



# Youth for Arctic Nature

FINAL REPORT

2024



Arktsik natur og ungdom: j.nr. 550-186



**NORA**

# Youth for Arctic Nature

## FINAL REPORT



### OUR TEAM

**Dr. Jessica Aquino**

Project leader

Hólar University, Iceland

**Cécile Chauvat**

Project coordinator

Northwest Iceland Nature Research Center

**Dr. Sandra Granquist**

Lead scientist

Marine and Freshwater Research Institute, and the Icelandic Seal Center

**Deisi Maricato**

Lead pedagogist

Hólar University, Iceland

**Örvar Birkir Eriksón**

Steering Committee

Icelandic Seal Center

**Húnaklúbburinn**

Steering Committee

Húnaþing vestra, Iceland

**Turið Gaard Hansen and**

**Anelia Philbrow**

Steering Committee

Faroe Islands Nature and

Environment Society

**Dr. Ragnhildur Guðmundsdóttir and**

**Helga Aradóttir**

Steering Committee

Icelandic Museum of Natural History

**Dr. Starri Heiðmarsson**

Steering Committee

Northwest Iceland Nature Research Center

Center

**Dr. Monika Abels**

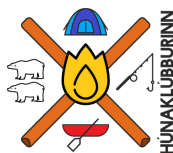
Steering Committee

The Arctic University of Norway

**Dr. Pigga Keskitalo**

Steering Committee

University of Lapland



LAPIN YLIOPISTO  
UNIVERSITY OF LAPLAND



MARINE & FRESHWATER  
RESEARCH INSTITUTE



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# Summary

## Overview

Youth for Arctic Nature (YAN) is a community development project that uses elements of place-based education and wildlife monitoring to understand biodiversity. The main aims of the project are to strengthen the connection to local nature by supporting the engagement of youth in outdoor learning activities and to further share capacity by engaging youth to assist in collecting scientific data that directly feed into ongoing wildlife monitoring projects. This is done by connecting youth to resources within their own communities and to local scientists. This report describes the outcome of the project from 2021-2024 with funding through NORA (project #550-186 Arktisk natur og ungdom) where youth engaged in participatory initiatives such as community-based monitoring and citizen science projects. Projects such as these have the potential to generate valuable new knowledge about the changing Arctic.

## Key Findings

Throughout the duration of this project, we have gained substantial insights in community youth development and biodiversity monitoring projects. These experiences have culminated in several critical takeaways that we believe are essential for the successful implementation and sustainability of similar initiatives in the future.

### **1. Need for inclusive capacity sharing**

There is a significant need for capacity sharing among diverse stakeholders, including scientists, elders and knowledge holders, youth, policymakers, and educators. Engaging these groups in cooperative efforts, grounded in local and scientific knowledge is crucial for appropriate climate change action. This approach not only supports the implementation of community-based projects but also ensures that the initiatives are culturally relevant and sustainable.

### **2. Youth-focused regional and community development**

Focusing capacity-sharing efforts on youth can drive both local and regional development. By connecting youth with practitioners and knowledge holders, they gain essential skills and competencies that support a new generation of resilient and capable individuals who can contribute meaningfully to their communities.



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### 3. Developing a strategic model

Through our work, we found that there is a pressing need to develop a comprehensive model that enhances the strategic involvement of youth in climate change policy at various levels—local, national, and international. This model should aim to prepare youth to collaborate effectively with practitioners, scientists, and policymakers, thereby ensuring their voices and perspectives are integrated into climate change strategies and actions.

## Future Work

These key points highlight the importance of collaborative capacity building and strategic youth engagement in addressing complex issues such as climate change. We hope to continue the work that we have started with YAN by implementing these takeaways in future projects that will have a more inclusive involvement stakeholders such as communities, policymakers, and scientists which recognizes intergenerational, local and indigenous knowledge; and Involves youth in place-based actions from conception to policy. This will lead to greater impact on sustainability and climate actions.



**Figure 1.** Life and Biodiversity Project with Húnaflúbburinn and Icelandic Museum of Natural History. April 2023

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# Introduction



**Figure 2.** Ice fishing with Húnaklúbburinn March 2022

## Background

In 2021 we were awarded grant funding through NORA for the project Youth for Arctic Nature (YAN) for the years 2021-2024. YAN aims to encourage youth to go out and study local nature. The project goals are:

1. Encourage youth to participate in the study of nature and climate change in the Arctic.
2. Connect Arctic youth who are interested in their local nature.
3. To empower youth in wildlife monitoring.

Through the project, youth groups and schools are encouraged to connect with scientists and science centers (locally and internationally) to conduct surveys to collect important data that will be used to help monitor species and climate change effects on wildlife.

Funding from NORA for the project year 2021 helped to establish a long term local longitudinal monitoring program that connects internationally with other school groups, youth organizations and scientists for collaboration ([www.arcticnature.org](http://www.arcticnature.org)).

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## Communities in the Northern Periphery Areas

Youth in communities within the Northern Periphery areas express significant concerns regarding the quality of life in their communities. These concerns stem from several reported factors by the youth:

### 1. Changing Economy and Demographics

The economic landscape in these regions is evolving, with traditional industries such as fishing and agriculture giving way to growing sectors such as tourism. This shift impacts job opportunities and community structure, requiring adaptation and new skills. Furthermore, there is an increase in changing demographics as more individuals immigrate to Northern countries.

### 2. Mental Health

Mental health is a critical issue for youth, influenced by various stressors including climate anxiety.

### 3. Stigma of Staying in Rural Communities

Youth in Nordic rural areas typically leave their communities to go to urban areas for school and training. However, there exists a stigma associated with remaining in rural areas after primary school. Many youths feel labeled as "high school dropouts" or as having "failed," which underscores the need for focused attention on those who choose to stay. Prioritizing these youths can lead to enhanced resiliency (both individual and community) and have the potential for positive benefits to collective wellbeing (natural and social). Therefore, we argue that youth-centered initiatives should focus on:

- **Skill Building:** Providing opportunities for youth to develop new and relevant skills.
- **Capacity Sharing:** Encouraging the sharing of knowledge and resources among community members.
- **Youth Engagement:** Actively involving youth in community projects and decision-making processes.
- **Place-Based Initiatives:** Fostering pride in their locality and enhancing their connection to place.

