of the scallops as well as the weight of scallops and current in the water column, and they refer to these as "agé pins".

Scallops attached to rope using shell drilling and pin insertion machines.

The company has also developed numerous machines for automatic ear drilling, biofoul removal, insertion of pins into scallop ropes, shell cleaning and harvesting. The advantage of rope-grown scallops is that they tend to have a fast growth rate and a better shell shape than other methods of rearing scallops. Patents protect most of the company's products as they are considered to be unique in the industry. The company provided videos of these machines in use in the field and these were given to Dr Davis who has archived them.

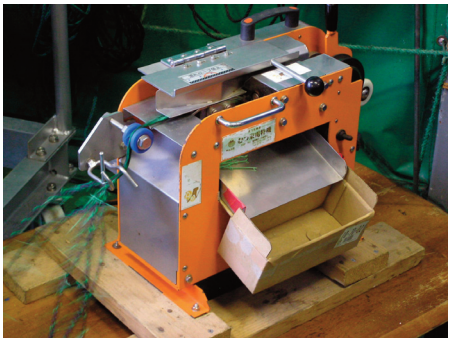
The machines are designed to maximize the production of 1 year plus scallops (prior to 1 year old the scallops are grown in lantern nets or concertina cages - see report on Jin Fishing Net Co., Ltd.). This is the minimum age and size (4.5cm, maximum size that could be used is 10.5cm) that the ear pins can be inserted safely into the scallop without injuring it. These scallop pins are made of nylon and have a very low failure rate and easily last the 2 year scallop growth period. However, there has to be routine husbandry carried out on the scallop about every six months, including removal of biofouling organisms and re-seeding the scallops onto large ropes as they grow.

After the presentation and videos of the machine, there was a detailed discussion on the application of these machines to the Maine scallop industry and it was agreed that they could help to develop the industry. However, the biggest issues with deploying these machines is the small, but developing, scallop industry in Maine and the lack of a distribution network. As many of the machines cost between $5,000 and $60,000 the industry does not have the resources to invest in such large capital at the moment.



Newer automatic pin setting machine

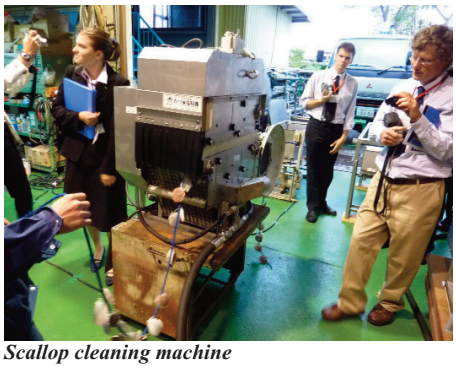
They demonstrated 8 machines that they have built over the years to assist with deploying, cleaning, grading, drilling holes in shells for "ear hanging" and removing ear tags from lines. The first machine that was demonstrated in their workshop was an "Automatic Pin Setting Machine" which simply inserts the pins into the lines to be hung vertically in the water column. We then saw a more recent model/design of a faster "Automatic Pin Setting Machine". Next was a scallop grading machine which had interchangeable screens for different shell size selection. Next was a



Pin outer

"scallop drill" that feeds live scallops through a machine that drills a small hole in one corner of the hinge of the scallop so it can be hung on a pin for deployment. Scallops are then pushed onto the pins by hand. Next was a "pin outer" which is a fast, portable pin removal machine that takes the pins out of the vertical lines (without destroying the lines so they can be re-used). Next was a "scallop cleaning machine" which takes a vertical line of scallops and cleans all of the growth from the shells and line by spraying highly pressurized sea water onto the shell surface and then returns the scallops to the sea (still attached to the vertical line). Cleaning the growth off fosters better feeding ability of the scallops and as a result more rapid growth. We were also shown a video of this machine working in the field during the sit down portion of our meeting. Next was a "scallop cleaning machine for harvested scallops". The machine gives a final cleaning to larger individual scallops once they have been removed from the vertical line. This machine also removes the plastic pins from the shells so they are ready for market. The last machine we were shown was a new project (commissioned by the Prefecture Government) to develop an emulsion fuel mixture of kerosene, water and a "secret ingredient" to make a more efficient fuel mixture for use in an open flame heater burner (somewhat resembling a salamander type heater). These heaters are common in Japan to heat hot springs, pools, schools, offices, homes public buildings and greenhouses. The end result being a higher efficiency burning fuel that uses less kerosene and saves the user money on fuel. The company also has a device (which we did not see demonstrated) called the "Aqua Egg System" that is used to raise and lower aquaculture nets and transport them to different areas of a lease site in response to environmental conditions.

Scallop grading machine



Scallop cleaning machine

Burner

Recommendations

The group that visited Japan in 1999 identified Mutsu Kaden Tokki Co., Ltd. as a business worth visiting but ultimately were unable to visit the company. On this trip, there was a great demonstration of tech transfer that occurred between Mutsu Kaden Tokki Co., Ltd. and the visitors from Maine. If Maine had a cultured scallop industry, Mutsu Kaden Tokki Co., Ltd. would be a great business to align with for equipment needs in Maine. With Mutsu Kaden Tokki Co., Ltd. demonstration of a cleaner burning fuel, there could be opportunities for sharing this information with Maine. Although we do not use kerosene in Maine to the extent that they do in Japan, there is still an opportunity to share information once Mutsu Kaden Tokki Co., Ltd. has secured their patents on this and is comfortable sharing the information.

Next Steps

- Call a meeting with Dana Morse, Marsden Brewer, Chris Davis, Ian Bricknell, Hugh Cowperthwaite and other relevant parties to revisit this scallop spat collection project in Maine and see if there is still potential for a hatchery based scallop fishery in Maine.

- Research what Maine is doing in the alternative fuel area to see if we are doing something similar to their kerosene and water burner.

- Follow up with Mutsu Kaden Tokki Co., Ltd. to thank them for the demonstrations and encourage them to keep in touch with us as we will with them.

Contact Information

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Hiroaki (Hiro) Sugiyama—-President
Mitsuru Sugiyama
2 technicians that help design, build and demonstrate the machines.
2 administrative/office staff

Aomori Prefecture Fisheries Research Institute

by Chris Davis, Executive Director, Maine Aquaculture Innovation Center
Adjunct Associate Professor of Marine Sciences, University of Maine
Hugh Cowperthwaite, Fisheries Project Director, Coastal Enterprises, Inc.

Thursday, October 14, 2010 at Hiranai Town

From Maine:
Ian Bricknell, Chris Davis, Hugh Cowperthwaite, Karen Baldacci, Sue Plummer, Lisa Adams, Sally Baughman, Kathryn Miller
From Aomori:
Yasunori Kitagawa, Zachary Bass, Mutsuko Tamai
From the Research Institute:
Shuji Nagatsu, Director of the Institute; Hiroshi Kimura, Executive ResearchManager; Hideaki Ito, Supervisor of Planning and Management; Yoshinori Kabotomori, Resource Management Section Chief; Toshihiro Kudo, Scallop Section Chief; Naohisa Kikuya, Stock Enhancement Section Chief, Kyosei Noro, Executive Senior Chief, Fisheries Promotion Division of the Prefecture Office

Summary

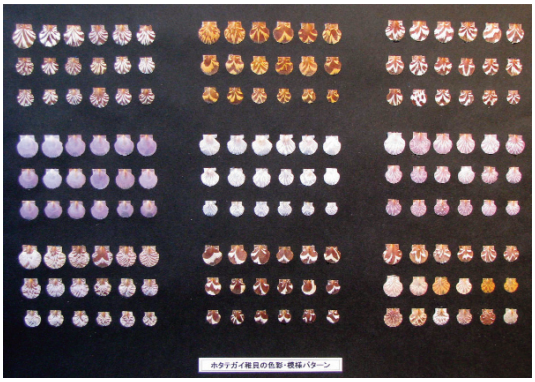
We met with senior staff of the Aomori Prefectural Industrial Technology Research Center (AITC), Fisheries Research Institute. Director of the Institute, Shuji Nagatsu, made some welcoming remarks as did First Lady Karen Baldacci. Geographically, the Institute is responsible for the waters in the Sea of Japan, Mutsu Bay and adjacent Pacific Ocean waters. They operate three large research vessels capable of offshore survey work. It was noted that achievements of the Institute include assisting development of the scallop (Patinopecten yessoensis) aquaculture industry in Mutsu Bay, a successful squid fishery in the North Pacific and research on the culture of the left-eyed flounder. They also noted that China has utilized some of their technology and markets for scallops. The AITC is divided into Departments of Industry, Agriculture, Food

Processing and Fisheries. The Inland Water Fisheries Research Institute and the Fisheries Research Institute fall within the overall Fisheries Department. Organizationally, there are six branches within the Institute comprising 64 staff (24 researchers and 40 office and vessel crew). We met with Section Leaders for most of these divisions, including, Hiroshi Kimura, Executive Research Manager, Hideaki Ito, Planning and Management Supervisor, Kyosei Noro, Director of Planning and Promotion, Yoshinori KabotomoriResource Management Section Chief, Toshihiro Kudo, Scallop Section Chief and Naohisa Kikuya, Stock Enhancement Section Chief, and we were also joined by Kyosei Noro, Executive Senior Chief, Fisheries Promotion Division in the Prefecture Office. Each then briefly described the goals and responsibilities of their unit.

The Fisheries Resource Management Section is comprised of six researchers who primarily conduct surveys for stock assessment and distribution. This includes age and growth studies of fish species and development of hydroacoustic methods to evaluate stocks of schooling fish species.

The Fisheries Ground Environment Section employs six researchers who monitor ocean conditions and environments and conduct surveys of fisheries habitat for the benefit of fisheries operators within the Sea of Japan and western Pacific. They also conduct a monitoring program to detect outbreaks of toxic marine phytoplankton responsible for paralytic shellfish poisoning (PSP) ("red tides outbreaks due to Dinophysis fortii") using the mouse bioassay model.

The Scallop Research Section (7 staff members) conducts surveys for seasonal scallop larval and spatfall spatial and temporal distribution within Mutsu Bay. These spatfall forecasts allow scallop farms to set out "spat bags" at the appropriate time to gather wild scallop set. Timing of deployment is crucial. If bags are deployed too early, they can become biofouled and thus not gather many juvenile scallops and if deployed too late, completely miss the larval scallop's metamorphosis stage and yield poor recruitment. This spatfall prediction "service" is one reason the Mutsu Bay scallop industry has been able to depend on natural recruitment as opposed to hatchery production of juveniles. Bottom culture surveys for scallop populations are also conducted by this group. Finally, this unit also conducts research on the culture of the Ark shell.



The Fisheries Resource Enhancement Section has six staff members who conduct research on the mass production of cod, flounder, rockfish, seaweeds and abalone for release into the marine environment.

Our hosts then provided a description of the marine environment around Aomori Prefecture which consists of 800 km of coastline. They noted the importance of plankton production for the fisheries due mixing of cold Pacific currents (Oyashio current) with relatively warm, Sea of Japan currents (Tsushima and Tsugaru currents) off the Tsugaru Strait.

The group then toured a Visitor's Center which featured scallop research related to the scallop fishery and aquaculture industry including relevant historical and current research that has benefited the industry. From there, we toured the aquaculture "wet lab" where a variety of fish species were being reared for stock enhancement programs including several species of flat fish. From here, we toured the laboratory including the ocean environmental monitoring facility where environmental data is automatically gathered from remote data-buoys in Mutsu Bay. This data is then made available online to other researchers and the fishing industry, similarly to the GoMOOS (Gulf of Maine Ocean Observing System) network of buoys operating off the Maine coast. Parameters measured include temperature, salinity and dissolved oxygen at the surface, 15m, 30m and on bottom for each of the three buoys.

At the conclusion of the tour, the Delegation and our hosts reconvened in a meeting room for further Q & A. The Maine delegation asked some questions about how the AITC is funded. The AITC facility itself is funded by Aomori Prefecture and they indicated that there are always budget constraints, cuts and tightening up every year. They indicated that most of their program funding was from the national government and not directly from Aomori Prefecture. They gave an example of a flatfish project that was supported with national government monies for a specific marine resource for the greater good of Japan and not just Aomori Prefecture. A juvenile salmon stock enhancement program was also supported with national government funding. The scallop industry is so well developed that very little federal money goes towards supporting this industry.

The Maine delegation pointed out that their information sharing and education with fishermen appeared to be impressive and we were curious how this was achieved. They hold seminars for the industry, information is available online, and they will fax and email information to co-ops who then post and share with the individual members. They will also provide ocean condition information to anyone who requests it.

We asked about the stability of seafood prices at the dock (boat price). Is there a safety net for fishermen or any measures in place to help keep prices stable? Left eye flounder were fetching 200-300 yen per kilo and it dropped to 100 yen per kilo. Scallops are at about half of their value compared to the height of the fishery, though it is not clear when this was. Large scallop meats produce a better price at the dock.

