

# Saving Suri

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## Project Title and Team Introduction:

Our team has planned a project titled "Saving Suri" aimed at increasing the population of vultures

## Problem Definition:

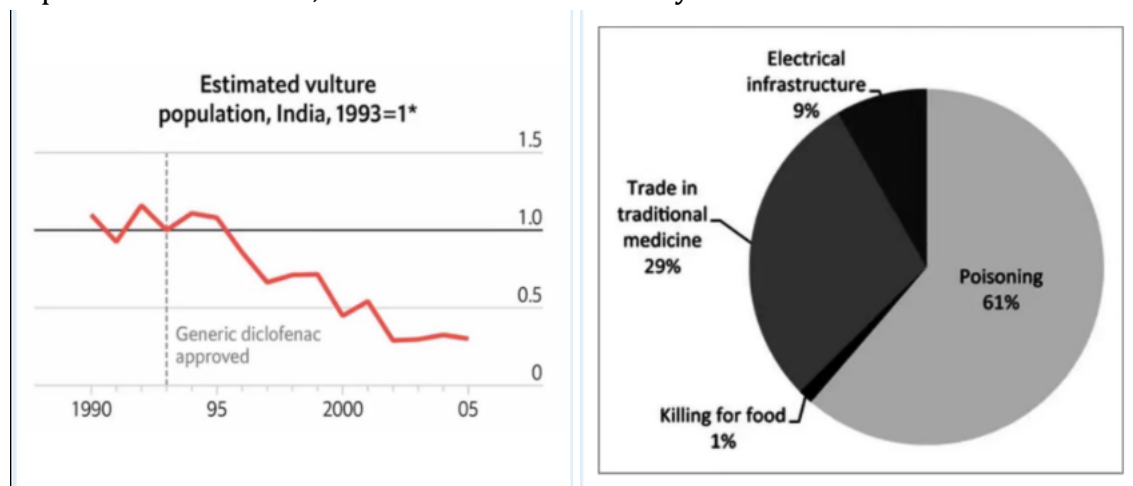
The vulture species primarily exhibits scavenging behavior, consuming deceased animal carcasses. Vultures, as scavengers, play a vital role in the ecosystem. Additionally, vultures possess cross-border characteristics, making international cooperation a crucial factor.

Tracking the movement patterns of vultures reveals that they typically roost on the Mongolian Plateau. In winter, they migrate south toward the Korean Peninsula in search of overwintering sites.

**South Korea plays a significant role in this migration, particularly for the majority of non-breeding individuals under two years of age. Ensuring a safe passage back to Mongolia after a successful wintering in South Korea could be key to increasing eagle populations. Hence, we have organized a living lab event, approaching this issue from an upstream-downstream perspective.**

## Problem Severity (Data Insights), Causes, and Significance:

Many news reports have highlighted vulture fatalities, particularly those caused by pesticides, alongside numerous other factors such as industrialization, urbanization, exposure to chemicals, and resultant food scarcity.



**Research data indicate that "poisoning" accounts for 61% of vulture deaths.**

According to studies conducted in India, the use of diclofenac was approved in 1993.