Additionally, more research is needed to understand the motivations behind why some youth return to or stay in rural communities. Investigating these reasons can provide valuable insights into community and regional development, helping to create more supportive environments for youth and overall wellbeing for the community.



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## Objectives

Throughout the duration of this project, we have gained substantial insights and made necessary adjustments to our overall approach. Although we did not venture too far from the original goals of the YAN project. Our objectives for future work has developed as the project team gained experience together. Therefore, after several Steering Committee meetings, we have proposed revision of our aims working in the future:

### Our aims are:

- Resilience
  - Skill building
- Biodiversity (ecosystems, species and within species) using the CBD definition.
  - Deeper understanding/better understand of biodiversity
  - Place-based and our connections (Nature and with each other)
  - Climate change and adaptability
  - Sustainability
- Youth engagement
  - Further develop methodology on how we will reach these goals.
  - Youth-centered initiatives that focus on project conception to policy.

Here we define **resilience** as the process and outcome of successfully adapting to difficult or challenging issues

- Individual
- Community
- Nature

Discussion also focused on how we measure both the impact and the success of our project. We need to further develop this, but we have outlined the use of community, partner organizational resources and current activities that are already implemented. This will help to further develop a best practice approach and focus on knowledge sharing and capacity sharing within our partner countries.



**Figure 3.** Monitoring of aquatic life near the harbor

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## Approach

Using a community development approach, YAN focuses on two main areas which are place-based education and scientific study of wildlife monitoring. Community development was used as a process and a practice to help the integration of these two areas and help further co-create the project within our different collaborators.

The project was youth-centered. We acknowledge this to mean that youth have the right to take part in the decision-making process within their communities. Therefore, a youth-centered approach means to support youth in developing their competences. We further acknowledge that youth are integral to our communities and should work along side knowledge holders, elders, educators, scientists who can support in youth's development and civic engagement focusing on listening to what is important to the youth.

YAN activities were developed for youth ages 5-30 and can be completed as part of a classroom activity, youth group, family activity, a science project or a combination of such activities (in both formal and informal learning). However, since the project acknowledges that youth an integral part of a community, it also encompasses people and resources that help support youth, education, and local and scientific knowledge. We argue that this leads to capacity building of local youths and resiliency of a community.

The project activities can be local or international. By learning about the natural environment closest to us, we understand and learn how to care about and protect nature. Furthermore, close cooperation with local scientists and knowledge holders which is facilitated in the project creates added benefits. For example, it ensures not only increased knowledge and awareness for the youth that participate in monitoring activities, but also that these activities are incorporated into ongoing biodiversity programs and create valuable scientific data.



**Figure 4.** Discussion with high school group from Norway about biodiversity and monitoring projects 2023.



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# Implementation

## Description

The project includes partners from Iceland, Norway, Finland, and the Faore Island. Since 2021, our network has grown to include others who are not part of the NORA grant but who are interested in the civic and democratic engagement of youth and capacity sharing through wildlife monitoring (see Box 1).

### Box 1: Project overview

#### Partners

- Hólar University
- Northwest Iceland Nature Research Centre
- Marine and Freshwater Research Institute
- The Icelandic Seal Center
- Húnaklúbburinn
- Faroe Islands Nature and Environment Society
- Icelandic Museum of Natural History
- The Arctic University of Norway
- University of Lapland

#### Target Participants

##### Children and young people ages 5-30

- School groups
- Youth organizations and clubs
- Museums
- University
- Scientists who work with young people

#### Collaborators

- Youth group Pyhtää, Finland
- STEM Húsavík
- Hólar Grunnskóli
- Grunnskóli Fjallabyggðar
- Grunnskóli Húnaþings vestra
- Lýsuhóll grunnskóli Snæfellsnes
- Snæfellsnes Regional Park
- Nýheimar center for youth and community development
- University of Iceland
- Alaska Pacific University
- University of Washington
- Arctic Frontiers

#### Countries

- Faroe Islands
- Norway
- Iceland
- Finland

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YAN was developed in two phases. The first phase was situating the YAN project within the North Atlantic and developing its network, capacity. Connecting to local resources and knowledge and further developing a community development approach towards the study of biodiversity. The results of our project have led to the creation of the second phase of the YAN which included indigenous scholars to further develop other ways of knowing and being within a reciprocal interconnection of human and nature along with land-based education. This current report will focus on the outcomes of the YAN project from 2021-2024 in the next sections.

The main activities of YAN were to help support the engagement of youth in outdoor learning activities, to further share capacity to engage in wildlife monitoring projects, and the study of biodiversity. This was accomplished by creating a network of youth groups, educators, and people that are inclusive of local knowledge, families, and scientists; and to connect resources within their own communities. Furthermore, the YAN project also developed several program tools to help with the project activities (see Box 2).

## Box 2: Program Tools

### Website

- Description of project and news
- Description of species
  - Flora, fungi, and lichens
  - Marine mammals
  - Land mammals
  - Birds
- Downloadable resources

### YAN App

- Free and available on Android app store 2021-2024
- Goal was to make it easy to create small place-based nature monitoring projects
- Used for pilot monitoring activities
- Reviewed by users and board of YAN scientists
- Lessons learned and review can be used for further projects

### Activity protocols

- Free monitoring activity protocols

### Inclusive activities handbook

- Aimed at teachers and educators
- Target group ages 5-10
- Focus on different abilities and inclusion

### Life in the East Atlantic Arctic free online book

- Based on description of species on website
- Highlights concepts of
  - Biodiversity
  - Ecology
  - Biology
  - Cultural links to nature
  - History

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## Project Partners' Roles and Responsibilities

The Steering Committee is made up of our project partners and members of our network. The diverse makeup of the committee, both regionally and culturally, brings together an important mix of professionals to help steer the YAN project in the right direction. Below are the roles and responsibilities.