We asked about Trade Adjustment Assistance from the federal or prefecture government. Not for seafood prices but the co-ops do have security unions (similar to an insurance plan, sign up and pay a premium). All scallop co-ops are part of a security union. The Fisheries Mutual Aid program is in place to provide monetary relief to fishermen when they experience a decrease in income due to poor catch, natural disaster, or damages to aquaculture products being raised, facilities or equipment. ~80% of the scallop fishermen in Mutsu Bay are enrolled in the program. The national government will lower premiums to help bring enrollment up closer to 100%. The water temperatures in Mutsu Bay have raised concerns about the Mutual Aid program. Individual fishermen choose their level of coverage and people are predicting that the damages (due to die off of scallops in warmer waters) will likely exceed the coverage most fishermen have in place.

At this point, a member of the Maine delegation shared a series of slides of Maine shellfish aquaculture operations with our hosts who seemed quite appreciative.

Assessment

The prefecture provides valuable assistance to the fisheries industry in a wide variety of ways and there are many valuable lessons to be drawn from the Japanese/Aomori approach. Underlying economic, political and cultural difference may make it difficult to adopt in Maine many of the programs operated in Aomori, however they are all worthy of further consideration.

Next Steps

- Thank Director Nagatsu and his staff for a most enlightening visit and tour of the Fishery Research Institute facilities.
- Call a meeting with Dana Morse, Marsden Brewer, Chris Davis, Ian Bricknell, Hugh Cowperthwaite, others to revisit whether there is potential for scallop aquaculture in Maine.
- Follow up with 1999 delegation about its subsequent experience with wild spat collection.
- As aquaculturists in Maine investigate the potential for a scallop aquaculture industry here, it will be important to consider the various governmental programs that make the industry so successful in Aomori, such as the spat collection data and consider how Maine might equally well support its aquaculture industry.

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Naohisa Kikuya, Stock Enhancement Section Chief

Research Center for Marine Biology, Asamushi (Tohoku Univeristy)

by Ian Bricknell, Ph.D., Director, Aquaculture Research Institute School of Marine Sciences University of Maine

Thursday, October 14, 2010 at Asamushi

From Maine:
Ian Bricknell, Chris Davis, Hugh Cowperthwaite, Karen Baldacci, Sue Plummer, Lisa Adams, Sally Baughman, Kathryn Miller
From Aomori:
Yasunori Kitagawa, Zachary Bass, Mutsuko Tamai
From the Research Center:
Keiichiro Kyozuka, Hideki Katow, Ahmed Hamdy

Tohoku University Marine Biology Research Center

Summary

The Research Center for Marine Biology at Asamushi (RCMBA) is an outpost of Tohoku University and was established as a field station for research and education in 1941. It currently has five resident professors and one resident PhD student.

On arrival we were met by Associate Professor Keiichiro Kyozuka and Professor Professor Hideki Katow. Unfortunately, Prof Urabe could not attend and sent his apologies.

Asamushi meeting

Introductions were made and the meeting began with Dr Kyozuka and Prof. Katow providing a comprehensive PowerPoint presentation of the facility. Like many marine biology outstations in the current global economic crisis it had found that central funding had been reduced. However, it did have excellent facilities to house students and visiting researchers from Tohoku and Sendai Universities and the marine biology station ran many field courses for the students from these universities. Many of these are residential with lectures and labs being taught on site by the resident academics or visiting course tutors. Although it welcomed visiting researchers from overseas it was felt they did not have many people use the facility for this.

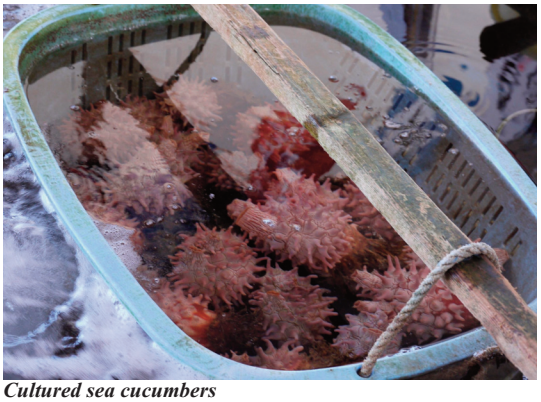
Lab classroom

During the subsequent discussion Dr Davis and Dr Bricknell described the similarities between the Darling Marine Center (DMC) at the University of Maine and its use as an educational center for

marine biology and the Semester by the Sea Program that bases University of Maine marine science students at the DMC where they are taught practical marine biology. It is abundantly clear that a lot of similarity exists between these two courses and it was suggested that the possibility of a formal student exchange be investigated to see if this could be a viable way of building links between the two institutions' students and academics.

The discussion then moved on to the research carried out at the field station. One of the strengths of the research at RCMBA is the research in developmental biology and how this is complementary to the shellfish broodstock research that is carried out at the DMC. Indeed, an invitation was issued to the University of Maine's newly hired developmental biology assistant professor (Dr Heather Hamlin) to visit RCMBA.

Dr Davis asked about the problem with red tides in Aomori and if it impacted scallop culture. There was much discussion about this and, yes, Aomori does have a red tide problem caused by the dinoflagellate, *Noctilica*. However, this was, currently, not a serious issue for scallop farmers but had the potential to increase if pollution and enrichment of the bays increases.



Cultured sea cucumbers

We learnt that there were some collaborative projects with the Technical University's Aquaculture Center, in particular the growth and culture of sea cucumbers, and many aquaculture researchers from Japan visit the facility to learn sea cucumber culture. Sea cucumbers are becoming a very important aquaculture species in Japan due to the high demand for them in the Chinese market where they are considered to be a delicacy. This led to a very detailed discussion about the potential of Maine sea cucumbers being aquacultured for the Chinese market. Although our native US species has not been cultured it was felt that there was a good business and research opportunity here.

Cultured sea urchins, including rare albino

The final discussion before we went on a tour of the campus was the potential to establish hatcheries for shellfish in Aomori. The subsequent discussion was very productive and highlighted the need for dedicated hatcheries to ensure continuity of supply of spat. The urgency for such hatcheries differs however: Aomori's wild spat collection satisfies their current needs while a successful aquaculture industry in Maine will depend upon hatcheries from the outset.

Asamushi dormitory

Asamushi group on steps

The meeting ended and the group then toured the faculty and saw the research laboratories, well-equipped aquarium with urchins, sea cucumbers and starfish being cultured. It ended with a tour of the institute ship and boathouse and a visit to the dormitories for visiting researchers.

Assessment

The similar nature of the DMC and RCMBA facilities and the complementary nature of the research and educational programs offer excellent opportunities for academic/research exchanges at many levels: undergraduate, graduate, faculty and even high school.

Next Steps

- Professor Bricknell to discuss within UMO the interest in/feasibility of such exchanges, including the Marine Sciences faculty (including Professor Heather Hamlin) and the Office of International Programs (Karen Boucias)

- If UMO is interested in pursuing an exchange program, MASSAC will facilitate the establishment a relationship between Tohoku University and UMO that would allow for the creation of a student/academic exchange program

- UMO to open a dialogue with RCMBA about the logistics of an exchange: Student or faculty? What level of student? What duration? What cost? Etc . . .

- MASSAC to confirm interest/willingness of RCMBA to welcome Maine high school (middle school?) students at RCMBA and open dialogue about logistics of exchange.

- MASSAC to communicate with the Maine schools to gauge interest in such a program, starting with existing exchange programs, other schools likely to be interested (North Yarmouth Academy, Maine School of Science and Mathematics in Limestone)

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Ph.D. Student Ahmed Hamdy

ENERGY REPORTS

ESCO

by Mike Burke, CEO, Community Concepts, Inc.
Susan B. Inches, Deputy Director, Maine State Planning Office

Tuesday, October 12, 2010, Aomori Prefectural Buildings

From Maine:
First Lady Karen Baldacci, Sue Plummer, Lisa Adams, Dale McCormick, Sue Inches, Sue Jones, Don Hudson, Daniel Martinez, Adam Lee, Mike Burke
From Aomori:
Yasunori Kitagawa, Zachary Bass, Takuya Yamagata of the Property Management Division

Summary

Aomori Prefecture launched an energy savings business project in April 2006. It is a 15 year project with private funding, targeting the Aomori Prefecture government offices and is known as an ESCO (energy services company). JX Nippon Oil and Energy Corporation, a major private Japanese energy company is the operator/servicer of ESCO for the local government.

Under the project, three high efficiency oil generator units having an output of 520 kilowatts combined with exhaust heat recovery are installed in the main government building. The project provides electricity and heat to four buildings. JX Nippon is engaged in all aspects of the project from procurement of oil to the installation, operation and management of the energy savings facility.

The project was financed with a subsidy from the New Energy and Industrial Technology Development Corporation (NEDO) and a bank loan made to JX Nippon. The loan is being paid back via an annual fee of roughly 96.95 million yen (U.S. $1.1m), which is based on the energy saved as a result of the investment.

The prefecture estimates that carbon dioxide emissions and energy consumption will be reduced by about 7.9 percent and 12.4 percent respectively. The project expects to reduce utility charges from 148.2. million yen (U.S. $1.55 million) to approximately 79.5 million yen (U.S. $829,000). After the annual fee to the ESCO, the prefecture expects annual costs savings of four million yen (U.S. $41,700).

In addition to the investment in the high efficiency electrical generators and heat recovery units, the project also invested in a new air sealing project for the government buildings. A series of CO2 sensors are installed throughout the building and automatically control ventilation at selected CO2 levels.

The heat recovery units are also used to heat city sidewalks. The warm sidewalks melt any snow accumulations. This has resulted in savings in snow plowing and has increased pedestrian safety.

Another use of the co-generation project is to power four electric cars that are used for government business.

Assessment

This ESCO project demonstrates a successful public and private partnership. The ESCO model allows the energy savings to be used to pay off loans for the capital improvements. There are three principles at work that make the project successful in saving energy cost: one is generation and distribution of power locally ("distributed energy"), another is to use both the power generated and the "waste" heat ("co-generation") and the third is to use the heat and power for a bundle of different purposes, in this case to heat and power buildings, melt snow on sidewalks and power electric cars.

Private Energy Service Companies have been successful in creating primarily single purpose energy projects in the US. The Aomori ESCO approach bundles the three principles described above to create a feasible project. One of the risk factors involved in ESCO projects is the price of fuel—oil or natural gas, for example. If energy savings are less than projected because fuel prices have gone down since the investment was made, that may pose a problem in paying back the original investment. Or alternatively, if fuel prices spike, the additional fuel cost may wipe out the projected savings in the budget. The latter happened when the State of Maine made an ESCO investment a few years ago, when oil prices spiked after the investment was made.

With Japan's commitment to the Kyoto Protocol and their hope that carbon credits will become available in the near future, decisions to invest in clean energy and energy conservation are based on both financial and environmental returns. This is different from the current US approach which bases decisions entirely on financial return. An expansion of carbon credits under a cap and trade program, or an outright carbon tax (both of which have languished in Congress for a while), would provide an added incentive for this kind of project in the US.

Recommendations

Share information on the Aomori ESCO project with Maine's Department of Administration and Financial Services and other large institutions such as the Maine Medical Center.

The project described here is similar to projects that large institutions in Maine have considered in the past. Eastern Maine Medical Center has an ESCO project in place and other large institutions may now be considering how they could apply this model. An exchange of information with the proponents of the project described here and large Maine institutions which could benefit here would be a good next step.

Contact Information:

Property Management Division, Department of General Affairs, Aomori Prefectural Government

North Japan Research Institute for Sustainable Energy

by Daniel M. Martinez, Ph.D., Professor, University of Southern Maine

Tuesday, October 12 at NJRISE facility, Hirosaki University, Aomori City

From Maine:
Daniel Martinez, Don Hudson, Sue Inches, Dale McCormick, Adam Lee, Mike Burke, Lisa Adams, Karen Baldacci, Sue Plummer
From Aomori:
Yasunori Kitagawa, Zachary Bass, Ryota Ishida
From NJRISE:
Kenji Itaka Ph.D., Associate Professor; Seiichiro Ioka, Ph.D., Associate Professor; Munekatsu Shimada, Ph.D., Professor

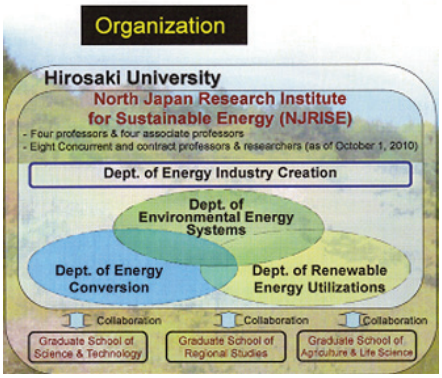
Snapshot

- Part of Hirosaki University
- Gained Institute Status October 2010
- 4 full-time Faculty, 4 Associate Faculty
- Technical Institution with an Energy Engineering Focus
- Key Areas of Research: Geothermal, Fuel Cells, Biogas Engines, Snow Melting, Silica to Silicon
- Key Potential Maine-Aomori Collaborations: Tidal Power Research, Student Exchange

NJRISE meeting

Summary

The North Japan Research Institute for Sustainable Energy (NJRISE) is a new government initiative, receiving institute status October 1, 2010. NJRISE is part of Hirosaki University, and was established to focus a small, experienced faculty force on solving a number of Japan's energy problems, in particular, the energy problems of northern cold climates like that of Aomori, in ways that reduce the usage of fossil fuels, and that use local, renewable resources that produce little-to-no carbon emissions during energy conversion.