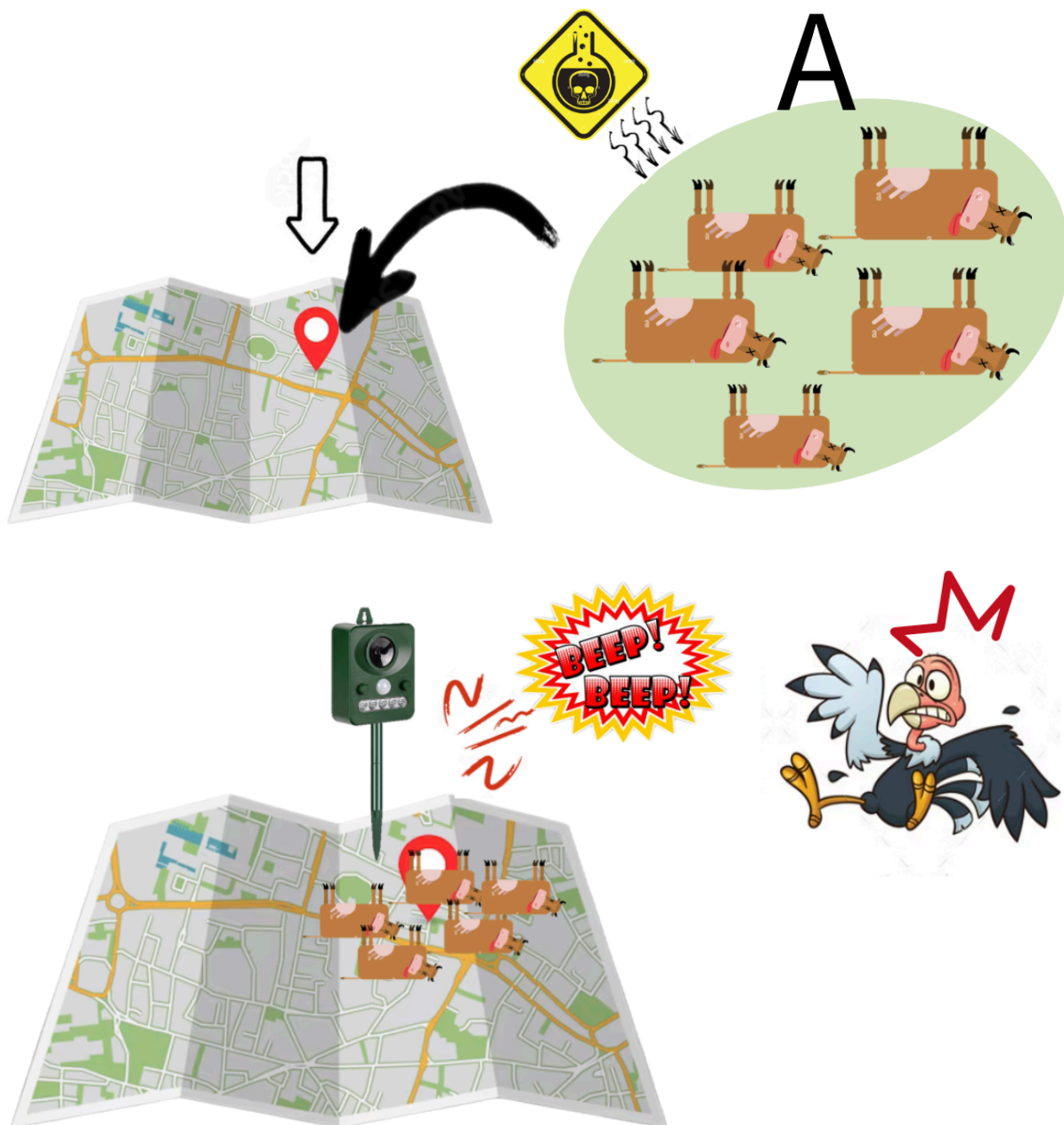
Prior to this year, vulture populations were relatively stable; however, their numbers declined significantly following the introduction of diclofenac, underscoring poisoning as a severe threat.

Our focused discussion addresses the "misuse of the chemical diclofenac". This substance is used as a veterinary drug, but it is highly toxic to birds of prey. Vultures consuming the carcasses of cattle treated with diclofenac can suffer renal failure and death. If vultures perish, the populations of wild dogs and rodents could surge, facilitating the spread of infectious diseases—a dire threat to the ecosystem and food chain.

To address the rampant misuse of diclofenac, some countries have recommended banning its use. In an effort to protect vultures, the Indian government approved Meloxicam as an alternative medication that poses no harm to them, and in 2006, prohibited the excessive use of diclofenac. By 2010, the government of Bangladesh banned the use of diclofenac in treating cattle, with Nepal and Pakistan also implementing laws to ban the import and manufacture of diclofenac. However, the sale and use of diclofenac have not been completely eradicated. Some countries have trained farmers on the connection between diclofenac use and vulture mortality, yet this has not entirely overcome the farmers' indifference to vulture conservation. Inadequate enforcement, insufficient monitoring, and the decreased economic viability of using alternative medications are inevitable outcomes. Therefore, we propose solutions to address these issues.