### Partners

- Hólar University
  - Jessica Aquino, Project manager
    - Coordinates with the student researchers
  - Deisi Maricato, PhD students, Pedagogy
    - Coordinates with schools and parents in Iceland
- Northwest Iceland Nature Research Centre
  - Cécile Chauvat, Project coordinator
  - Starri Heiðmarsson, Scientist
- Marine and Freshwater Research Institute
  - Sandra Granquist, Scientist
- The Icelandic Seal Center
  - Örvar Birkir Eriksen, Outdoor education and wildlife monitoring
- Húnaklúbburinn
  - Youth nature club. Youth engagement in Northwest Iceland, project implementation, and environmental education
- Faroe Islands Nature and Environment Society
  - Anelia Philbrow, Project implementation, environmental education
- Icelandic Museum of Natural History
  - Ragnhildur Guðmundsdóttir, Project implementation, environmental education
  - Helga Aradóttir. Project implementation, environmental education
- The Arctic University of Norway
  - Monika Abels, Research, study on nature connection and children
    - Coordinates with the student researchers
    - Coordinates with schools and parents in Norway
- University of Lapland
  - Pigga Keskitalo, indigenous knowledge, transdisciplinary intergenerational collaborative research approach

# Project Timeline 2021-2024

| MILESTONE                                             | DATE                    | DETAILS                                                                                             |
|-------------------------------------------------------|-------------------------|-----------------------------------------------------------------------------------------------------|
| <b>1. IMPLEMENTATION</b>                              | APRIL 2021 - MARCH 2022 | COVID-19 RESTRICTIONS. DEVELOPED YAN APP AND WEBSITE                                                |
| <b>2. GROWING NETWORK FUTHER IMPLEMENTATION</b>       | APRIL 2022- MARCH 2023  | ACTIVITIES HANDBOOK. GROWING THE NETWORK. MARKETING APP, WEBSITE, AND BOOK. FURTHER DEVELOP PROJECT |
| <b>3. EVALUATION, DISSEMINATION, AND PUBLICATIONS</b> | APRIL 2023-MARCH 2024   | EVALUATION OF THE OVERALL PROJECT. PUBLICATION. FUTURE PROJECTS AND CONTINUATION.                   |



**Figure 5:** Nature Days at Húnaþing vestra Grunnskóli May 2021



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# Project Outcomes

## 2021-2024

### Project Results 2021

#### IMPLEMENTATION

- Wildlife monitoring fact sheets and data collection methods for youth has been created together with scientists, to match ongoing regional monitoring of important species
- Website development, [www.arcticnature.org](http://www.arcticnature.org).
- Connections with local youth groups in North Iceland and in Finland.
- Two workshops with local scientist, youth leaders, FabLab, and teachers (June and September 2021)
- Connection with local schools and activities
- Development of the YAN app



Figure 6: APP Logo

### Project Results 2022

#### GROWING NETWORK AND FURTHER IMPLEMENTATION

- Free online handbook on outdoor education activities for school and youth groups with tips in how to include youth with special needs
- Outreach for scientific data collected by youth, youth groups, and scientists. Data will be visible online and can be used for monitoring and analysis of the impact of climate change
- Outreach to youth groups in Norway
  - Research with local school in Norway and Iceland looking into the connection with nature and well-being of children ages 4-6
- Create a Steering Committee to help evaluate and further develop YAN. The Committee is made up of local and international partners
- Life in Freshwater day with the Icelandic Museum of Natural History
- Input of seal monitoring data from the Great Seal Count with the Icelandic Seal Center in July 2022 in the app (for testing and visualization)
- Launch of YAN app
- App workshop in collaboration with STEM Húsavík
- Seaweed monitoring event with Grunnskóli Húnaþings vestra
- Session at the Arctic Circle Assembly
- Art and Biodiversity workshop

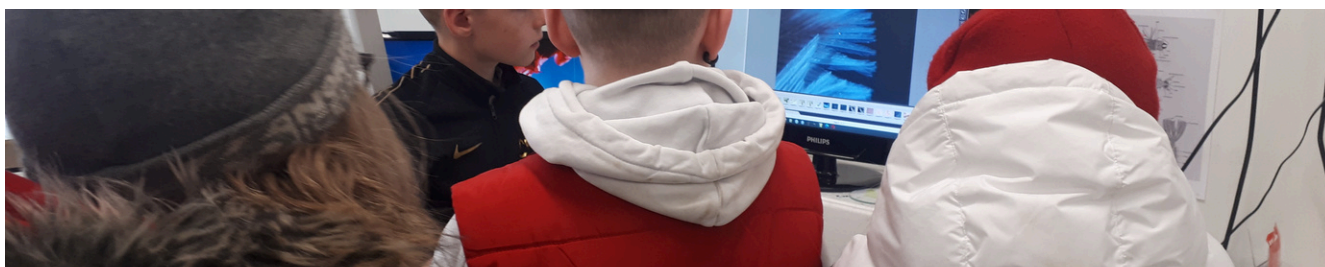
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# Project Results 2023

## EVALUATION, DISSEMINATION, AND PUBLICATIONS

### Outcomes for 2023

- Publications and presentations at conferences
  - Arctic Science Summit Week (ASSW2023) in Vienna
  - Symposium at the Icelandic Seal Center
  - Invited guest speakers at the ENU - Føroya Náttúru- og Umhvørvisfelag for Náttúruráðstevnan 2023 in Faore Islands
  - IceBio Conference
- Nature Club at Hólar, Iceland
- Ice Fishing with Húnaklúbburinn
- Wildlife monitoring projects and events
  - Wildlife monitoring at the shore in Húnaþing vestra, Iceland
  - Shore monitoring project with Kvívík school, Faroe Islands
  - Hafnarlífsvaktarvika með Grunnskóla Húnaþings vestra Harbor sea life monitoring week with the Húnaþing vestra primary school
  - Steering Committee Meetings and Workshops
- Invitation at an international Arctic Workshop "Co-Designing Civic Education for the Circumpolar North" in Seattle, Washington, USA
- citizen science project in Snæfellsnes, Iceland
- Research project on nature connectedness and well-being in Icelandic preschoolers and in Tromsø, Norway
- Bee workshop in Tromsø, Norway
- Connection with Arctic Frontiers
- Guest Speaker at the University of Iceland
- Evaluation procedures for the overall project that includes youth and scientist about their experiences with the project
- Growing our network (Scientist, Youth Workers, youth groups, and youth)
- Marketing of the YAN website and app
- Continuing and expanding activities in partner countries
- Research projects with students involving the community on children's connection to nature and wellbeing