The focus of the institute is energy engineering with foci in the following areas:

1. Environmental Energy Systems → Electric Vehicles, Fuel Cells, Energy System Assessment
2. Utilization of New Energy → Geothermal, Biomass
3. Energy Conversion Technology → Deoxidation of Silica, Biomass Gasification, Fuel Cells Materials
4. Creation of Industry → Small, Low-velocity Wind Generation and Geothermal Snow Melting Systems

Assessment

There are a number of possible reasons why this institute was established in Aomori Prefecture. First, an emphasis has been placed on branding Aomori as an "energy state," as Aomori also is home of numerous energy technologies including renewables such as the Rokkashomura-Futamata Wind Power Station and nuclear fuel cycle related facilities, as well as the International Thermonuclear Experimental Reactor (ITER) fusion research center. Second, Aomori's climate is quite cold, and there are particular needs for snow cleaning and removal, as well as dealing with issues of sustaining the (relatively) extensive oil usage for home heating in that region. Third, massive hydrothermal reservoirs (with moderate-to-high geothermal gradients) exist throughout the Prefecture, offering a large potential for use as a municipal heating supply, as well as for snow melting. Fourth, through investment from the major automobile companies, there is a strong emphasis on fuel cell research for stationary and mobile applications. Lastly, Aomori has a large tidal power potential, due to its proximity to the Tsugaru Straight, and there is a growing interest to tap tidal power potential in Japan. All of these factors combined have made Aomori a place for "all things energy."

Recommendations

1. University Collaboration

The three areas that have the most viable potential for meaningful collaboration between UMS and Hirosaki University are: 1) Biogas Engines; 2) Tidal Power; and 3) Undergraduate and Graduate Student Exchanges. A fourth area could be with Fuel Cell research, however Maine's potential in this area is likely limited by its proximity to major research institutions in Massachusetts and New York. It is recommended that the NJRISE literature provided to the Delegation should be made available to UMS schools in order to spark a personal connection with faculty at NJRISE. The Hirosaki University – UMaine institutional agreement should also be expanded to other institutions with research capacity, like USM.

Vertical micro wind tubine

2. Industry Collaboration

One potential area for industry collaboration might be in the development of micro wind-powered turbines to generate electricity to perform tasks otherwise dependent on a grid connection. Engineers now at NJRISE have developed a micro wind-powered system for opening and closing baffles on fences designed to reduce the impact to roadways and railways of high winds and blowing snow and turn on emergency lights. Blowing and drifting snow routinely produces hazardous conditions along roadways in northern Aroostook County, Maine in addition to an increase in the expense of energy and effort required to clear the snow. An industry and government collaboration with a Maine partner and the Maine Department of Transportation might provide an opportunity to test such equipment under Maine winter conditions.

Wind-powered blizzard fence

Upon future exchanges between Maine and Aomori, it might be beneficial to include delegates that are from Maine's thriving renewable energy industry, as this may spur new economic links between the two states.

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Toyota Floritech

by Adam Lee, Chair, Efficiency Maine Trust

Wednesday, October 13 in Rokkasho Village

From Maine:
Karen Baldacci, Sue Plummer, Dale McCormick, Sue Inches, Sue Jones, Adam Lee, Daniel Martinez, Lisa Adams, Don Hudson, Mike Burke
From Aomori:
Yasunori Kitagawa, Zachary Bass, Hitoshi Ota, Ryota Ishida
From Toyota Floritech:

Toyota Floritech Greenhouse

Summary

The Toyota Floritech facility was built as a joint venture between Toyota Motor Corporation and Hakusan Co., a Japanese firm specializing in seeds and seedlings. Simply put, the facility is an enormous greenhouse taking up 20,000 square meters or roughly 5 acres full of low tech plants and high tech equipment. The greenhouse is the largest of its kind in all of Asia. They grow roughly 30 varieties of flowers for use in the domestic market.

The greenhouse itself resembles most greenhouses, just much bigger. The actual technology used to fill the small pots with potting soil and plant the seeds is imported from Denmark. What makes this greenhouse stand out is the unique system it uses to power all systems and the creative use of the waste heat and CO2 produced.

They generate their own electricity by burning natural gas, a very clean switch from the number 2 oil they used to burn. They use the electricity to power everything in the greenhouse. They capture the CO2 produced by burning the natural gas and put it through a scrubber to create cleaner CO2. Roughly 1/3 of the CO2 created is fed back into the greenhouse facility to "feed" the plants. Plants breathe CO2 the way people breathe oxygen. The waste heat from the system is used to heat the facility and the water used to water the plants. So with one creative system they are able to generate electricity, capture the CO2 and use it to feed the plants, and use the waste heat to heat the building and the water.

Toyota Floritech energy source

This is a great example of a collaboration between a well known car manufacturer and a company specializing in growing plants where they can both use their expertise to provided dozens of jobs in a rural area of Japan, reduce pollution, reduce global warming and grow beautiful flowers at the same time.

Toyota Floritech transferring heat and CO2 to greenhouse

Recommendations

Share the information learned about Toyota Floritech with Maine greenhouse growers such as Backyard Farms in Madison, ME. https://www.backyardfarms.com/index.aspx

Contact Information

General Manager, Takuya Sato

Rokkashomura-Futamata Wind Power Station

by W. Donald Hudson, Ph.D., President Emeritus, Chewonki Foundation, Trustee, Midcoast Regional Redevelopment Authority
Sue Jones, President, Community Energy Partners

Wednesday, October 13 in Rokkasho Village

From Maine:
Karen Baldacci, Sue Plummer, Dale McCormick, Sue Inches, Sue Jones, Adam Lee, Daniel Martinez, Lisa Adams, Don Hudson, Mike Burke
From Aomori:
Yasunori Kitagawa, Zachary Bass, Hitoshi Ota, Ryota Ishida
From Rokkashomura-Futamata Wind Power Station:
Hiroshi Hasegawa, Overseas Sales Department, Japan Wind Development Co.; Katsutomo Suzuki, Plant Chief; Rie Shimoda, Engineering Group, EOS Engineering & Service Co

Snapshot

- 51 MW; 34 1.5 MW turbines; 17 2 MW NAS batteries
- 1st wind farm in the world with large battery storage
- Stable electric power provided to grid through forecasting and electronic management of the system

Rokkashomura-Futamata Wind Power Station

Summary

The Maine delegation visited the Rokkashomura-Futamata Wind Power Station accompanied by Aomori Prefectural Government officials and interpreters, Yasunori Kitagawa, Zachary Bass, and Hitoshi Ota. Hiroshi Hasegawa of the Japan Wind Development Co., Ltd. traveled from Tokyo to host the visit.

Rokkasho - Hiroshi Hasegawa presentation

The Rokkashomura-Futamata Wind Power Station was the first in the world to combine a commercial wind farm with a large capacity storage battery in order to provide stable electric power to the grid. Power is generated by 34 1.5 megawatt (MW) turbines with a total capacity of 51 MW, stored in 17 2 MW sodium sulfur (NAS) batteries, and provided to the grid through a complex management system that includes:

- a wind power generation forecasting and planning system
- wind turbine generator supervisory control equipment
- electric power supervisory control equipment
- 17 2 MW AC/DC converters
- NAS battery controller

Assessment

Rokkasho batteries

The region around Rokkasho Village has become a hub of new energy development in Japan and a major component of industrial and technological development in Aomori Prefecture. The 34-turbine Rokkashomura-Futamata Wind Power Station is one of the two prominent projects in the region, along with a nuclear fuel reprocessing facility developed in partnership with the French nuclear industry. Though a relatively small installation, this wind power station is unique in its capacity to deliver stable and dependable electricity to the grid. In order to accomplish this task, engineers at the Japan Wind Development Co., Ltd. have created software to forecast power production based on an instantaneous analysis of meteorological data, individual wind turbine position and overall geographical features. Electronic management of 17 2 MW NAS batteries and their associated AC/DC converters insures a steady flow of power to the grid despite the fluctuating nature of the wind. The NAS batteries have a high energy density (3 times that of lead acid batteries) and high energy efficiency of 85%. They are expected to have a long life and are considered environmentally friendly, with no exhaust gas and no vibration. The cost of the combined project – wind turbines and batteries – is approximately 180% of the cost of the wind turbines. The additional cost of the batteries that nearly double the cost of the project would be a huge obstacle to widespread adoption of the technology. Nevertheless, wherever the external cost of impacts to climate change are included in the calculus of funding renewable energy projects, this approach to stabilizing the power delivered to the grid by wind, solar, or ocean (tidal, wave) energy might be very attractive

Full scale turbine in training room

The several pieces of this renewable energy project come from across the world: the turbines from Germany, blades from India, towers from China and the batteries from Japan. One of the unique elements of the project, and something that Japan Wind Development Co., Inc. has to sell to the world is the complex electronic management systems employed for forecasting and managing electrical output to the grid. Finally, a state-of-the-art training school for power station technicians and employees rounds out the overall facility, and is a management and training component that others may wish to emulate.

Recommendations

1. University Collaboration
The Rokkashomura-Futamata Wind Power Station should be included in the information shared with the University of Maine and the University of Southern Maine as they contemplate connections with NJRISE of Hirosaki University. This approach to buffering the energy from intermittent renewable sources is relatively unknown in Maine, and will be of interest to university-based engineers and researchers. People working on wind, solar (PV) and tidal projects should consider this project and determine whether or not something like it might fit in their plans should cost not prove to be an insurmountable obstacle.

2. Industry Collaboration
The Ocean Renewable Power Company may want to take a look at this technology, as may those who are developing 'grid-solar' projects. In addition, the Midcoast Regional Redevelopment Authority, which is responsible for converting Naval Air Station Brunswick to civilian use, will likely have interest in this project. MRRA is planning to develop a leading edge sustainable energy center on the old base in collaboration with industry as well as the University of Maine and Southern Maine Community College. Xcel Energy installed the Japanese NGK sodium sulfur battery storage system at their Minwind wind power station in southwest Minnesota earlier this year, the first such installation in the United States. The matter of cost is clearly not an insurmountable obstacle.

Contact Information

Operating Company
Futamata Wind Development Co., Ltd.
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Rie Shimoda
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Plant Manager
Katsutomo Suzuki

Rokkasho Village Smart Grid Demonstration Model

by Daniel M. Martinez, Ph.D., University of Southern Maine

Wednesday, October 13 in Rokkasho Village

From Maine:,

Karen Baldacci, Sue Plummer, Dale McCormick, Sue Inches, Sue Jones, Adam Lee, Daniel Martinez, Lisa Adams, Don Hudson, Mike Burke

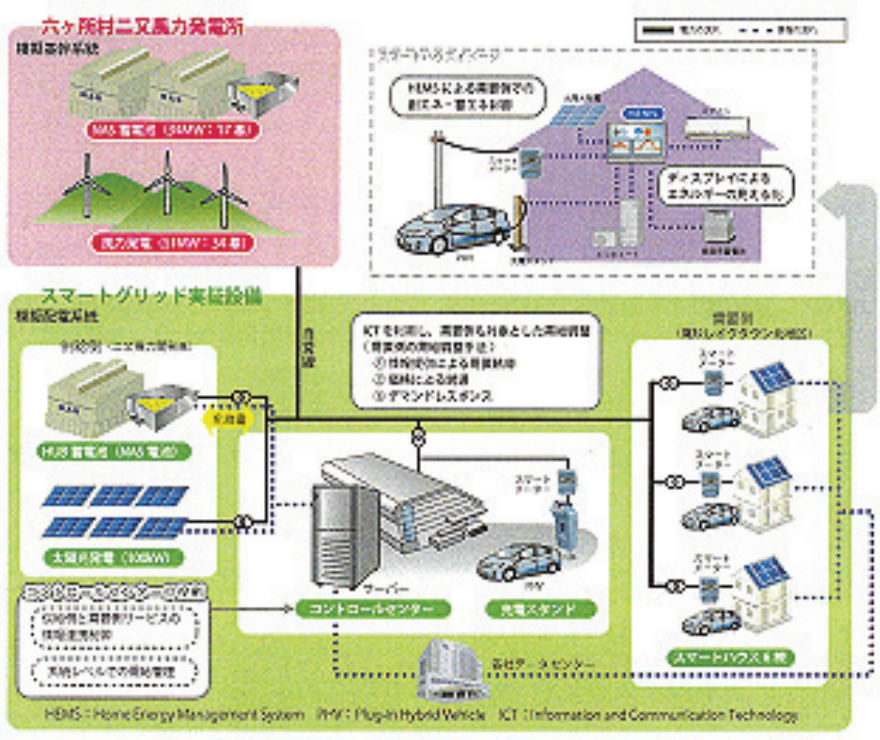
From Aomori:

Yasunori Kitagawa, Zachary Bass, Hitoshi Ota, Ryota Ishida

Snapshot

- Japan Wind Development Company, Panasonic Electric Works Company, Hitachi, and Toyota Motor Corporation Partnership
- 4 independent Smart Homes, one of which (Toyota's) has plug-in hybrid capacity
- Develop and demonstrate technologies for optimizing supply and demand effectively
- Assess potential for commercialization in Japan and abroad
- Key Potential Maine-Aomori Collaboration: Model Replication

Summary



The Rokkasho Village Smart Grid Demonstration Model (Smart Grid) is a joint experimental demonstration project between Japan Wind Development Company, Panasonic Electric Works Company, Hitachi, and Toyota Motor Corporation. The four companies intend to use the trial project to test and develop technologies for effective and efficient use of electricity derived solely from renewable sources. The project began September 2010 and will run through July 2012.

