PICES PROJECT ON "SEA TURTLE ECOLOGY IN RELATION TO ENVIRONMENTAL STRESSORS IN THE NORTH PACIFIC REGIONS"

The Korean sector of PICES decided to fund a new PICES project entitled "*Sea Turtle Ecology in Relation to Environmental Stressors in the North Pacific Regions*". The profile of the project is as follows.

Background

Most sea turtles are endangered species designated by IUCN. They are now receiving threats from multiple stressors induced by anthropogenic activities such as climate change, pollution and plastic garbage. Based on the PI group's research (Jang et al. 2018) on the movement of green sea turtles bycaught in the Sea of Jeju Island of Korea, they have different movement patterns (1. Staying around Jeju Island 2, Moving toward Japan, and 3. Moving toward China) depending on individuals. It is necessary to reveal the connectivity of populations in the North Pacific regions and to identify the major environmental stressors to them to conserve the sea turtles in the North Pacific areas.

Project Goal and Key Questions

The overall project goal is to research the sea turtle population found in the North Pacific regions centering on Jeju Island of Korea to enhance the understanding of their habitat use and ecology related to anthropogenic activities. The project key questions are: (a) How the sea turtles found in Jeju Island, Korea, Kyusu Island, Japan, and Hongkong, China are connected to the other identified populations in the North Pacific areas and (b) What are the major environmental stressors to the sea turtles in the North Pacific regions.

Duration and Funding

The maximum project lifetime is 4 years: from the starting date of the project in 2018 to November 30, 2022. Funding for Year 1 (FY 2018), with ending November 30, 2019, is set at CAD 75,000. This amount includes a 15~20% overhead to be retained by PICES and Inha University to coordinate the project. Total funding for four years of this project is CAD 300,000.

Connection to PICES

The project is expected to interact with and support relevant activities of PICES Scientific Committees on Human Dimension (HD), PICES Technical Committee on Monitoring (MONITOR), and PICES FUTURE (***F****orecasting and* ***U****nderstanding* ***T****rends,* ***U****ncertainty and* ***R****esponses of North Pacific* ***E****cosystems*) Program (specifically, Research Theme 1 on "*What determines an ecosystem's intrinsic resilience and vulnerability to natural and anthropogenic forcing?*").

Major Initiatives

The project is proposed to focus on the following two major initiatives:

1. Identifying the ecological information of the sea turtle population through the use of advanced tagging technologies, DNA analysis, and stable isotope analysis (*e.g.*, identify habitat use and

movement and collect environmental factors through satellite tagging, and identify the sea turtle population through DNA analysis, identifying the tropic ecology using stable isotope analysis).

2. Identifying the ecological threats (collect environmental information on the habitat and bycatch/stranding monitoring in Jeju Island) and conducting behavioral experiments (*e.g.*, testing the behavioral response to marine plastic debris) using individuals in the aquarium.

Products and Publications

- A report to be published in the PICES Scientific Report Series that presents the project, its findings and lessons learned;
- A summary of the report to be published as a brochure, possibly in PICES member languages;
- Several newsletter (PICES Press) articles will be contributed during the project period.
- A workshop will be held at the PICES Annual Meeting, or at the International Sea Turtle Symposium for the project collaborators and party who are interested in the project.

Outreaches

- An outreach/promotional Material: create brochures (both physical and online) that emphasize project purpose and research results in PICES member languages and distribute it both locally and globally.
- Public education on sea turtle ecology and marine ecosystem towards local fishermen, all levels of students and the general public.
- Domestic and international seminar and workshops to promote and share the research results.
- Building capacity for coastal sea turtle monitoring by local small-scale fishermen and local NGOs

Year 1(2019) Operational Plan

March – May, Aquarium research: Response of captive sea turtle to plastic debris (Lotteworld Aquarium)
June – Aug. Field research in Jeju Island
July – Aug. Benchmarking for rehabilitation of sea turtles rescued and building collaborative network in the West Coast of America (e. g. Seattle, Monterey, San Diego etc.)
Sept – Dec, Aquarium research
Oct, PICES meeting

Reference

Jang, S., Balazs, G. H., Parker, D., Kim, B.-Y., Kim, M.Y., Ka Yan NG, C., Kim, T. W. (2018) Movements of green turtles (*Chelonia mydas*) rescued from pound nets near Jeju Island, the Republic of Korea. *Chelonian Conservation and Biology. In Press.*

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