**Figure 7:** Eider nest project in Skagatrönd, 2021.

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# Project Results 2024

## EVALUATION, DISSEMINATION, AND PUBLICATIONS

### Outcomes for 2024 (Project ending and final report July 2024)

- Publications and presentations at conferences
  - Arctic Congress in Bodø, Norway
- YAN event, 19 April 2024, Faroe Islands. Purpose: to broaden nature and environmental education of youth, to encourage closer connection to nature in terms of care and appreciation, to learn about sustainable practices such as reducing food waste. Workshops:
  - Writing workshop with Vónbjørt Vang
  - Wall decorations with Faroese plants and flowers with Marita á Lákjuni
  - Nature inspired printing workshop/ (Prentuverkstova), with Edith Mørkøre.
  - No-food-waste workshop (making “Disko” soup from old veggies donated by food-shops with Maud Wang Hansen.
  - Birds and plants hiking trip in a nearby natural area (around the lake Toftavatn) with Sjúrdur Hammer.
- Workshop with NorReg on citizen science project in Snæfellsnes, Iceland
- Workshops in Finland, Norway, Faroe Islands, and Iceland on how to involve youth and the community on the study of nature



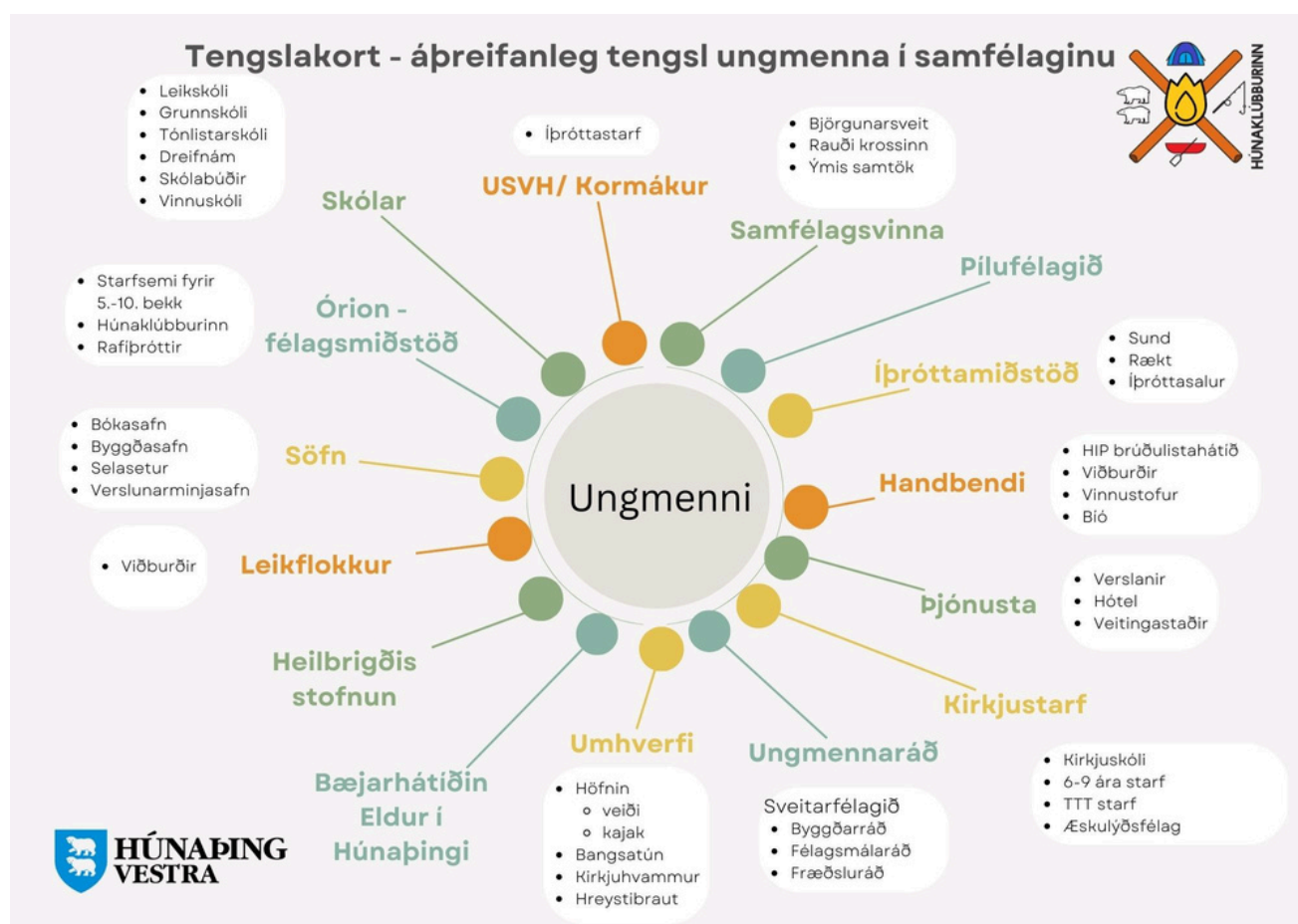
**Figure 8:** No Food Waste Workshop: Making “Disko” soup from old veggies April 2024

## Activities in 2021-2024

**Workshops with communities and youth groups on how to start their own project:** Youth projects that enable community youth development

Community development can be both a process (developing the ability to act collectively); and an outcome where the collective action leads to improvement in a community (i.e. physical, environmental, cultural, social, political, and economic). Community youth development focuses on the rights of youth to participate in a meaningful way in shaping their future and the future of their community.

Figure 9 is an example of community youth development. This asset map was created during a community meeting held on September 2021 in Húnaþing vestra, Iceland. The Húnaklubburinn and a youth group from Pyhtää, Finland met with the community to learn about asset mapping and how youth are a valuable asset to our communities.