The main goals of this experimental project are to:

- Build an electricity network independent of the main grid in Rokkasho
- Measure electricity demand and supply in a small cluster of homes connected directly to the renewable electricity network
- Develop and demonstrate technologies for optimizing supply and demand effectively
- Assess potential for commercialization in Japan and abroad

This project is significant in that it aims to demonstrate different supply and demand scenarios that are important for considering the use of renewable electricity in a decentralized system. The independent electricity network includes upstream power from the Rokkashomura-Futamata Wind Power Station, midstream power from a 100 kilowatt (kW) PV array with 250 kW HUB battery backup, and downstream generation at the Smart House, to assess the potential for power generation self-sufficiency of homes. According to a response to a question by the Maine Delegation, almost all of the breaker switches in the Smart Homes provide real-time data regarding the amount of electricity consumed and generated, and this data is used in grid control. Additional data is also collected at the power generators and storage batteries upstream, as well as at each transmission point along the way.

Another interesting feature of the project is that residents will be able to sell surplus electricity generated from the rooftop PV arrays using transmission lines to the power company. (Because this is a "direct line" and monitored extensively, it makes this very easy to do) In such an instance, the rate of purchased electricity will be calculated depending on the balance of supply and demand at that time. Each family will be able to choose when and how much electricity to sell according to rates. In times of power outage, it would also be possible to sell power at higher rates.

In further discussions after the delegation returned to Maine, it was related that during the winter of 2010/11 the homes built in this demonstration project had a hard time staying warm with just air conditioning units (heaters running off of electricity). In this project the extreme cold of the northern climate posed challenges to only using electricity as a source of heat.

1. Maine Demonstration Homes

The results of this Smart Grid project should bear interesting results for modeling power situations of different countries. In Maine, however, there has been a concerted effort to eliminate electricity as the sole source of power, since rates are rather high and since most homes are heated using oil. However there is potential for using the energy home demonstration model tailored to Maine's built environment. An example of an interesting site to develop include housing-turned-offices on USM's Portland campus with an eye towards collecting real-time data from energy efficiency improvement, electricity generation, and perhaps, centralized heating from geothermal heat pump installations. A second location that could benefit from this would be Peaks Island in support of the Peaks Island Home Start program, building new homes with high energy standards and with monitoring built into the structures.

2. Industry Collaboration

Smart Grid advocates and power industry leaders will be interested in the results of this project, but it seems that the actual data being collected for this Rokkasho Smart Grid project are proprietary in nature and specific to its proximity to renewable sources with independent power delivery lines. It would take a large-scale effort to try to duplicate this project but, perhaps, may be of interest to Maine's power industry.

Ohu Clean Technology

by Susan B. Inches, Deputy Director, Maine State Planning Office

Thursday, October 14 in Hachinohe City

From Maine:
Sue Inches, Sue Jones, Mike Burke, Adam Lee, Don Hudson, Dale McCormick, Daniel Martinez
From Aomori:
Shigeru Chiba, Leon Fonseka, Takutoshi Ichinohe
From Ohu Clean Technology:
Masafumi Tanaka, Center President, Hachinohe Branch
From Sanki Engineering:
Yoshihiro Iwai, Division Chief, Energy Solution Center

Snapshot

- Waste Heat is transferred from incinerator to hospital and aquaculture facility via truck
- Proprietary phase change material (PCM) that carries the heat makes this more efficient than in the past
- Other than the PCM material, the heat transfer system is a basic pump, pipe and heat exchanger system
- A forthcoming monetization system of carbon emissions is a key part of the financial formula to make this work
- Japan incinerates all industrial waste including toxic soils
- Japan's nuclear generation policy changes the way they regard renewable energy

Summary

Docking Space and Transheat Container at Medical Court West Hachinohe Hospital

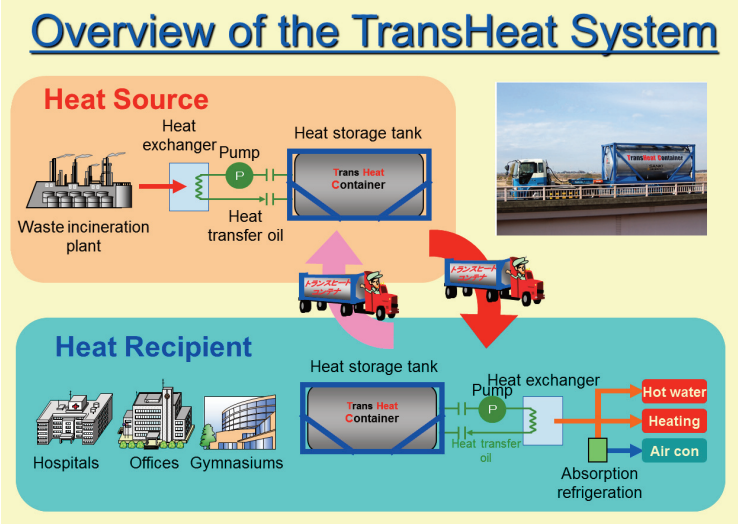
Heat Exchanger and pump at Ohu Clean Technology

The Ohu Clean Technology Project transfers waste heat from a waste to energy plant to a hospital and an aquaculture facility, where the heat is used to heat water and warm and cool buildings. The core technology is a phase change material (PCM) that absorbs the waste heat (from hot oil that is pumped through it) in a container that is then trucked several miles to the recipient facilities.

This is a unique and efficient method of transferring and storing and using waste heat. The PCM is 5 to 8 times more efficient than previous technology and can store 4.5 times the heat of water. The other system components including the tank, transport trucks, pipes, pumps and heat exchangers appeared to be simple technology and easy to operate.

Challenges of this new project that are still being worked on include reducing the cost of the PCM material, reducing the cost of transporting the material, instituting a CO2 credit trading system, and developing more social incentives for use of waste heat.

In addition to the heat transfer project, our group was keenly interested in the waste to energy incinerator, since Maine has four waste to energy incinerators and has embraced this technology as part of our solid waste management system. The plant in Hachinohe was built in 2007, began operating in 2008. It accepts industrial waste



from all over Honshu (Japan's largest island) on a contractual basis, however it does not accept all of the industrial waste of this type in Honshu.

The plant is 100% privately owned and is supported by two revenue streams, tipping fees from industrial waste, and government contracts to incinerate waste from cleanup sites. Our tour guides noted that illegal dumping has been a problem in Japan, and we saw toxic soil and construction debris at the plant that may have come from government clean up efforts. The plant does not accept household waste and in response to our question about this, we learned that household and industrial wastes are managed as entirely separate systems in Japan.


Waste Incinerator Plant at Ohu Clean Technology

The plant was equipped with scrubbers for nitrous oxides and other toxics. 70% of the ash leftover after incineration is landfilled and 30% is mixed with cement and made into brick. The plant appeared to employ state of the art technology for high temperature incineration and capture of residual toxics.

Assessment

This project is significant in that it employs a unique technology for transferring and using waste heat. The carbon savings are recognized by Japan's Domestic Emissions Trading Certification Board but a trading system where the carbon savings can be sold is not yet operational, according to a handout we received.

The energy savings at the receiving hospital facility seemed modest at about 30 gallons of heating oil per container load of waste heat. The hospital can accept up to four containers per day, the equivalent of about 120 gallons of oil. Our hosts said that the hospital does realize savings from using the waste heat, but that the waste heat doesn't supply all the hospital's energy needs.

We inquired about the cost of the heat transfer project. But, since the project was an integral part of the waste to energy plant from the start, it proved difficult for our hosts to separate its cost from the incinerator as a whole. They thought that it might cost about $8m to retrofit an incinerator with a similar system, but weren't sure if it made sense to do so.

Written handouts we received cited the following benefits of the heat transfer system:

- Utilizes waste heat that would otherwise be discarded

- Operates year round
- Large CO2 reduction
- Highly efficient
- Reduced operating costs through reduced fuel costs

To fully calculate the benefits of the project, one would have to account for the cost of the investment, the cost of operations, the avoided cost of the energy saved and the price of carbon credits. While we weren't able to fully calculate this, it appeared that the decision to invest in the technology was likely based on the carbon saved to meet carbon reduction goals, rather than on the financial payback of the system.

The waste to energy plant presented a different business model than we have used in Maine. Where our waste to energy plants sell the energy they generate to the grid, the Hachinohe plant is not connected to the grid. Energy generated is used to run the plant, along with additional energy purchased from the grid. The day we visited, the energy generated on site was about 1/3 of the total energy being used to fire the incinerator. The calculations to determine how much heat/energy is wasted are extremely complex and we weren't able to discern why the plant could not generate enough energy to meet its own needs. Delegates speculated that burning toxic soil might possibly require significant additional fuel but further investigation is needed to understand this issue.

When we asked why the plant was not connected with the grid, our hosts explained that such facilities are not yet authorized for power supply to the grid according to current deregulation policies.

Recommendations

1. Investigate burning industrial waste in Maine.
In Maine, we landfill almost all industrial waste. With landfill space at a premium and our incinerators facing a downturn in municipal solid waste fuel (a result of the economic downturn), burning more of our industrial waste is worthy of consideration.

As with any change in solid waste policy however, there are many variables to consider. Our incinerators may not be licensed or equipped to handle some industrial wastes, for example, or our landfill operators may oppose diverting waste from their facilities.

The State Planning Office is tasked with establishing solid waste policy in Maine and can explore burning industrial waste and its implications as part of its public policy and planning role.

2. Consider making better use of waste heat at incinerators in Maine.
While an investment in the heat transfer system we saw in Hachinohe may not make sense for Maine incinerators, we certainly could consider making better use of the waste heat we generate. Nearby buildings could be heated by waste heat generated from these plants. Alternatively, businesses that need heat or cold could co-locate adjacent to our waste to energy facilities. This is an example of "co-generation", meaning to both generate electricity and use the waste heat that results from generation.

Two of Maine's incinerators are municipally owned, one is privately owned and one is a public/private partnership. The state can certainly encourage these plants to make better use of their waste heat. But to get real results in this arena, waste to energy plants and residual waste heat would need to become eligible as carbon offsets under the Regional Greenhouse Gas Initiative or a (not yet created) federal carbon tax or cap and trade system. These federal policy initiatives are actively being worked on now.

The State Planning Office can communicate about this with the Solid Waste Advisory Council, the four incinerators, the Office of Energy Independence and Security (OEIS) and energy advocates as a first step.

Contact Information

Waste Heat: Sanki Engineering Co Ltd.
www.sanki.co.jp

Waste to Energy Plant: Tel. 0178-44-1061
www.ohu-clean-techno.co.jp

To-o Nippo Housing Plaza and Weatherization

by Dale McCormick, Director, MaineHousing

Tuesday, October 12 in Aomori City

From Maine:
Don Hudson, Daniel Martinez, Sue Inches, Sue Jones, Adam Lee, Mike Burke, Dale McCormick, Chris Davis, Ian Bricknell, Hugh Cowperthwaite, Lisa Adams, Karen Baldacci, Sue Plummer, Sally Baughman, Kathryn Miller
From Aomori:
Katsuya Nagakura & Koji Sato from the Housing Division, Yasunori Kitagawa, Zachary Bass, Shigeru Chiba, Christy Bahr, Takutoshi Ichinohe, Ryota Ishida
From To-o Nippo Housing:
Ryoko Watanabe, Staff

Cross section of wall showing earthquake-resistant technology

Summary

The delegation first visited the housing plaza office where we were fascinated by the displays of hot water radiant floor heating, which seemed to be powered with heat pumps and kerosene heaters. Daikin and Corona technology is utilized for heating and hot water in the model homes.