### Proposed Solutions and Experimental Plan

The death of vultures primarily occurs due to the ingestion of carcasses contaminated with diclofenac. Casual burial of deceased animals can lead to an increase in accidental consumption by vultures, resulting in their death. **This issue can be addressed by minimizing the area of mixed burial sites or by creating maps to manage the sites before the carcasses are fully decomposed.**



**Specifically, alarm systems could be installed near cattle burial sites to deter vultures through auditory signals when they approach, thus preventing them from consuming the carcasses.** The management of these maps and the rental of alarm devices could be overseen by local governance bodies in eagle ecological cities like Cheolwon and Goseong, with participation from local farmers. These measures are expected to reduce the incidences of vultures dying from ingesting poisoned livestock.

Additionally, we have identified another issue known as the "tragedy of the commons", a theoretical economic concept originally used to explain resource depletion, which we have applied in our living lab context.



Eagles possess cross-border characteristics, which result in a lack of proactive conservation efforts by any single nation. Rather than taking a leadership role, countries tend to shirk responsibility, contributing to the decline in vulture populations. For instance, China's pandas and Australia's koalas, as national symbols, are dearly cherished by their citizens and enjoy various benefits, including conservation funds centered around community groups, active rescue operations, and even fan clubs. **In contrast, vultures are transboundary animals, not confined to one nation, leading to a general indifference towards them and culminating in the "tragedy of the commons".**

Therefore, it is essential to foster a sense of shared responsibility among nations. To counteract this, **a GPS device called 'Wingtech'** could be employed, allowing individual nations to share responsibility equally—Korea: 10, Mongolia: 10, China: 10—tracking the movement and survival of eagles across borders. **Enhance monitoring capabilities and instill a sense of stewardship in each country.**

Additionally, creating infographics can help establish processes; for example, if there is a sharp decline in the population in Heilongjiang Province, China, investigate local farmers for traces of diclofenac use or sewage discharge, and develop procedures to

address these issues. This approach has the advantages of overcoming cross-regional challenges, raising awareness of eagle conservation, and highlighting pressing concerns.

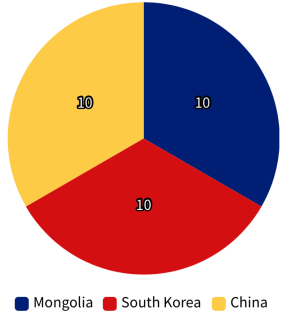
## Targeted Regulation of Specific Countries

### Utilizing 'WingTech' National Transit Tag System


ex) Mongolia 10: South Korea 10: China 10

If there is a sharp decline in the number of individuals in a specific country, phenomena such as 'What kind of problems occur in which areas and why?' will emerge. By understanding these issues, swift countermeasures can be formulated.

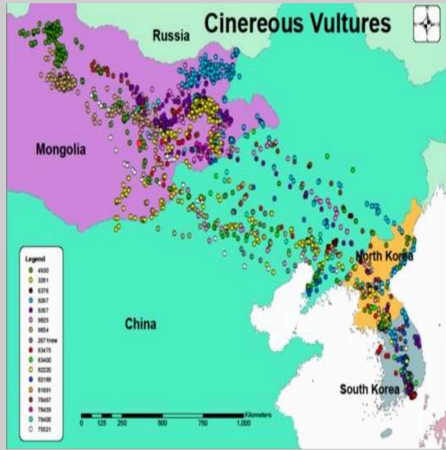
Phenomenon Occurrence : A significant and abrupt decline has been observed in Zhejiang Province, China.  
Cause Tracking: Upon discovering traces of diclofenac in local farmers' practices and resolve the issue.

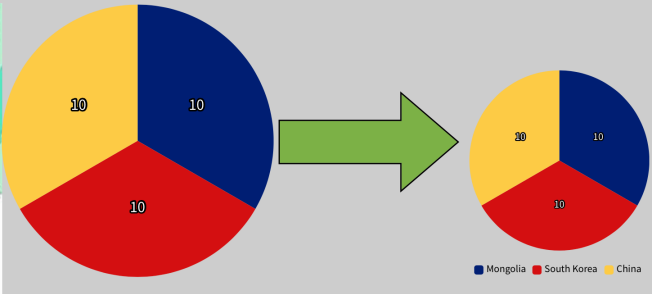


■ Mongolia ■ South Korea ■ China



## Individual Monitoring





■ Mongolia ■ South Korea ■ China

### Raising Awareness of Issues and Utilizing Databases

This problem will be able to be solved by privatizing the Tragedy of the Commons. Solutions, we suggested, - such as maps and sirens for preventing Diclophenac poisoning and Tag system with wing tags - are bound to be an issue that "How to suggest to other Nations".