**Figure 9:** Community development mind maps of Húnaþing vestra created by local youth with the community during a community meeting. See the full map at <https://www.hunaklub.org/news/tengslakort-ungmenna-i-samfelaginu>



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## Recap of hands-on environmental education activities organized or supported by YAN 2020-2023

### Ice fishing project 2020-2023

This project, which is ongoing, aims to take youth to a frozen lake in Northwest Iceland every year to learn about ice fishing. There are two main goals: 1) taking youth out in nature with elders from the community to encourage connection to local nature and culture; 2) to teach youth about fish species in Icelandic lakes, how to identify them and take measurements such as number, size and weight.



Figure 10: Ice fishing, 2023



Figure 11: Spider crab, crab monitoring 2023

### Harbor monitoring project 2021-2023 (see YAN app)

The harbor monitoring project has introduced dozens of youth from schools throughout the Northwest region to less well-known marine wildlife such as sea sponges, crabs, starfish, copepods, amphipods, and shorthorn sculpin. The goals were to inspire love and respect for animals usually not considered beautiful, to teach children how to identify these species and how to recognize sex in crabs, and to introduce the concept of invasive species with Atlantic rock crabs.

### Introducing nature monitoring activities with local nature clubs (Finland, Norway, Iceland, Faroe Islands 2021-2024)

Throughout the YAN project, one goal was to work with local youth clubs and nature organizations on the how to start the process of local biodiversity monitoring. YAN collaborated with clubs, schools, and nature organizations to show how to start the process and to connect them with local or international scientists. The youth and educators involved decided together what they were interested in when it came to local nature (for example swans, number of eider nests and eggs, sea temperature, or shore wildlife), and went out in nature to introduce concepts of nature monitoring in the form of mini-projects. Emphasis was put on why and how we should collect data with minimal wildlife disturbance.



Figure 12: Eider nests in Skagaströnd, 2021

## Recap of hands-on environmental education activities organized or supported by YAN 2020-2024



**Figure 13:** Seaweed measuring in Kvívík Faroe Islands, 2023

### Support for school activities (Húnathing vestra, Faroe Islands, Snæfellsnes, Búðardalur, Svalbarð) 2021-2023

Similarly to the activities done with local youth clubs, the YAN project also collaborated with school groups in Iceland and the Faroe Islands. The main aim of these projects was to show teachers that it was both easy and beneficial to implement place-based education into the curriculum. We did this by collaborating with them to define the opportunities that local nature and resources offer to organize environmental education both in and out of the classroom using simple activities and easily accessible sites. This was often activities on the shore, like observing and measuring algae, or birdwatching in local parks, nature journaling or storytelling, seal watching if colonies are close-by, etc. Teachers were generally enthusiastic about incorporating more activities like this in their classes.

### Art and Biodiversity with NMSI 2022

In collaboration with BIODICE, Youth for Arctic Nature supported students in Húnþing vestra to represent the Northwestern region in the Art and Biodiversity national event. The students dyed a 2mx2m sheet of white fabric with homemade stamps and paint to represent their idea of shore biodiversity. Their art was shown at the Perlan museum in Reykjavík.



**Figure 14:** Detail of artwork, 2022



**Figure 15:** Ytri tunga, 2023

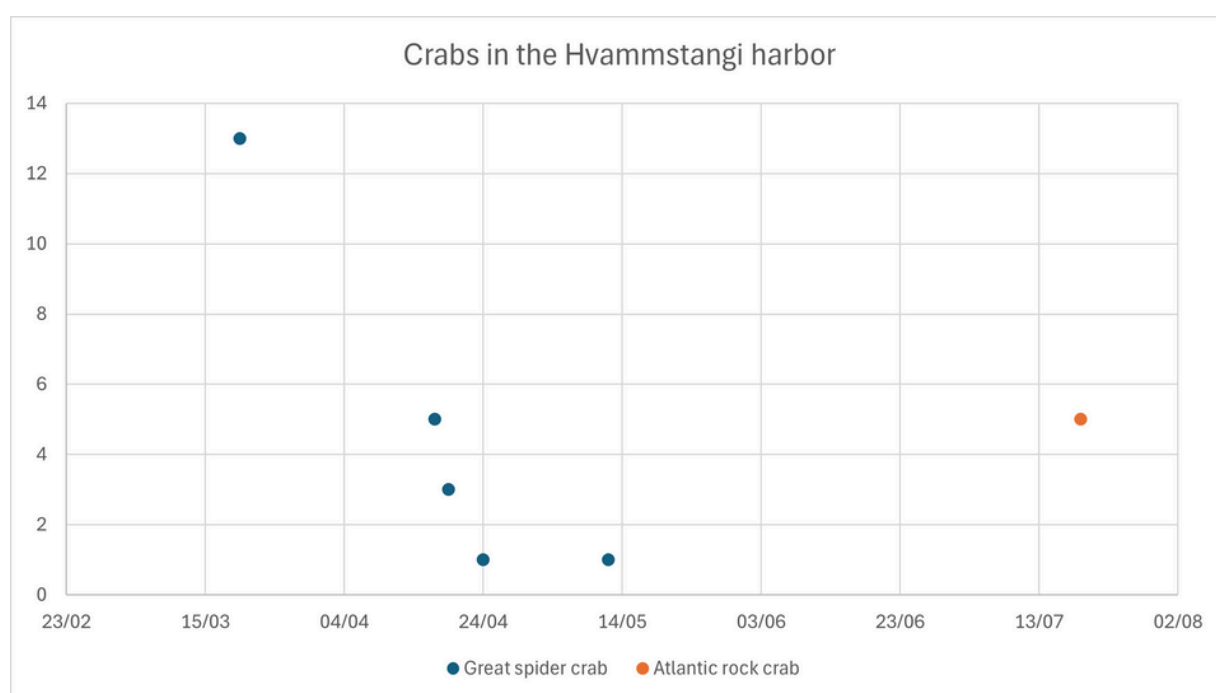
### Seal monitoring project in Snæfellsnes 2023

In summer 2023, Youth for Arctic Nature, the Snæfellsnes Regional Park, the Marine and Freshwater Research Center, Snæfellsnes schools, and various Snæfellsnes stakeholders, business owners, and land owners collaborated to pilot a seal monitoring project in Ytri tunga. This site is important ecologically and economically due to the presence of a seal colony. Collaboration with the schools and community enabled this project to become a community development initiative. Teachers were trained to count seals with their pupils and Youth for Arctic Nature staff met with students to raise awareness about the importance and vulnerability of seals in Iceland, which is especially important since levels of human disturbance at this site can be high. The local high-school also decided to include seals in their new environmental education course thanks to this project.