The delegates from Maine split into two groups and visited the 5 model homes that were open.

Model #1 impressed us with its traditional Japanese design, use of low ceiling storage space, and anti-earthquake technology. The delegates subsequently learned that the low ceiling storage space is a tax saving measure because low ceiling spaces (1.4 meters or lower) are not included in the taxable floor space area of a home

Saison House

Model #2 called the Saison House (Ichijo Co., Ltd.) featured an upstairs apartment, a table with a heater under the floor of the foot space, radiant floor heating, argon windows, low heat lights and many space savers includ-

ing folding and pocket doors, playroom utilizing the under the stair space, fold down shelves for upper cabinets.

Model #3 had contained many features that showed that the designer knew how to make a house easy to live in. We were particularly delighted with the removable clothes drying pole in the master bedroom. Japanese people do not use electric clothes driers as much as Americans and rely on air drying typically under porch overhangs in apartments. This model also featured a silent stainless steel sink, which had a layer of rubber or a magical substance under the metal so that when one turns on the water, there is no noise. A screen displaying the energy produced by the solar array on the roof and the energy used by the house was proudly set on the living room table. There was even a Mickey Mouse window that allowed whoever was cooking to watch a child in the playroom.

PV metering & grid interaction/sales monitoring system hooked up to the television

All of us enjoyed seeing Japanese style homes and gaining a better understanding of the Japanese home lifestyle. The design was crisp and beautiful. The use of space was innovative and the heating technology was fascinating. We were informed that the homes cost approximately USD $500,000. This puts them above most people in Maine.

The energy delegates are interested in knowing how typical Japanese middle and low income homes and apartments are constructed and insulated. Does Aomori or Japan encourage energy efficiency and how? There was much discussion about this over the course of the visit. Both Aomori and Maine have similar goals to reduce dependence on fossil fuels:

Aomori (from Debriefing Meeting October 14)

- Reduce dependence on fossil fuels from 80% to 43% by 2030

Maine (from Public Law, Chapter 372 LD 1485, An Act Regarding Maine's Energy Future):

- Weatherize all homes and 50% of businesses by 2030
- Reduce the consumption of liquid fossil fuels by 30% by 2030
- Reduce peak load electric energy consumption by 100 megawatts by 2020
- Achieving electricity and natural gas savings of 30% and heating fuel savings of 20% by 2020

Maine believes that the least-cost energy resource is energy efficiency because it costs 1/3-1/2 less than traditional supply, is made in Maine and will never run out.

Recommendations

Maine proposes a knowledge exchange on energy efficiency in buildings between Aomori and Maine.

- Maine would like to understand more about the energy efficient technologies and appliances used in Aomori Homes.
- Maine would like to share its expertise on energy efficiency weatherization technologies with policy

makers, carpenters and contractors from Aomori.

- If the Aomori Prefecture is interested, the representatives from Maine (Mike Burke, Dale McCormick, Sue Inches will take the lead) will schedule a series of video conferences between the two states to ascertain how Japanese houses are built and insulated.

- The Maine energy delegation will prepare presentations on retrofitting buildings that are geared to Japanese building needs.

- When the next Aomori Delegation comes to Maine, a 3 day workshop will be presented at one of our . community college weatherization training centers and in the field. This could also be done via video conference, but it won't be as effective.

Useful Maine Websites and Resources

www.mainehousing.org
housing programs, green building standards

www.efficiencymaine.com
energy efficiency programs

www.waptac.org
US Weatherization Assistance Program Technical Assistance

www.eere.energy.gov
US Dept of Energy information on energy efficiency and renewable energy

Contact Information

Aomori Prefecture Housing Division

Community Wind Project: Green Energy Aomori

by Sue Jones, President, Community Energy Partners

Saturday, October 16 at Ajigasawa Town

From Maine:
Sue Jones
Ms. Jones's hosts:
Itaru Kashiwaya, Professor at Aomori University; Kimiharu To, Lecturer at Graduate School of Environmental Science Aomori Univeristy

Summary

Green Energy Aomori (GEA) is the owner of a community wind project located on the outskirts of the small town of Ajigasawa, Japan, which is approximately one hour west of Aomori City. GEA is a non-profit whose mission is to develop community energy generation projects – i.e., those that are owned by its members,

who are typically members of the local community where the project is sited. Most of its interests are in developing wind projects less than 3 mw, but it is also leading efforts to develop small-scale, locally-owned wood pellet biomass production and other smaller-scale (less than 1 mw) renewable energy generation projects.

For the Ajigasawa site, GEA started developing the site in the early part of this decade; the project became operational in February 2003. The 1.5 mw wind turbine is a GE prototype and is 65 meters tall. In a typical year, it generates approximately 3.4 million kwh of electricity (which is equivalent to approximately 1,000 Japanese households). It has a 22-26% capacity factor, which would be considered slightly low for a feasible turbine of this size in Maine.

Aptly named "Wands" – or "Ours" - the 1.5 mw wind turbine at Ajigasawa is a source of pride for local owners and residents.

Ajigasawa is a coastal town and port of 11,000. It is famous for its seafood and local fishermen's and agricultural cooperatives. It reminded me of many towns in Maine for its quaintness, lack of traffic and peaceful and laidback lifestyle. The site of the project was approximately 1 mile inland up from the coastal highway on a small plateau, on a secondary road than ran back down into the town. The parcel where the turbine is sited is 200 meters square, which in Maine would probably be considered a pretty tight area in which to construct such a project.

The nearby vicinity appeared to be generally rural in nature. The wind turbine site is adjacent to the business location of a small, family-owned construction company, a secondary road, and a watermelon farmer's fields and small house. No other homes were visible, and the town was less than a ¼ of a mile or so away downhill.

The Ajigasawa project is named – very affectionately – "Wands", which is a local Tsugaru dialect word meaning, "Ours". From what I could see when I observed the turbine and its site with 10 or so members of GEA in October 2010, this is a very appropriate name given the personal interest in the project from its members. Overall, 776 investors, mostly citizen-types (as compared to corporate, or institutional types) provided the majority of the funding to build this project, including half of the costs of the land parcel (50% is owned by the adjacent construction company), the wind turbine and related equipment and construction. (See pictures below of some of the members and citizen investors.)

Many of these investors apparently found out about the project through advertisements in local newspaper, fliers, and posters as well as through word of mouth and information provided by the local town office about investing in the project. The investment sizes range from $10,000 to $200,000. The shareholders are estimated to receive a modest interest of 2-4% a year for 16 years.

This is a 100 kw Furlander wind turbine at a separate community wind site visited (serving on-site needs of a nursing home complex), and looking out across Ajigasawa Bay toward the slight coastal plateau where Wands can be vaguely seen in the distance.

GEA was partially funded by the Hokkaido Green Fund (HGF), which is a separate non-profit organization that also builds and manages large-scale, community wind projects but generally does so in localities on the north island of Hokkaido.. Because of its experience in similar projects, HGF and its staff were instrumental in helping to seed some of the initial development efforts at the Ajigasawa site. It generally prefers to help fund wind turbine projects

of a similar size and scale as the Ajigasawa site – i.e., single 1.5 mw turbines that can produce roughly the electricity needs of 1,000 to 1,200 Japanese households.

At the time this project was built, a single turbine's construction costs were approximately 300 million JPY (approximately $2.61 million at 115 yen to the dollar exchange rate). To raise its funds, the HDF offers shares to residents in areas where the projects are built to cover half the costs, while the remainder comes in the form of national subsidies, and other financial incentives.

Itaru Kashiwaya, Professor at Aomori University, is a founder and leader at GEA and speaks to the group about the project. He is pointing to the written names of each of the investors. In some cases, investors offered the names of their beneficiaries such as their kids, grandchildren – and in one case - a dog's name, we believe to be the famous celebrity dog Wasao! Interestingly, the last name listed is Lester Brown, the well-known American environmentalist http://en.wikipedia.org/wiki/Environmentalist and founder of the Worldwatch Institute in Washington, D.C.

In addition, the HGF has created a Green Energy Tariff system where anyone can pay 5% extra to his or her monthly electricity bill as a "Green Fund" to invest directly in the building and development of a new generation source. This financing mechanism brings energy independence to the community since there is no financial reliance on power utilities or other private corporations to raise the capital needed.

The system secures power for households, and any excess electricity generated from its sites can be sold to utilities, profiting the investors in the respective projects. In Maine, only projects less than 660 kw can use this financial option.

Both Yasushi Murayama (Professor at Nagoya University), and Itaru Kashiwaya (Professor at Aomori University) are leaders in Japan studying the social acceptance of the ten community wind projects currently located there, including investor demographics. They have found that the primary reason why investors invest in these projects is environmental protection.

Contact Information

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Hiroki Kudo
NPO Legal Representative of Green Energy Aomori
Email: hiroki@ge-aomori.or.jp

Akiko Yonaga
Investor of Green Energy Aomori and neighbor of Wands
Phone: +81-173-72-2798

At 82-years young, Ms. Yonaga is pictured below, proudly pointing to the names of her grandchildren, for whom she invested. She is an enthusiastic supporter of the project.

GOVERNMENTAL MEETINGS

International Relations Division Opening Meeting

by Lisa Adams, MASSAC Delegation Coordinator

Tuesday, October 12, 2010 at the Aomori Prefectural Offices

From Maine:

First Lady Karen Baldacci and all Maine Delegates

From Aomori:

International Relations Division Director Kan Kosaka, Executive Senior Chief Hajime Sato, Executive Senior Chief Koji Nishiya, Senior Chief Shigeru Chiba, Senior Staff Hitomi Tenma, Senior Staff Yasunori Kitagawa, Senior Staff Takutoshi Ichinohe, Coordinator for International Relations Zachary Bass, Part-time Worker Ryota Ishida, Aomori CLAIR Branch, Mutsuko Tamai

MASSAC Delegates gathered in front of the Maine Bench in Aomori Park before the meeting

In a brief opening meeting, International Relations Division Director Kan Kosaka warmly welcomed the Maine Delegation to Aomori. He introduced the members of his staff and expressed his desire that the delegates would be pleased with their upcoming meetings and site visits. He hoped that the delegation's work would lead to productive exchanges between the two states. Mrs. Baldacci thanked Kosaka-san for the warm welcome and expressed her pleasure at returning to Aomori to continue to pursue the important work between the two states.

International Division first meeting

International Relations Division Closing Meeting

by Lisa Adams, MASSAC Delegation Coordinator

Thursday, October 14, 2010 at the Aomori Prefectural Offices

From Maine:

First Lady Karen Baldacci and All Maine Delegates

From Aomori:

International Relations Division Director Kan Kosaka, Executive Senior Chief Hajime Sato, Executive Senior Chief Koji Nishiya, Senior Chief Shigeru Chiba, Senior Staff Hitomi Tenma, Senior Staff Yasunori Kitagawa, Senior Staff Takutoshi Ichinohe, Coordinator for International Relations Zachary Bass, Part-time Worker Ryota Ishida

First Lady Karen Baldacci offered heartfelt thanks to Kosaka-san and all the International Relations Division for the enormous effort put forth to create the enormously successful visit to Aomori. She mentioned Yasunori Kitagawa and Zachary Bass in particular for their highly professional and cordial assistance in preparing for the delegation's visit, noting that this year's was the most complicated and demanding itinerary representing a new level of cooperation and joint explorations for the two states. She praised the level of trust and commitment each side had show in pursuing areas of mutual interest. She also noted her hope that communications between visits would be more frequent as each side works to accomplish some of the projects that spring from the work done together over the past days.

International Division final meeting

Kosaka-san also looked to the future in his remarks, asking the delegation to discuss what areas appeared ripe for exploration. His question prompted a response from a number of the delegates and discussion with Aomori representatives:

- Ian Bricknell discussed the opportunities to work with the Marine Biology Research Center at Asamushi at many different academic levels, including students, researchers and professors, and encouraging visits to both Maine and Aomori. He noted the opportunities for research presented by the similarities and interesting differences in the projects in Maine and Aomori such as the Atlantic and Pacific Oceans, the similar investigations but on different animals. He anticipated both academic and commercial advantages from collaboration.

- Chris Davis added that his organization, the Aquaculture Innovation Center could help with the connection between industry and research, as that is an area that he and AIC work on. He also expressed interest in helping to find a distributor for Jin Nets in Maine.

- Kosaka-san mentioned that the Prefecture has support systems for trade opportunities abroad.

- Chris Davis, in response to a question from Kosaka-san about the scallop aquaculture technology the fisheries experts has observed, Chris stated that he felt the technology could be applicable in Maine. He noted the challenge that spat collection is much more difficult in Maine but that it was a difference that could be overcome with help from Aomori regarding its hatchery methods and technology.

- Kyosei Noro from the Fisheries Promotion Division stated they would be happy to share past results of scallop research.