For this reason, we found bottom upwards will be effective. It would rather cooperate with local governments related to The bird conservation organization and inhabitation of vultures and eagles than propose the policies to each nation.

This process has already been conducted between Goseong-gun in Korea and Mongolia. After starting this project from the 'bottom' through existing network, 'Upwards' can make sustainable cooperation system for vultures

## Saving Suri Experiment

Basic Experimental Information	<p>1) Experiment period: 1 year (a period for accumulating data such as the location and population of eagles which is a winter migratory bird, embarking from Korea arriving the following year using GPS)</p> <p>2) Experiment budget: around 15,000,000 ₩ (requires approximately 30 GPS devices around 500,000 ₩)</p> <p>3) Experiment mobilization: Total of 12 people</p> <p>① 3 professional mobilization to embed GPS (1 person per country)</p> <p>② 6 personnel to monitor and analyze GPS (2 people per country)</p> <p>③ 3 personnel for cooperation and communication with other countries (1 person per country)</p>				
Key Experimental Contents	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr style="background-color: #e0e0e0;"> <td style="text-align: center;">1st experiment : WingTech attachment and Entity designation</td> </tr> <tr> <td> <ul style="list-style-type: none"> <li>- Equipment preparation</li> <li>- Identifying the existing movements of the eagle</li> <li>- Capturing eagles</li> <li>- Distribution of eagles by country</li> <li>- GPS installation</li> <li>- Releasing eagles</li> </ul> </td> </tr> <tr style="background-color: #e0e0e0;"> <td style="text-align: center;">2nd experiment: Experiment and Analysis</td> </tr> <tr> <td> <ul style="list-style-type: none"> <li>- Monitoring the movement paths of the eagle and survival using GPS</li> <li>- Identifying the cause and location of deceased eagle</li> <li>- Identifying the entire route of the eagle and rendering an infographic map</li> <li>- Identifying the population of surviving eagles by country</li> </ul> </td> </tr> </table>	1st experiment : WingTech attachment and Entity designation	<ul style="list-style-type: none"> <li>- Equipment preparation</li> <li>- Identifying the existing movements of the eagle</li> <li>- Capturing eagles</li> <li>- Distribution of eagles by country</li> <li>- GPS installation</li> <li>- Releasing eagles</li> </ul>	2nd experiment: Experiment and Analysis	<ul style="list-style-type: none"> <li>- Monitoring the movement paths of the eagle and survival using GPS</li> <li>- Identifying the cause and location of deceased eagle</li> <li>- Identifying the entire route of the eagle and rendering an infographic map</li> <li>- Identifying the population of surviving eagles by country</li> </ul>
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Anticipated Experimental Results	<ul style="list-style-type: none"> <li>- Before: Heedlessness to eagles which is the transboundary migratory bird of many countries, has led to a Tragedy of Commons.</li> <li>- After: Resolving the Tragedy of Commons issue through privatization.</li> </ul>				

Occasionally, vultures that descend south propense to dwell in South Korea regions. It can be confirmed that Cheorwon-gun, Goseong-gun in Gangwon-do, Ulsan Metropolitan City, and Geoje-si in Gyeongsangnam-do, are the main wintering sites in the country which implies the habitats for eagles. The information that wild eagles live in these wintering sites is that it can be operated as a good tourist attraction for ordinary citizens. In the case of families with children, parents said that it is more meaningful to be able to

see them directly in the wild than seeing them at a zoo, and children also prefer seeking them in the wild more.

Canon, a photography company, held a campaign called “Canon Together: Canon Conservation Activities”, which allowed wild animals, especially wild birds, to be photographed with an emphasis on environmental protection. It is said that people who used to come to take pictures of wild birds threw away their leftovers and trash everywhere just for a single moment of a photograph, exacerbating damage to nature. For that reason, they arranged a plan called the Bird Branch Project, which had been carried out since 2015, to carefully distinguish in a borderline that does not harm wild birds, and also carried out the project to thoroughly capture their ecosystem, lifestyle and characteristics as much as possible.