## YAN app use

The YAN app was produced for this project to encourage collaborators to create youth inclusive place-based nature monitoring projects. We presented the app at the Arctic Circle Assembly in October 2022, and at the Arctic Science Summit Week (ASSW) in February 2023. Workshops and pilot projects with community members, schools, youth organizations, and student-teachers at the University of Iceland were implemented.

Overall, the app was successful in inspiring some interesting pilot projects. One such example was its use in the crab monitoring project in the Hvammstangi harbor. We found that the invasive Atlantic rock crab was present in the harbor in 2021, during the first YAN harbor monitoring activity. We noticed that at some times of the year, only rock crabs were found, while at other times, only native Great spider crabs were found. To find out more, we organized an activity in collaboration with local schools (with students participating from three schools). Members of the YAN team explained to students the concept of invasive species, and showed them hands-on how to use crab traps, how to identify the different species, and why we release the native species and not the invasive species. Students were taught to handle the wildlife with respect, and how to take accurate measurements for weight and size. Crabs were counted and the data was entered in the app, which helped to keep records and GPS data if needed. As shown below, it was found that a switch occurs in early Summer in the harbor, where the number of spider crabs decreases before Atlantic rock crabs are found. We also found that all the crabs of both species were male, which may be because of depth preferences between sexes.



**Figure 16:** App data showing the switch in crab species in the Hvammstangi harbor

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## YAN app evaluation

A full retrospective of the app was conducted at the end of 2023, with interviews from users and a review by YAN's board of scientists. Both opportunities and a fundamental obstacle with the original app design were identified.

- Users loved the concept of the app. The most common use-case scenario was for youth groups and school groups, as well as tourism operators. They wanted a simple tool available in their native language that could be used by teachers, older youth, or casual visitors with simple design and no necessary training. In general, these groups felt that the app should be more simple, and was too detailed - for example, they would have preferred a shorter but fully translated species list instead of using scientific names.
- On the other hand, scientists felt that the way the app was built was not conducive to collecting usable scientific data because it was not detailed enough. For example, if a group wanted to count seals, there was no dedicated way to express how many were in water or on land which could affect data standardization. Scientists also noted that with the way the app was designed, anyone could start a monitoring project without scientific input, meaning that most of that data would not be usable.

In conclusion, feedback from both scientists and community users demonstrated that these groups had different needs. The YAN app tried to provide for the needs of both groups but ultimately issues came from the fact that the separate needs lead to separate concepts. With retrospective, two ideas for concepts needed to fulfill the needs identified were drafted:

- Users needed a simple and general nature monitoring app that can be used on school iPads or on phones. Unlike available apps such as iNaturalist, this tool would be entirely translated into local languages such as Icelandic or Faroese, including common names of species. It would be simple enough in design to be used without an extensive learning curve for young users. The data produced would be easy to download by the groups working on their project for educational purposes rather than to produce scientific data
  - For example, using this data in the teaching of natural sciences, statistics, or geography.
- Scientists described a need for an app that would make it possible to link scientists and communities for specific citizen science projects. This tool would allow scientists to receive standardized and valuable data through individual modules made for specific goals which would each have separate introductory information, protocols, and data fields to fill-in. For example, modules could include monitoring beach pollution with fields for types of pollution, weight, or GPA data; or counting marine mammals with fields such as species, standard behaviors, sound recordings, etc.

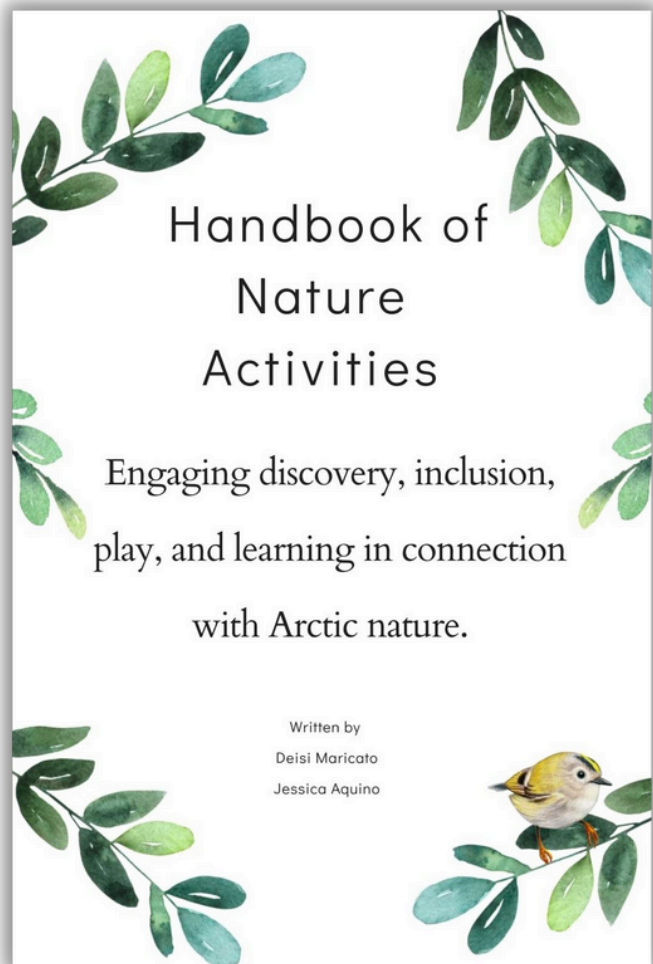
Because of the ongoing interest from both groups, we are considering revisiting these ideas in the future with possible future funding.



## Handbook of nature activities

The Handbook of Nature Activities: Engaging discovery, inclusion, play, and learning in connection with arctic nature, is a free online book of nature activities for children ages 5 - 10 years old, with a focus on encouraging inclusion. It can be used in the classroom, with youth groups, and with parents and guardians. It was published in February 2023 and can be downloaded from [www.arcticnature.org/publications](http://www.arcticnature.org/publications).

