Report Task 2.6: The Arctic Resort,
Station Managers Forum,
INTERACT III,
Bäckaskog Castle, Sweden,
5-6 February 2020

Executive summary

The overall aim and deliverables for Task 2.6 were presented to the station managers and during formal sessions and informal discussion, the opinions regarding process and impact of the task sought from the station managers. Several station managers expressed a desire to create a scientific paper in additional to the two formal deliverables from this task. It was agreed that all station managers should have the opportunity to contribute to a paper submitted to a peer review journal, but it was not mandatory. As many of the stations were not represented at the meeting (approximately half) it was decided to write this separate report, distribute for comment and when final place as an appendix to the first Station managers minutes for INTERACT III project.

In order to understand the breadth and depth required of a best practices guide for handling the impact of tourism at research stations an understanding of the role of

tourism at INTERACT III stations was sought. During the meeting, station managers were invited to indicate the context of tourism at their station and in the area surrounding their station. A simple two-dimensional matrix approach was employed (interest e.g. a research topic, a source of income and infrastructure for tourism e.g. accommodation). The results of this exercise revealed that across stations there was a wide range in interest in tourism and some station were well equipped to accommodate tourists while other were the polar opposite. A best practice guide must therefore accommodate all situations.

During formal and informal discussions a range of issues were raised and an initial classification, which may form the structure of the two best practice guides was captured.

The rapid ad hoc assessment of stations (while adequate to show a broad approach was necessary for the best practice guides) was not considered sufficient for a peer reviewed paper describing the role of tourism in the arctic, subarctic, boreal and alpine areas of the northern hemisphere covered by the INTERACT III station. Therefore, a more rigorous approach was developed and tested in this draft report.

Using the two-dimensional matrix approach as the basis a series of definitions for each quadrant of the matrix were developed and all stations assigned a quadrant in the matrix using the information provided in the INTERACT Station Catalogue 2020. This draft report, circulated to all station managers with an invitation to check, verify or alter the data for their station if they wish to join the authorship team of a peer-reviewed article, serves as a test of interest in creating an scientific article. It was recognised that additional work would be needed to collate sufficient data for a paper and not all station managers are able or want to contribute to a scientific article so it is not envisaged that all stations will want to join this work, which is additional to the funded work of INTERACT III.
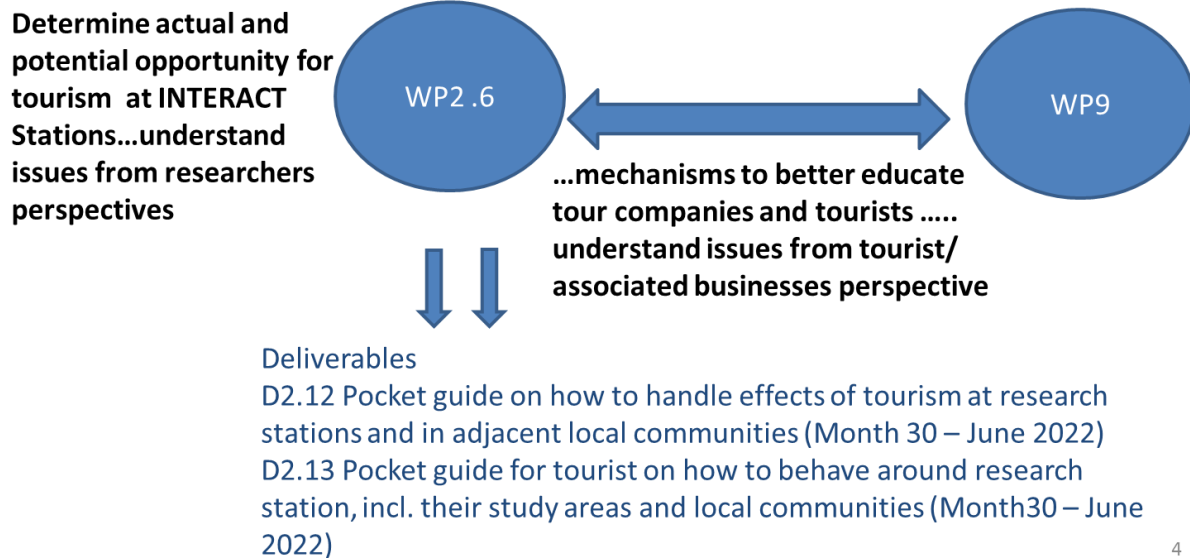
Introduction

The overall aim and deliverables for Task 2.6 were presented at the meeting (Box 1).