Similarly, a very good contest was held to protect eagles, which can take pictures of wild eagles and promote environmental protection. Our strategy is to hold an eagle photo contest to increase the number of visiting factors for tourism purposes at the same time as the influx of outsiders from the village, thereby supporting and ensuring participation as a member of the Saving Suri project.

The lack of food for eagles is also a major issue. Eagle feeding events, which are held in some regions such as Paju, Yeoncheon, Cheorwon, and Goseong, are actually often organized as voluntary work. The city’s feeding budget alone has limitations such as making it difficult to keep up with inflation and bated budget in the event of avian influenza. Han Gap-Soo, chairman of the Paju branch, said that more than 700 eagles need to consume 2.5 tons of sufficient pork and chicken at least once a week to help them spend the winter in wintering sites. In addition, the food supply budget supported by the Cultural Heritage Administration and the Paju city is finite, and the price of food continues to rise, so there are cases of starvation because of lack of nutrition. The Paju branch said they rescued two eagles that lost control that month due to exhaustion caused by lack of nutrition.

The solution was inspired by Nepal's "Vulture Restaurant" initiative. Renown as Bird Conservation Nepal (BCN) and this organization's "Vulture Restaurant" in 2007, allowed eagles to consume the carcasses of cattle that died on the ranch, thereby it's capable of dealing the carcasses and sufficing the eagle's food. Such as in Nepal, Hindu cultures view cows as sacred existence hence harming is prohibited, which the issue can be settled by releasing aged cattles free until they die naturally caused by old age, and their carcasses would be placed at designated Vulture Restaurant spots for eagles to eat. It's an explicit way for farmers to deal with old, less valuable cows, and for eagles to some extent the problem of food shortages can be resolved in this way, gradually increasing the number of endangered species, and for communities, as in tourism or maintenance, it's a fruitful resolution.

As can be seen also in movies set in old and sick chickens and cows such as "Leafie: A Hen Into the Wild" and "Old Partner", manifest livestock for meat processing live a much shorter life than average life expectancy. Therefore, it can be helpful for animal rights and overcoming the lack of feeding budget if we can run associated programs in eagle ecological parks like this Vulture Restaurant project or redeem lesser prices of meat in connection with the abandoned industry of village farmers.

With the cooperation between cross-culture and exchange between countries, the Saving Suri project can be operated with transnational cooperation. First of all, it can be used as a means of exchange and cooperation with North Korea. If the two countries advance their relationship, they will be able to collaborate by establishing a GPS-based urban designation system or a national transfer 'tag' system through governments such as the Ministry of Unification or other associations, they can look forward to the formation of a route map by attaching a device that can track the routes of eagles in North Korea and the northern regions of the South Korea. The related article also shows that Goseong-gun applied to the Ministry of Unification and the Korea Association for inter-Korean exchange and cooperation to promote academic research on eagle ecological parks in North Korea.

These conditions can also be utilized for cooperation with the Mongolian region. Mongolia, home to the vulture species, has the conventional funeral culture most commonly initiated in Tibet, named "鳥葬", in English "Sky Burial". This is a funeral method in which the dead are gouged out from their flesh and bones, cut into small pieces and crushed, and then the eagles eat the remnants. However, since Mongolia's "Sky Burial" funeral culture tends to disappear due to the rapid decline in the number of eagles, hence the project can be quite flawless to be expected to have the effect of protecting Mongolia's funeral culture and the Eagle Festival, a UNESCO World Heritage Site held near Ulaanbaatar.

There is a likelihood of embracement for cooperation with Indonesia as well. Currently, there is a link with Gadjah Mada University, which has a partnership with Yonsei University Mirae Campus. Another connection is that the national bird of Indonesia is an eagle, and the symbolic animal of Yonsei University is also an eagle. Since these animals have such interactive significance, this will be beneficial for each other if they carry out projects to increase the number of bald eagles in South Korea and Java eagles in Indonesia and conduct comparative research while sharing their experimental results.





It appears to be compelling to the SDGs’ **“11. Sustainable Cities and Communities”**, **“15. Life on Land”**, and **“17. Partnerships for the Goals”**. Since eagles live across all continents of the Northern and Southern Hemispheres, this global project could eventually be used as a tool to eradicate extinction and prolific in result, and for cross-border cooperation.