The activities used in the Handbook are based on a socio-constructivist approach where individuals build knowledge through their experiences with their environment and through social integration. The book has a multidisciplinary focus and seeks to promote reflection on the potential of the natural world to enrich pedagogical practices.



**Figure 17:** Handbook cover

The Handbook is based on inclusive education, which respects diversity and encourages a greater connection between children and the local natural world. Throughout the handbook are tips on how to adapt activities for children with disabilities, neurodivergent children, or children who may have speech delays or who are in the process of learning the local languages. We believe that the use of the activities from the Handbook can enhance integration, and inclusion. Furthermore, it encourages creativity, reflection and the importance of preserving and caring for the natural world.



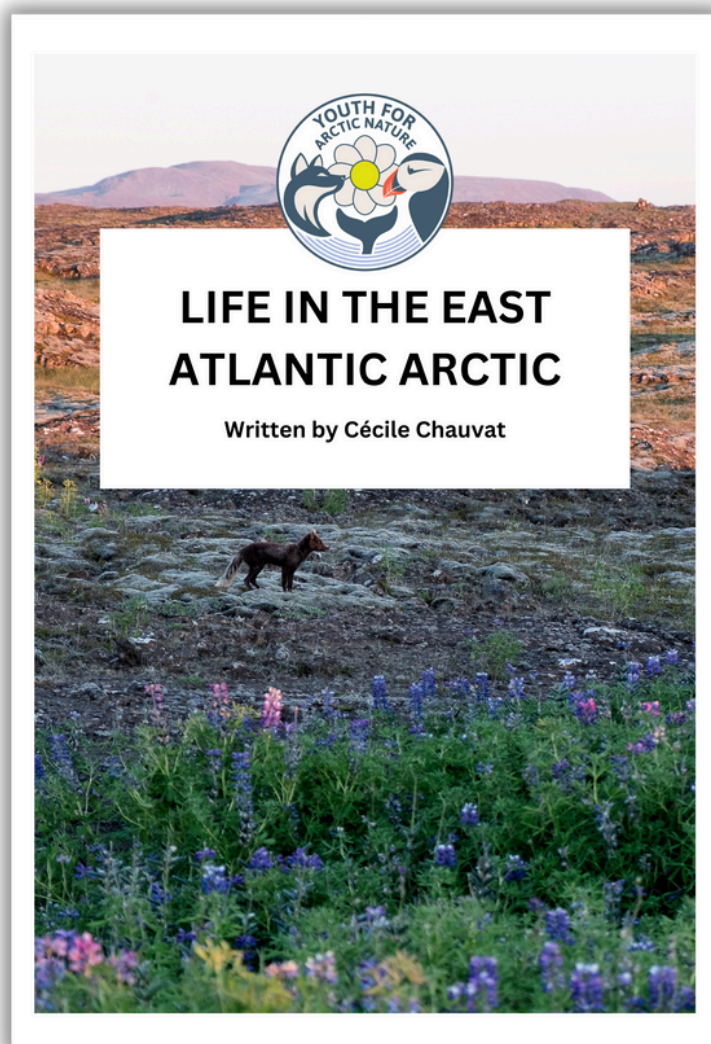
**Figure 18:** From the Handbook. Using the environment to print tote bags

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## Life in the East Atlantic Arctic - free online YAN book

“Life in the East Atlantic Arctic” is based on the “Local nature” section of the website, with expanded and more deeply researched and edited material. The book does not give an exhaustive account of wildlife, plants, and other organisms in the East Atlantic Arctic. Instead, it gives an introduction to groups of organisms and provides notable examples of species in the groups, along with interesting facts and distribution within the East Atlantic Arctic.

Some of these groups are well-known, such as terrestrial mammals or birds, while some attract less attention, such as lichens, phytoplankton, or non-vascular plants. For each group, an introduction is given to explain in simple ways what they are and how they influence Arctic biodiversity. Examples are chosen based on factors including cultural importance, interesting features, or notable distribution.



**Figure 19:** Life in the East Atlantic Arctic cover

All species examples are found in the East Atlantic Arctic (defined as the region between the Faroe Islands, Greenland, Svalbard, and Fennoscandia). Most examples are found in multiple NORA regions or countries. The goal is provide an introduction to the tapestry of life that connects our regions of the Arctic and sub-Arctic, as well as an invitation to learn more about the interactions between different elements and why they matter. Through the examples chosen, the book touches on concepts of biology, ecology, biodiversity, evolution, and cultural and economic importance of nature in the past and present for the people of the East Atlantic Arctic.

Important groups are missing in this book, including most notably freshwater algae; marine, freshwater and terrestrial invertebrates; and marine and freshwater fish. In the future, we hope to continue this project to include them and to expand both the scope and depth of the information provided.



**Figure 20:** Image of one of the Handbook's activities

## Evaluation and Research in 2023 for the Handbook

- Explore the use of the handbook with more students and teachers from different learning communities within the Icelandic and international educational context.
- Translate the Handbook into more languages, such as Icelandic, thus expanding access to this educational resource.
- Search for research funds to promote the dissemination of the handbook as well as expand the project with other collaborators.
- Expand our network with new partners (educators and researchers) who are interested in research and projects relating to inclusive and environmental education.

- Use the data collected by PhD student, Meghan Orman, on sustainable behavior and connection to nature in early childhood to understand better children's connection with nature and possible links to well-being. This research is being coordinated with UiT, Hólar University, and elementary schools in Norway and Iceland.
- Work in partnership on educational projects with our partners in the Faroe Islands.
- The handbook was presented at the Arctic Science Summit Week 2023 (ASSW) conference in Vienna, Austria, and we had the opportunity to meet researchers, professors and organizations interested in the Handbook. We intend to expand these connections for sharing and exchanging knowledge regarding the connection of Arctic youth with the natural world in future collaborative work.

# Future Work

## The Development of the Model from Key Findings

Findings from our work highlight the importance of collaborative capacity building and strategic youth engagement in addressing complex issues such as climate change. These key findings are:

1. Need for inclusive capacity sharing
2. Youth-focused regional and community development
3. Developing a strategic model

We hope to continue the work that we have started with YAN by implementing these takeaways in future projects that will have a more inclusive and greater impact on sustainability and climate actions. The YAN Steering Committee has decided to continue working together towards these aims.