- Hugh Cowperthwaite spoke about the opportunities for expanding aquaculture in Maine in light of the declining natural stocks and strong motivation to keep Maine fishermen on the water. He noted the need for strong basic biology to grow the scallops, making education a key factor. He encouraged the exploration of apprenticeship programs for Maine fishermen to learn from Aomori aquaculturists. He also expressed his interest in the community based model of the AUGA facility.

- Sue Jones described two upcoming wind conferences, one in Maine and one nationally. She felt that the battery storage might be something of particular interest.

- Kosaka-san indicated interest in hearing in greater detail about the conferences.

- Daniel Martinez described Maine's strong interest in wind, biomass and tidal power. He noted the University of Maine System's research and teaching in the fields of energy engineering and environment, including policy, planning and economics. He appreciated the importance of personal networks and the sharing of information as a means of exploring ongoing opportunities for collaboration. In that regard he encouraged exchanges between researchers to explore the potential for joint project and possible student exchanges. Dan also noted his interest in the energy tourism in Aomori as well as the need to establish a formal relationship between Hirosaki University and the Maine University/ies it might engage with.

- The NJRISE representative at the meeting, Professor Abuliti Abudula responded by saying that Hisosaki University holds openness as a core value of the institution and welcomes exchanges with Maine, particularly of students in areas of mutual interest.

- Sue Inches reiterated the importance of personal researcher to researcher contact as essential to developing projects. She also noted that in Maine the universities work with private industry on projects and that model might be of interest to Aomori.

- Adam Lee suggested that in the future Maine explore Aomori's snow removal system in greater detail. He also wished to look more closely at the weatherization of Aomori homes and what Maine and Aomori might be able to offer one another in that field.

- Hitoshi Ota described Aomori's desire to reduce oil dependence from 80% to 30% and that geothermal is the likely primary source of alternative energy. Right now it is used for snow removal but there is interest in moving geothermal more into the housing sector. An air conditioning (hot and cold) is under development which they hope to make a commercial project.

- Katsuya Nagaura spoke of an Environmental Impact/Quality of Living in the Home study that is currently in process. Aomori would like to share that with Maine.

- Kosaka-san mentioned Maine's Green Energy Guidelines and his desire to consider something similar in Aomori. Currently there are national standards in Japan, but Aomori would like to consider guidelines specific to the prefectures northern climate.

- Dale McCormick responded that Maine would be happy to engage in discussions at the policy level. She promoted energy conservation as the most efficient means of addressing energy concerns and noted that this approach was very prominent in Maine.

- Kosaka-san indicated that he has spoken with Professor Abuliti who is affiliated with NJRISE through Dalian University in China. Professor Abuliti stated NJRISEs interest in welcoming students from the University of Maine system to study energy topics. NJRISE's current thinking is to begin with undergraduates , moving then to researchers, graduate and post-graduate students. He indicated long term interest in collaboration and the potential for business opportunities. In closing, Kosaka-san expressed Governor Mimura's strong interest in creating projects with potential for long term commercial benefits. Kosaka-san sees the interfacing of the relationships resulting from the trip to be the International Division on the Aomori side and MASSAC on the Maine side.

International Relations final meeting group

Meeting with Governor Shingo Mimura

by Lisa Adams, MASSAC Delegation Coordinator

Tuesday, October 12, 2010 in the Governor's Conference Room

From Maine:
First Lady Karen Baldacci and all Maine delegates
From Aomori:
Governor Shingo Mimura; Yoshihito Shibutani, Deputy Director General of the Department of Commerce, Industry and Labor; Kan Kosaka, Director of International Relations Division

Governor Mimura meeting

Summary

After introductions of the Delegation and the Aomori representatives, Governor Mimura and Mrs. Baldacci exchanged formal greetings. At the outset of his remarks, the Governor asked for a moment of silence in memory of Toshiki Sawada. Regarding the work of the delegation, Governor Mimura noted the similarities between Maine and Aomori in fisheries and expressed his hope that there might be opportunity for economic

benefit resulting from the upcoming visits and discussions in this field. He also expressed pleasure that Maine had taken interest in Aomori's energy initiatives and remarked particularly on the batteries in use in Rokkasho to address the challenges of the instability of wind energy. He mentioned earlier discussions with both the Government of Abu Dhabi and the Ambassador from the United Kingdom regarding Rokkasho's wind power. He also indicated his interest in the future of electricity taking the same path as telephones – a future without large-scale electric lines and his aspiration that Maine and Aomori could work together on such a project. With regard to all areas of mutual exploration, he hoped they might lead to economic development for both Maine and Aomori. He expressed his support of the school exchanges and his hope for their continuation.

Mrs. Baldacci reflected on the exciting steps Aomori is taking to expand clean energy generation and distribution and stated her hopes that the delegation would find areas of possible cooperation between the states. She also expressed pleasure that the states would continue earlier discussions about sustainable fisheries. She spoke of her deep commitment to the educational exchanges which form the foundation of the Maine-Aomori relationship. She also expressed her gratitude to the International Relations Division for its hard work of on this year's ambitious schedule of meetings and visits and to the Aomori UNESCO Association for its kindness and generosity in arranging the cultural tour for the delegates including a visit to the Shirakami Sanchi.

Relaxed conversation with Governor Mimura

Governer Mimura then engaged the delegates in relaxed conversation about their work and the upcoming visits and meetings. At the conclusion of the meeting First Lady Karen Baldacci and Governor Mimura exchanged gifts. Each delegate received a set of Tsugaru laquerware chopsticks in a holder made of the Aomori-style kogin embroidery.

Exchange of gifts

Meeting with Rokkasho Mayor Kenji Furakawa

by Lisa Adams, MASSAC Delegation Coordinator

Wednesday, October 13, 2010 at Rokkasho Town Hall

From Maine:
First Lady Karen Baldacci, Sue Plummer, Dale McCormick, Sue Inches, Lisa Adams
From Aomori:
Yasunori Kitagawa, Zachary Bass
From Rokkasho:
Mayor Kenji Furakawa, Michael Hauss, ALT

Rokkasho Mayor meeting

A small group was able to visit with the Rokkasho Village Mayor Kenji Furukawa-san, who welcomed us into his office and asked us about our interests in Rokkasho. He told us about the international school that opened to educate the children of the overseas energy experts who now live and work in Rokkasho. We were joined by a new American ALT, Michael Hauss who was teaching in the school.

The foreign children participate with the Japanese children in a variety of activities that don't require too much language skill – athletics, meals, etc. Mrs. Baldacci thanked the Mayor for his graciousness and expressed her eagerness to learn more of the energy goals and accomplishments of Rokkasho as we continued with our day. The mayor's office included wonderful old photographs, presumably of early mayors of the village, which we wish we had had the opportunity to ask about.

Contact Information

Rokassho Mayor Kenji Furukawa
Rokkasho Village Office
#475 Aza-Nozuki, Oaza-Obuchi
Rokkasho Village, Kamikita-gun
Aomori 039-3212, JAPAN
Tel: 0175-72-2111

Visit with Hirosaki Mayor Noriyuki Kasai

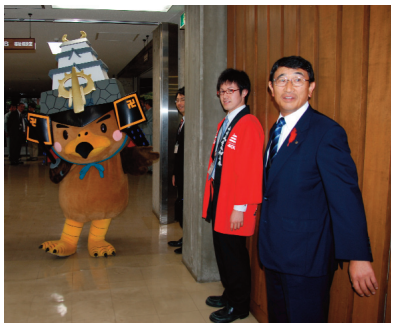
by Lisa Adams, MASSAC Delegation Coordinator

Friday, October 15, 2010 at Hirosaki City Hall

From Maine:
First Lady Karen Baldacci and all Maine delegates
From Aomori UNESCO:
Kojuro Wada and our Aomori UNESCO hosts
From Hirosaki:
Mayor Noriyuki Kasai

Hirosaki Mayor meeting

The warmth of the Aomori people and their interest in the Maine-Aomori relationship was ever present throughout the delegation's time in Aomori. It was strikingly evident during our visit to the Mayor's office in Hirosaki, where dozens of the city government staff lined the entrance to City Hall and the overlooking balcony of its atrium to welcome Maine's First Lady with smiles and applause. We had all come from apple picking and were not dressed in our finest, but we seem to be forgiven our rugged look compared to the fine suits that surrounded us! The Mayor greeted us in a beautiful conference room with a spectacular oval table. As we were introduced in turn, the mascot for the upcoming 400th year anniversary of the founding of Hirosaki Castle, Takamaru-kun, bowed graciously. Mrs. Baldacci and the Mayor exchanged greetings and gifts. Mrs. Baldacci noted particularly the contributions of Hirosaki citizen Akira Tonosaki and Sato-sensei and the relationship between the University of Maine and Hirosaki University.



Takamaru-kun greets the delegation outside the Mayor's office

Hirosaki City Office
1-1 Kamishioganechou
Hirosaki-shi, Aomori-ken
036-8551 JAPAN
Tel 0172-35-1111

SOCIAL EVENTS

The Welcome Reception

by Lisa Adams, MASSAC Delegation Coordinator

Tuesday, October 12, 2010 at JAL City Hotel

All Maine Delegates, Aomori Prefecture Host, Vice Governor Takeshi Ebina, Aomori UNESCO Host, Chairman Toshikatsu Wakikawa, Consul General John N. Ries from the Consulate General of the United States in Sapporo

Serving Cold River vodka

Together, the Aomori Prefecture and the Aomori UNESCO Association hosted a lovely Welcome Reception for the Maine Delegates. Vice Governor Ebina joined the group and gave a warm toast which First Lady Karen Baldacci reciprocated. Aomori UNESCO Association Chairman Toshikatsu Wakikawa welcomes the Maine Delegates before leaving for China to accept an award for his and Aomori UNESCO's accomplishments in bringing understanding between the senior citizens of China and Japan. Aomori delicacies and delicious sparkling cider, beer and wine were enjoyed by all. The Maine Delegation contributed a few Maine specialties including chocolate covered Maine blueberries, Maine maple sugar candies, and 40 nip bottles of Cold River Vodka, thanks to a donation from Cold River. Lisa mentioned our Aomori guests' to Maine fondness for the vodka and a number of guests took the bottles home to enjoy. Aomori UNESCO arranged for a performance by the Aomori Taiko Gumi Taiko group which played several stirring songs for us. After the delegates were offered a chance to play the drums and other instruments themselves and with the troupe members. The evening was a great success and filled with goodwill and anticipation for the visit to come.

Delegates try Taiko

First Lady Karen Baldacci with Consul General John Ries

Wakikawa-san welcomes Maine delegation

Reception feast

The Maine Party

by Lisa Adams, MASSAC Delegation Coordinator

Wednesday, October 13, 2010 at Bari Bari Okonomiyaki

All Maine Delegates, Aomori Prefecture Guests, Aomori UNESCO Guests

Bari Bari party

Bari Bari friends

Bari Bari fun with Sato Sensei

The Maine Delegation invited its Aomori Hosts, both Prefectural staff and members of Aomori UNESCO, to a dinner party at the Bari Bari Okonomiyaki Restaurant in Aomori City. Okonomi-yaki is a savory pancake, mixed with various ingredients such as seafood or vegetables, and its culinary cousin, monja-yaki. Sato-sensei delighted the group with a gift of traditional style Japanese top which she demonstrated with great aplomb! The evening included song by the Maine contingent (passable) and by our Japanese guests (glorious!). MASSAC is deeply grateful to the Maine Office of Tourism for its generous contribution to the party. The reciprocal Maine party is a very important tradition, allowing the Maine Delegation to reciprocate in a small way for the extraordinary generosity of our hosts.

The Farewell Party

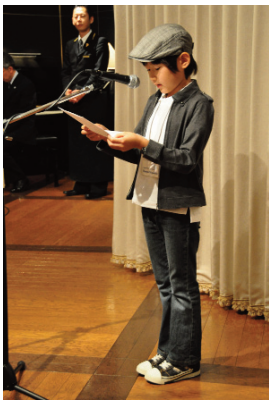
by Lisa Adams, MASSAC Delegation Coordinator

Saturday, October 16, 2010 at the Wine Club, Aomori City

All delegates, our Aomori UNESCO hosts, Vice Governor Ebina and many well wishers

Karen and Kathryn with kimono-clad friends

The Aomori Delegation was almost overcome with surprise at the incredibly generous and entertaining farewell party hosted by Aomori UNESCO. Over 100 people attended the sit down dinner, many of the women dressed in beautiful kimono. Mr. Hiroshi Kudo-san, a music instructor and a director of Aomori UNESCO led us in song. Mr. Akihiro Shiotani, the "finger whistler", entertained us with his amazing skill. And Mr. Hajime Yoneda played the recorder. Director General Kojiro Wada's grandson, Hayato-kun (age 8) delivered an elegant and flawless speech in English and gave each delegate lovely small origami figures in kimono. His mother and Wada-



Hayato-kun's speech

san's daughter, Mrs. Kyoko Mizushiri, through nothing short of magic, presented to each delegate a beautiful picture album "Autumn in Aomori 2010" mere hours after having taken the last photo. The delegation was extremely honored that Vice Governor Ebina attended the reception and Mrs. Baldacci and Lisa Adams greatly enjoyed his company throughout the dinner. The delegates are extremely grateful to Aomori UNESCO for their seemingly endless hospitality and good will. We have spent many hours during the trip and after our return planning their next visit to Maine.

