

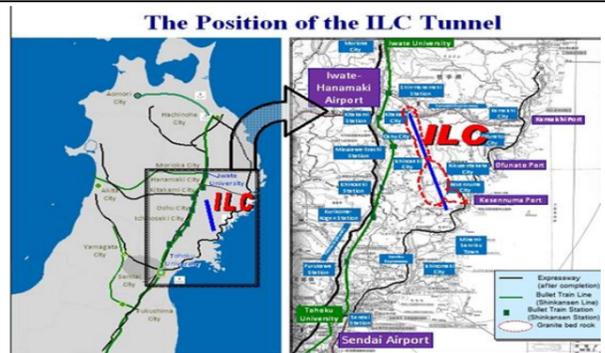
**Abstract**

We studied whether constructing the ILC affects the natural environment in Iwate. First, we did research on ecology of plants and animals living in the southern part of Iwate, where ILC will be located. Second, we conducted some interviews with experts of either the ILC or the environment to look for the best way for ILC to coexist in harmony with Iwate's rich natural entities.

**1. What is ILC?**  
The ILC, or an international linear collider, is a very large research facility on particle physics. The facility is planned to be built in our hometown, Iwate.  
Building ILC has two faces, a positive one and a negative one.

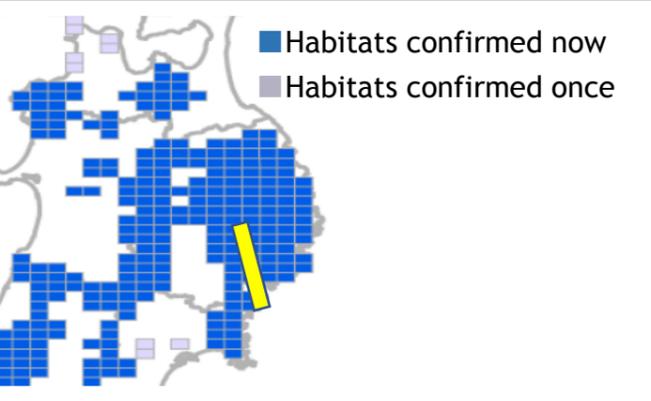


**2. Advantage and Disadvantage of building ILC**  
The positive face is to collect many intelligent researchers from all over the world in Iwate, possibly resulting economical and academic advancement.  
The negative face is the potential destruction of the environment. Vast nature is an important asset of Iwate.



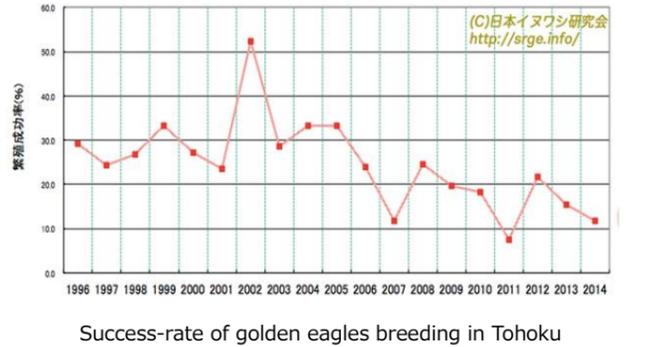
**3. In which part of Iwate will ILC be built?**  
ILC will be built 100 meters under the ground, 11 meters wide, 6 meters high.  
Researchers chose Iwate, because Kitakami Mountains in the south of Iwate has a strong rock.  
This project will greatly catalyze global, academic activity in Iwate. This is fine. But, it may also threaten the nature with environmental destruction.

**4. Does ILC project really threaten the nature?**  
To discuss this possibility, we focused on golden eagles, because this bird species needs a wide natural habitat.  
So, the breeding success ratio can be a good indicator whether the nature is well conserved or faces a danger.



The picture on the left shows the habitats of golden eagles in Iwate, current and before.  
There are vast habitats of golden eagles in Kitakami mountains. Golden eagles need steep mountains to breed and gentle plains to hunt.  
The yellow line is the ILC. ILC will be located in their territories. Building the ILC will definitely have a negative impact on the lives of golden eagles.

**6. Decrease in success rate of breeding**  
The picture on the right shows the success rate of breeding golden eagles in Tohoku area by year. The rate reached the optimal value in 2002, but later on the rate has been continuously decreasing.  
Scientists analyzed this trend, and concluded that the cause is development of lands.



Golden eagles live in untouched areas for breeding, however, most of these areas may be developed for ILC.  
ILC project may drive golden eagles to face an extinction crisis. We took this problem seriously, and then conducted some interviews with experts of the ILC or the environment as fieldwork.

**7. Two Outstanding Comments of the Interviews**  
August 15, 2016  
**Mr. ~, an Environmentalist in Iwate**  
Q. What kind of species of animals or plants will be affected by the construction of ILC?  
A. Golden eagles are now endangered and they are very sensitive. Even if ILC is made deeply underground, the construction and the operation of ILC would give a negative impact on their ecology.

December 8, 2016 @ MDI-CFS Meeting on ILC  
**Prof. Burrows, Oxford University**  
Q. Will construction of ILC have an influence on the natural environment in Iwate?  
A. We are going to construct ILC carefully to protect the environment and the town. ILC will be made underground, so that it will not have an effect on the surface. There are a lot of negative impressions, but it will be safe.

Not only Prof. Burrows but also most of the experts of ILC say that building ILC will not affect the ecosystem because it will be built 100 meters underground. On the other hand, the experts of the environment are careful because ILC is a very big project and they cannot predict all of the effects in advance.

**8. SG Overseas Fieldwork** (March 11 – 25, 2017)  
One of our members visited Boston and gave the presentation on our research to some experts, proposing that building ILC needs high consideration to the natural environment. They highly appreciated our viewpoint of conservation. And they suggested to us that we should make use of debris dug by constructing the big tunnel. We were told that our awareness of this crisis can lead to realization of a sustainable development.

**Advice**  
March 16, 2017  
**Prof. Grayman, Boston University**  
Your opinion is very interesting, but it is lacking data to prove the link between constructing ILC and ecology of golden eagles.  
You should consider the way of reusing debris which will be created by digging a big tunnel for ILC. Boston used to have an ugly highway, and we transferred the traffic system underground. We reused the debris to build an island at the Boston Bay to accommodate space to pile up garbage.

March 23, 2017  
**Mr. Dalzell, a senior director of Boston Redevelopment Authority**  
If ILC is located in Iwate, then you will welcome many people from all over the world. You can make use of the debris to build their residences. Now Boston is trying to promote and practice the concept of "green building", which realizes eco-friendly and sustainable development. You should introduce this concept when building such residences.

**9. Further Research:** We are going to find out a safe way to dig a big tunnel and an effective way of reusing the debris.

## 英語題

### Toward an Environmentally-friendly ILC

## 英語要旨

We studied whether constructing the ILC affects the natural environment in Iwate. First, we did research on ecology of plants and animals living in the southern part of Iwate, where ILC will be located. Second, we conducted some interviews with experts of either the ILC or the environment to look for the best way for ILC to coexist in harmony with Iwate's rich natural entities.

## 日本語題

### 「ILCと自然」

## 日本語要旨

私達のグループは、今後本格化する ILC 建設がどのように岩手の自然環境に影響を与えるのか、またどのような対策が求められているのかを研究テーマに掲げた。そこで、ILC 建設予定地である岩手県南部の山地に生息する動植物を調査した。また、環境の専門家と ILC の専門家の双方に直接話を伺い、岩手の恵まれた自然環境と共存できる望ましい ILC 像を模索した。