During our final work shop with our project partners, we developed a draft strategy for capacity sharing shown in figure 21.

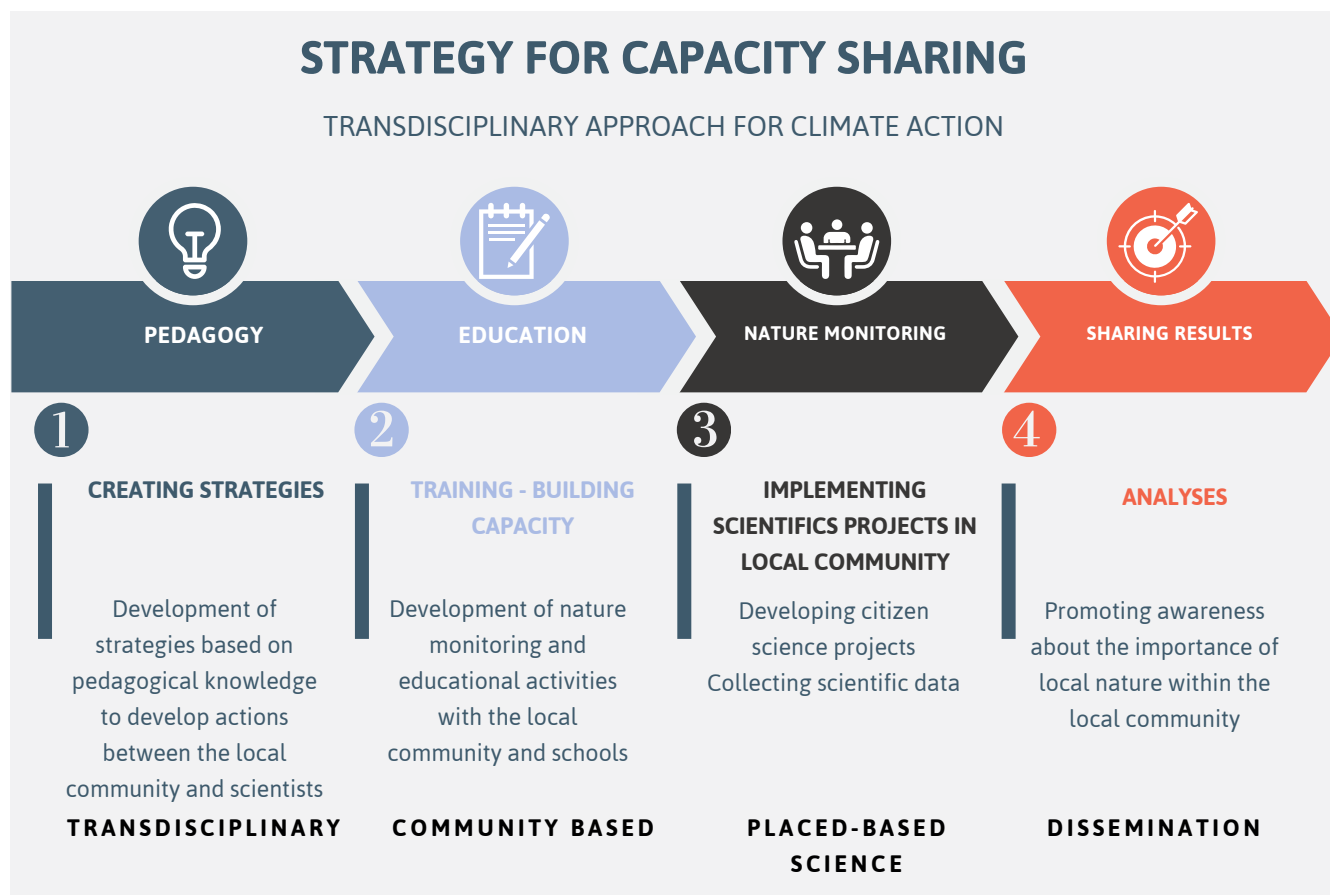
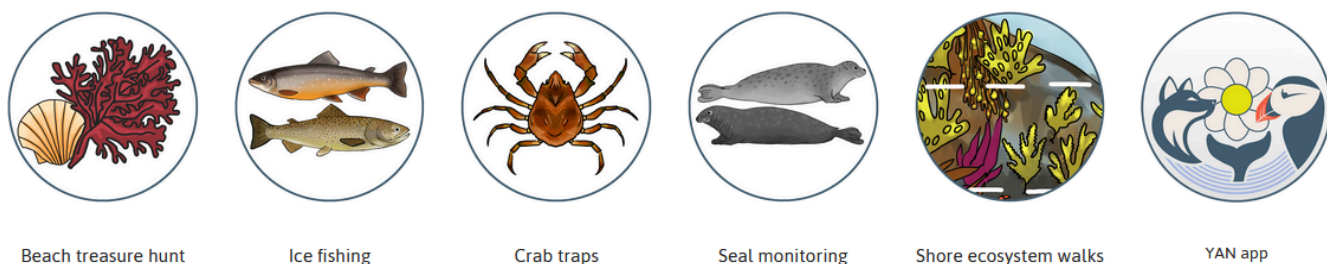


Figure 21: Draft strategy for capacity sharing



## Dissemination



**Figure 22:** The Great Seal Count, Húnaþing vestra. July 2021

The YAN website will continue beyond the completion of the NORA grant. All of the publications of the YAN project can be found at [www.arcticnature.org/publications](http://www.arcticnature.org/publications) along with the environmental education materials on [www.arcticnature.org/yan-project](http://www.arcticnature.org/yan-project).



**Figure 23:** Example of marketing for outdoor environmental education project in collaboration with BIODICE and NMSI for the Icelandic Festival for Biodiversity 2023.

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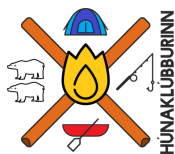
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LAPIN YLIOPISTO  
UNIVERSITY OF LAPLAND



NORA

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