Aomori UNESCO friends

First Lady Karen Baldacci, Vice Governor Ebina and Lisa Adams singing

First Lady Karen Baldacci, Vice Governor Ebina and Wada-san table

CULTURAL ACTIVITIES AND TOUR

Hirosaki Sports Day

by Lisa Adams, MASSAC Delegation Coordinator

Monday, October 11, 2010 in Hirosaki City

From Maine:
Karen Baldacci, Kathryn Miller, Sue Plummer, Sally Baughman, Don Hudson, Hugh Cowperthwaite, Sue Inches, Dale McCormick, Chris Davis, Lisa Adams

From Aomori:
Akira Tonosaki, Nobuko Tonosaki

On our way with Tonosaki-san

Akira Tonosaki, Executive Senior Chief, Department of Health and Welfare, met the group at the Hirosaki Train Station and led us to the Sports Park in Hirosaki where a series of sporting events had been planned for Sports Day, a national holiday celebrating health and wellness across Japan. We greatly appreciated Tonosaki-san spending his holiday with us. The group enjoyed a leisurely wander and tried some of the games including a game of chipping a birdie into what appeared to be an inverted umbrella with a golf club. Even those of us who missed the mark completely were awarded points, either an indication of a generous scoring system or a little extra boost for the inept foreigners!

Littlest competitor

We admired a large building which was a fascinating mix of contemporary architecture using some of the simple lines of a Shinto shrine. We learned it was a sports center and made our way over to explore further. Inside, multiple fast paced volley ball competitions mixed gender and age teams were going full force. In the entrance hall we noticed young people in the traditional garb of Kyuu-dou (Japanese archery or, literally, the way of the bow – see http://www.kyudo.com/kyudo.html.) Tonosaki-san investigated for us and learned that we would be able to watch the competition that was taking place among high schools in a short while. In the meantime we explored the Sumo competition area (the dojo) and the practice room where enormous timbers are installed for the sumo wrestlers to battle with. For more information visit http://www.japan-guide.com/e/e2080.html. After exploring the sumo hall, we were able to enter a small Kyuu-dou observation seating area. After a few rounds, we slowly came to understand the competition and the scoring. It was exciting to be close to the competitors' teammates as they reacted to the excellent shots shouting loudly and in unison something that sounded a great deal like "YES!" We watched for 45 minutes or so and then left between rounds. Luckily, Tonosaki-san's wife, Nobuko, who had joined us at the park had competed in archery as a high school student and was able to answer a number of our questions about the equipment and the format of the competition.

Kyudo

Noodle shop

Tonosaki-san and Nobuko-san then walked with us to a delightful self-service udon noodle restaurant where the noodles were made and prepared in an open kitchen and

diners are able to choose their ingredients. In addition to udon, onigiri (rice balls with various fillings) and tempura (lightly deep fried vegetable and seafood) and green tea were served. We ate our fill in the bright and busy restaurant before returning to the train station. With Tonosaki-san's help we got ourselves onto a local train back to Aomori City and enjoyed the relaxed and scenic route home.

Takayama Inari Shrine

by Sally B. Baughman, President, Friends of Blaine House

Thursday evening, October 14 to Friday morning, October 15 in the Shariki area of Tsugaru City

From Maine:
All delegates
From Aomori:
Yasunori Kitagawa, Zachary Bass and our Aomori UNESCO hosts


Takayama Inari torii


Takayama Inari bridge


Takayama Inari shrine

Background

With a history dating back to the 10th century, Takayama Inari Shrine is one of the most famous Shinto shrines in all of northern Japan. Shinto ("the way of the gods") is the indigenous faith of the Japanese people.

It remains Japan's major religion alongside Buddhism. This shrine pays homage to the Inari god, thought to preside over the harvest and wealth, and is most well-known for its spectacular row of red torii gates in the garden area on the far side of the shrine. A small hill at the end of the gates path reveals an excellent view of the gates as they weave through the garden area. It takes about an hour to enjoy a walk through the entire set of torii gates, well worth the not strenuous trip.


Delegates in Yukata

Inari is one of the most well-known kami (gods) in popular folk Shinto. He (or she) is the god of rice and is related with general prosperity. In earlier Japan, Inari was also the patron of sword smiths and merchants. Primarily, however, Inari is associated with agriculture, protecting rice fields and giving the farmers an abundant harvest every year. One of the main myths concerning Inari tells of this kami coming down a mountain every spring when it is planting season and ascending back up the mountain after the harvest for the winter. Both events are celebrated in popular folk festivals in Japan.

There are several theories on how the kitsune (Japanese word for fox) became Inari's servant/messenger. The first is a myth in a Buddhist text from the 14th century telling of a family of foxes who traveled to the shrine at Inari Mountain to offer their service to Inari. Inari granted their request and placed them as the

attendants of the shrine. Another theory comes from the behavior of actual living foxes. Foxes are often seen in and around rice fields during the growing season eating the rodents that would otherwise consume the rice. This pattern of behavior gave them the image of guardians of the fields. Also significant is that the color of the fox resembles the color of ripened rice, and its tail looks like a full sheaf of rice. These traits help to explain how the kitsune came to be associated with an agricultural deity like Inari in the early years of Inari worship (beginning around the 8th century).

Gustatory delight

Inari's Messenger is the Fox, and in traditional artwork, a pair of foxes typically flank Inari's image. But in modern times, images of Inari have all but disappeared, replaced instead by images of Oinari's messenger, the magical shape-shifting fox (kitsune). Here the symbolism is two-fold. First, rice is sacred in Japan, closely associated with fertility (the pregnant earth) and with sustaining life. Inari and Inari's foxes must therefore be placated — otherwise it would be disastrous to the livelihood of the nation's farmers and people.

Second, the fox is associated with the concept of Kimon, literally "demon gate," a Japanese term stemming from Chinese geomancy (Ch: feng shui). In Chinese thought, the northeast quarter is considered particularly inauspicious. It is the place where "demons gather and enter." This belief was imported by the Japanese and is referred to as Kimon. Kimon generally means ominous direction, or taboo direction. In Japan, the fox is considered a powerful ally in warding off evil Kimon influences. Fox statues are often placed in northeast locations to stand guard over demonic influence, and two foxes typically guard the entrance to Inari Shrines, one to the left and one to the right of the gate.

Takayama Inari Shrine interior

Shinto shrines are places of worship and the dwellings of the kami, the Shinto "gods". Sacred objects of worship that represent the kami are stored in the innermost chamber of the shrine where they cannot be seen by anybody.

Ritual cleansing before visiting shrine

As with most people visiting the site, the Maine contingent visited the shrine in order to pay respect to the kami and to pray for good fortune. A Purification Trough is found near the entrance to the shrine, the water of this fountain is used for purification of human bodies before going inside a shrine. Those of us who entered the shrine itself cleansed our hands and mouth with water dipped with bamboo ladles before approaching the main hall. Inside the hall the priest instructed us on the proper method to pray: kneeling, clapping twice, and then placing our forehead to the tatami mat. We were shown the beautifully painted ceiling, a recent addition to the shrine. Each square of the ceiling was painted with a different flower.

http://www.enjoytsugaru.com/areaguide/tsugarucity/takayamainari.html

Cheseborough Memorial

by Kathryn Miller, First Lady's Sister and Travel Companion

Friday, October 15, 2010 at Shariki Village

From Maine:
All delegates
From Aomori:
Yasunori Kitagawa, Zachary Bass and our Aomori UNESCO hosts

Wada-san laying flowers

"The cold sea wind is whipping my tired face. I cannot open my eyes to see. The massive typhoon is so intense and I fear we have run aground. All I hear are the desperate cries of my shipmates as they are slowly being washed out to sea. Suddenly, I'm in the freezing water. I swim hard with my legs trying to keep my head above the mountainous waves. The salty ice cold water fills my lungs and mouth. I can struggle no longer and give my body up to the sea. It seems all hope has run out. An eternity passes and I find myself lying on the stormy beach before a roaring fire. I cannot feel my frozen hands or feet. There is a warm presence next to me as I try to regain consciousness. Who is this warm angel sent from God lying naked against my frozen body? I'm alive and my name is H. Wilson survivor of the Cheseborough shipwreck on October 30, 1889. Thank God for the Shariki Village, Aomori, Japan!"

This was the beginning of warm friendship between the Aomori Prefecture and the State of Maine. The Cheseborough, built in Bath, Maine, loaded with sulfur ran aground off the coast of Shariki Village during a typhoon in 1889. Four men were saved by the villager's heroic efforts. The wife of Kichiemon Kudo, experienced with rescue used her body to provide warmth and saved their lives.

Cheseborough Memorial Tower

The villagers buried the casualties (19) with care and erected a memorial to them, The Cheseborough Memorial. On October 15, 2010, First Lady, Karen Baldacci and UNESCO Director General, Kojuro Wada, surrounded by both delegations, laid flowers at the memorial to remember the sailors that perished, to thank the villagers who risked their lives and to continue the Sister State relationship between Aomori and Maine.

To honor this memorial, the villagers hold a long-distance swimming relay race every year in August, the "Cheseborough Sea Ekiden Cup". The villagers say they want to continue the race until they swim the distance between their village and the State of Maine! The Shariki Shrine holds a model of the Cheseborough ship and a painting, which depicts the scene of the incident.

After the flower laying ceremony, the delegates climbed the stone tower to see the beach where it all happened.

Karen and Sue P with Demachi-san and Uchiyama-san atop tower

It is vital that the State of Maine maintain the Sister State relationship with Aomori and our ties with Shariki through the Bath City- Tsugaru City relationship. Visiting this historic site was the most significant stop on our tour and should be honored by all Americans, as well as the State of Maine.

Shayokan

by Lisa Adams, MASSAC Delegation Coordinator
with help from MASSAC member Pat Parker

Friday, October 15, 2010 at Kanagi Town

From Maine:
All delegates
From Aomori:
Yasunori Kitagawa, Zachary Bass and our Aomori UNESCO hosts

Shayokan

Shayokan garden

Shayokan is the family home of the writer Osamu Dazai. Dazai was born in the house and the room in which he spent much of his childhood is on the first floor. Built by his father, a rich landowner, the house is a striking combination of Japanese and Western style architecture, all of which reflects the family wealth. For example, the kitchen is a traditional style open hearth, but with polished wood instead of the usual dirt floor. The staircase to the second floor is a wide, elaborately carved Victorian style stairway, reflecting the late Meiji interest in Western architecture. The 15+ room house became an inn after the family sold it in 1949 but since 1996 has been a museum. It is a recommended stop for those interested in the life of Osamu Dazai or in a very fascinating combination of Western and Japanese architecture.

Contact Information

Telephone: 0173-53-2020
www.goshogawara.net.pref.aomori.jp/16_kanko/dazai/syayoukan.html (Japanese)

Tsugaru Shamisen Kaikan (Hall)

by Hugh Cowperthwaite, Fisheries Project Director, Coastal Enterprises, Inc

Friday, October 15, 2010 at Goshogawara City

Hugh Cowperthwaite and Yasunori Kitagawa

Shamisen player, Yasu-san and Hugh at Shamisen Museum

The Tsugaru-Shamisen (a traditional 3-stringed instrument) originated in the Tsugaru area. It's inventor was Nitabou Akimoto who lived from 1857-1928 and was from Kanagi. Nitabou lost his eyesight when he was 8 years old and invented a percussive "beating method" of playing. The

bachi (plectrum) is proportionately small and looks like a western style ice scraper you would use for your car windshield. The bachi is used to strike the body of the instrument on each stroke (creating a drum sort of sound). Unlike most other Japanese music, the Tsugaru-Shamisen is recognized as its own genre of music that originated in Aomori prefecture. It's not uncommon for musical pieces to be in triple time. The genre is played on a large Shamisen with thicker strings than those used for most other styles. Unlike other forms of Shamisen that use cat skin as a covering for the do (soundbox) the Tsugaru-Shamisen uses dog skin as its traditional material. Two of the strings are made out silk and one is nylon. The neck of the Shamisen is fretless (similar to a fretless bass guitar), intonation is an important aspect of playing the instrument. Players are known for tuning their instruments between songs because the percussive style of playing can stretch the strings and quickly need retuning. Shamisen cost between $4,000.00 and $6,000.00 US dollars for a nice instrument. There is an annual contest of the Tsugaru-Shamisen in Kanagi held in conjunction with the cherry blossom festival. Today the Tsugaru Shamisen is performed throughout Japan, though associations with the Tsugaru area of Aomori remain strong.

Shamisen player at Shamisen Museum

At the museum, you can watch a live performance which occurs 3-4 times a day (depending on the season). Audience members are encouraged to try the instrument (which we took them up on) and you can even arrange for ½ hour private lessons. Manji Aika-san played for us. There is also a video that is shown 8 times a day if you are unable to catch a live demonstration. There are many instruments on display which show how Shamisen's are constructed and the evolution of the instrument over the years. The museum is open daily and costs 500 Yen.

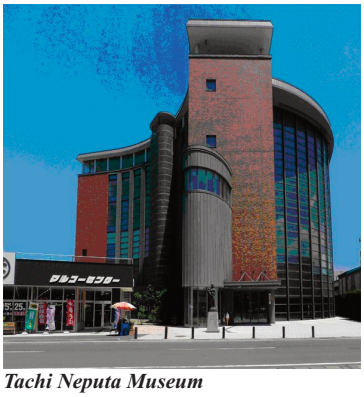
Tsugaru Shamisen Kaikan
189-3 Asahiyama, Kanagi-machi, Goshogawara City, Aomori, Japan
Phone 0173(54)1616
Fax 0173(54)1023
http://www.kanagi-gc.net/syami/index.html

Tachi Neputa Museum

by Lisa Adams, MASSAC Delegation Coordinator

Friday, October 15, 2010 at Goshogawara City

All delegates and our Aomori UNESCO hosts, Yasunori Kitagawa, Zachary Bass



Tachi Neputa Museum

We visited the extremely interesting Goshogowara Tachi Neputa museum as guests of our generous Aomori UNESCO hosts. The large modern museum building designed by Frank La Riviere Architects, Inc. was constructed to house three of the enormous (22 meters) parade floats.

One of the figures was in the process of being transported to Tokyo on exhibition, and we were able to see how the building functioned including an interior draw-bridge and a mult-story door large enough to remove the float.

Zachary Bass explains the floats and the Tachi Neputa float on the Aomori-Mori blog:

Red demon

Tachi Neputa is famous for its illuminated three dimensional floats which are made out of paper and painted elaborately, much like the Nebuta Festival in Aomori, but the best thing is the size! The largest floats in the parade are over 20 meters (over 65 feet) tall! In fact, the name Tachi Neputa, (literally standing Neputa) refers to tall-standing composition of the floats.

Tachi Neputa is held every year for 5 days from August 4th to August 8th. It doesn't matter if it is a weekday or not, the party still goes on! This year I went on the very last day, a popular day because the main floats stand facing one another and a popular Japanese singer from Goshogawara, Ikuzo Yoshi makes an appearance every year at his hometown's festival on this last day.

Tachi Neputa from upper level

We took the elevator to the top floor and then descended on a walkway wrapping around the perimeter of the interior space. (Those of us with a fear of heights hugged the walls.) The floats are truly impressive in both size and detail. We learned that new ones are made each year for the Neputa festival and the old ones are rotated through the museum and then, in a ceremony, are burned. It is hard to imagine burning these wondrous works, but also not practical to store more than three.

Hirosaki Park and Castle and Choshoji Temple

by Lisa Adams, MASSAC Delegation Coordinator

Friday, October 15 at Hirosaki City

All delegates, Aomori UNESCO hosts, Yasunori Kitagawa and Zachary Bass

After a delicious soba noodle lunch in Hirosaki city the group traveled to to the entrance of the Hirosaki Park and Castle where we were greeted by Masamichi Kato, Director of the park. Hirosaki Castle was built in the early 17th century by the second of the Tsugaru feudal lords. Remaining on the ground today are a castle tower, three turrets, five gates and a three moat system. We passed through the impressive gates and made our way to the Castle, noticing early signs of the renowned Chrysanthemum Festival that some of us had been able to enjoy in 2007. We stopped at the lovely red Gejo Bashi bridge that crosses the moat just below the Castle Tower, surely one of the most photographed spots in all of Aomori.

We heard of the wonderful hanami (cherry blossom) festival that takes place in the park drawing more than

a million visitors, all hoping one day to return during cherry blossom season to enjoy the more than 2,600 trees that bloom each April. For a peek at the park in during hanami look at: www.youtube.com/watch?v=RW_7Q6tWjZc

We climbed the tower and explored the museum in the tower keep that houses historical items from feudal times. The original tower was built in 1611 but burnt to the ground after being struck by lightning in 1627. The tower was rebuilt between 1810 and 1811 and remains the only castle tower keep built during the Edo Period in northeastern Japan that remains to this day. It has been designated an Important Cultural Property by the Japanese government. On our way out of the park we passed the oldest Somei Yoshino Cherry Blossom tree in Japan.

Chosho-ji Temple gate

We made a brief stop at the gate to the Chosho-ji Temple in the Zen temple area adjacent to Hirosaki Park. Chosho-ji was the family temple of the Tsugaru family. The gate was built in 1629 by the second lord of Tsugaru, who also built Hirosaki Castle Tower.

1-23-8 Nishishigemori, Hirosaki, Aomori, tel:0172-32-0813

Apple Park

by Lisa Adams, MASSAC Delegation Coordinator

Friday, October 15, 2010 in Hirosaki City

From Maine:
All delegates
From Aomori:
Our Aomori UNESCO hosts, Yasunori Kitagawa, and Zachary Bass

Hirosaki city is the largest apple producing municipality in Japan. Throughout our visit we often saw apple orchards as we traveled throughout the Hirosaki area and saw the trees in full fruit. Many of the delegates expressed interest in learning more about apple growing techniques (including reflective material placed at the base of the tree to assure that the apples are lighted from below as well as above, creating an even color overall) and suggested that Maine apple growers would be fascinated to visit Aomori. At the Hirosaki Apple Park, which features 1000 trees and 60 varieties of apples, we were able to both pick and taste these delicious apples. As we had become accustomed, Aomori UNESCO provided for our

Overlooking thatch roof house and orchards

Pruning implements

every need with umbrellas to protect us from a light drizzle and bags to collect apples. While we were at the park, "Ringo Oiwake" a popular song from 1952 sung by the post-war Shirley Temple-like superstar of Japan, Misora Hibari was playing in the background. The song describes spring and apple blossoms scattering in sight of Mount Iwaki. A number of delegates climbed a small hill to overlook the orchards while others explored the gift shop filled with apple memorabilia and displays of apple growing tools.

Shirakami Sanchi UNESCO World Heritage Site

by W. Donald Hudson, Ph.D., President Emeritus, Chewonki Foundation, Trustee, Midcoast Regional Redevelopment Authority

Thursday, October 14 at Ajigasawa

From Maine:
All delegates
From Aomori:
Our Aomori UNESCO hosts, Yasunori Kitagawa and Zachary Bass

SUMMARY

The Maine delegation visited the Shirakami Sanchi UNESCO World Heritage Site in Aomori-ken, Japan on October 16, 2010, accompanied by Aomori Prefectural Government officials and interpreters, Zachary Bass and Yasunori Kitagawa, and Christy Bahr, Coordinator of International Relations for the Aomori City Board of Education. A large contingent of the Aomori UNESCO Association led by Director General Kojuro Wada accompanied the Maine delegation on this visit to the spectacular old-growth forest preserve in the remote Shirakami Mountains.

Shirakami Sanchi comprises a core area of 10,139 ha with an additional buffer zone of 6,832 ha (a total area equivalent to 42,000 acres), and protects the last remaining large stand of Japanese beech in the world that is unaffected by man. This mountainous area (300-1,243 m) escaped the most recent glaciation, and the forest of over 500 plant species was thus established nearly 8,000 years ago. One hundred eight, or over 20%, of the plant species have protected status. Twelve of the 14 medium to large forest animals of northern Honshu are found here, including the Special National Monument species, the Japanese serow (*Capricornus Crispu*s, goat-antelope), as well as the Japanese black bear (*Selenarctos thibetanus*) and the snow monkey (Macaca fuscata), which is the most polar non-human primate in the world and whose habitat ranges as far north as the Shimokita peninsula.

Eighty-four species of birds, including the National Monument and Special bird species Japanese golden eagle (*Aquila chrysaetos japonica*, 1 nesting pair) and the black woodpecker (*Dryocopus martius*, 3 nesting pairs) are found in the core forest area. Though no people live within the core protected area or buffer, several small communities surround the area. Local people use the reserve for subsistence collection of edible mushrooms, herbs and bamboo, and for regulated hunting and fishing. An ancient tradition of woodcutters, charcoal burners, hunters and gatherers has survived in the region. A special group of hunters know as matagi use special techniques and ritual ceremonies to hunt bears in the forests. Evidence of past mining can be seen here and there in the mountains, though the activity has ceased within the boundaries of the reserve.

The Mother Tree

The Maine delegation along with members of the Aomori UNESCO Association was invited to plant young Japanese beech saplings in one mid-elevation beech forest before joining an interpretative walk to the largest beech tree in the forest – The Mother Tree.

ASSESSMENT

The visit to Shirakami Sanchi was a very special opportunity for a shared experience with the Aomori UNESCO Association. The Association arranged for tree planting in a managed section of the forest reserve, and we were invited to write notes of encouragement on wooden stakes marking the saplings. A picnic lunch under towering beech, oak and magnolia trees preceded an interpretive walk to the largest beech tree in the reserve, the Mother Tree. Though we did not see any of the special bird and mammal species that live in the forest, we had a good opportunity to get a feeling for the overall ecosystem. Of note, our guides reported on research that has established a strong ecological connection between the forests in this remote region of Aomori and Akita Prefectures and the near ocean fisheries of the Sea of Japan. The transport of minerals and chemical nutrients, filtered, buffered and enhanced along the way by the organic leaf litter, humus and mineral soils of the forest, contribute significantly to the productivity of the near ocean. Thus, one of the most important benefits of conservation of upland ecosystems and terrain include a more resilient and sustainable local fishery.

Of particular note to botanists, is a very strong relationship between the plant communities of the east Asia, including those of the Shirakami Sanchi mountains, and northeastern United States and adjacent Canada. Tree genera such as beech (*Fagus*) and oak (*Quercus*) are shared between our two very physically separate regions of the Earth, with an even greater affinity between sub-canopy and herbaceous genera like Viburnum (*Viburnum*) and the lady slipper orchid (*Cypripedium*), as well as fern species like the wood fern (*Dryopteris*) and the maiden hair fern (*Adiantum*).

Notwithstanding an autumn visit, the delegation was able to get a feeling for this peculiar disjunction of global plant distributions that has been recognized since the time of Linnaeus (1732) and studied in depth since the time that Charles Darwin presented his theory of evolution by natural selection in the mid-nineteenth century (1859). The plant disjunctions between Japan and New England were the focus in part of correspondence between Darwin and his earliest enthusiastic adherent in North America, Asa Gray of Harvard College.

RECOMMENDATIONS

1. University Collaboration

The University of Maine system (as well as the private colleges of Maine) should explore the opportunities for shared research in the life sciences. The relationship between the floras of east Asia and the northeastern United States is not well known nor well understood despite nearly two and a half centuries of inquiry. Dr. Christopher S. Campbell, Director of the University of Maine Herbaria in Orono might be invited to participate in a future trip to Aomori and Shirakami Sanchi, as might colleagues in the School of Biology and Ecology at the University of Maine. Ornithologists such as Dr. Herb Wilson of Colby College and Dr. Nathaniel Wheelwright of Bowdoin College might also see value in an academic exchange with counterparts at Hirosaki University and other institutions of higher learning in Japan – with a focus on the special natural resources of Shirakami Sanchi.

2. NGO & Government Collaboration

Those interested in conservation and environmental education in Maine might benefit by focused collaboration on issues and approaches to large landscape scale protection of natural resources. Alan Hutchinson, Executive Director of the Forest Society of Maine, Michael Tetrault of the Maine Chapter of The Nature Conservancy, Walter Graff of the Appalachian Mountain Club and Tim Glidden of the Land for Maine's Future program are just a few of several potential participants in an exchange of ideas and issues. NGO partners like the Aomori UNESCO Association, as well as Aomori and Japanese government natural resource agency staff, might appreciate the opportunity to explore management issues in particular with Maine NGO and government counterparts. If a return visit to Maine by the Aomori UNESCO Association is made, a meeting of interested parties might be organized. In particular, the managers of Shirakami Sanchi and such places as Baxter State Park, the Allagash Wilderness Waterway and Acadia National Park might appreciate getting to know each other. Finally, we should think carefully about a site visit in Maine that might match the very special trip to Shirakami Sanchi.

Shirakami Sanchi World Heritage Center Summary Snapshot

- 17,000 hectares of protected and buffer forestland in the Shirakami Sanchi mountains
- The world's only virgin Japanese beech forest, established as Japan's 1st World Heritage site in 1993
- Over 500 species of plants, including 108 of special concern as rare, threatened or endangered
- 12 of the 14 medium to large mammals, including the Japanese serow and the Japanese black bear
- Over 80 species of birds, including the Japanese golden eagle and the black woodpecker
- A special ancient cultural heritage of subsistence harvesting and hunting is maintained

General Contact Information

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