Description of work
Task 2.6 The Arctic Resort (Lead: UKRI) This task will address objective (i) and contribute to INTERACT's SC6 and WP9 and will explore different ways in which research stations can contribute to the development of sustainable tourism at or near research stations. Subtask 2.6.1 will consult with station managers to determine actual and potential opportunity for tourism at their sites in order to develop sustainable tourism at INTERACT research stations by (i) assessing best practices for handling the impact of tourism at research stations and in their study areas to contribute to WP9 (D2.12), (ii) implementing best practices for how research stations can make tourists respectfully aware of station operations, science and local communities with input from WP9 (D2.13), (iii) identifying with WP9 mechanisms to better educate tour companies and tourists.
D2.12 Pocket guide on how to handle effects of tourism at research stations and in adjacent local communities (Month 30 – June 2022) D2.13 Pocket guide for tourist on how to behave around research station, incl. their study areas and local communities (Month 30 – June 2022)

Task 2.6 links closely with WP9 which was explained diagrammatical at the meeting (Fig 1).

Relationship between WP2.6 and WP9

Determine actual and potential opportunity for tourism at INTERACT Stations...understand issues from researchers perspectives

WP2 .6

WP9

...mechanisms to better educate tour companies and tourists ..... understand issues from tourist/ associated businesses perspective

Deliverables
D2.12 Pocket guide on how to handle effects of tourism at research stations and in adjacent local communities (Month 30 – June 2022)
D2.13 Pocket guide for tourist on how to behave around research station, incl. their study areas and local communities (Month30 – June 2022)

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Figure 1. Diagrammatic representation of the relationship between WP9 and Task 2.6 as presented at the Station Managers Forum I, Bäckaskog Castle, Sweden, 5 February 2020.

The full description of WP9 (Box 2) was also presented elsewhere in the meeting and task WP9.1 presented in the station managers' forum.

Description of work
Task 9.0 Management of WP (Lead: SESAM)
This task will liaise with the leader of task 9.1 to ensure that the WP is represented at consortium meetings.
Task 9.1 Educating the tourists and tourist operators (Lead: AECO)
Enhancing education of tour operators and tourists on the Arctic environment, its ecosystems and peoples to a) generate greater awareness of the sensitivity of the Arctic to disturbance, b) value this unique environment and c) ensure sustainable tourism. AECO will work with tour operators to identify what additional educational resources would be beneficial and to identify and potentially refine any existing best practices for reducing impacts on the environment. AECO will also consider if measures and tools used to ensure sustainable tourism can be applied to research activities to ensure sustainable practices in station management (in collaboration with WP2).
Task 9.2 Reviewing existing tourism policies and regulations from an Indigenous and local Peoples' perspective (Lead: SESAM)
Policies and regulations are needed to prevent arctic tourism from becoming an industrial activity that has a negative impact on local- and Indigenous communities, their livelihoods and the natural environment. There are currently several projects aiming to develop guidelines for a more sensitive practice in Arctic tourism. However there is little focus on nature-based tourism such as dog-sledging, small game hunting and sports fishing where the basis for the activity is natural resources. There is a need to a) gather and summarize existing policies and regulations concerning arctic nature-based tourism, b) identify their purpose and if needed c) suggest revisions based on the perspectives of local- and Indigenous People. The University of Tromsoe/the Arctic University of Norway, through the Centre of Sámi studies (SESAM), will work together with local- and Indigenous communities in Scandinavia to identify the impacts that arctic nature-based tourism activities have on local and Indigenous communities and their livelihoods, traditional resource management systems and/or perspectives on natural resource stewardship. The results will be useful for tour operators, politicians and local- and Indigenous communities. It will be considered to what extent it is possible to form guidelines for nature-based tourism activities applicable to all arctic areas.
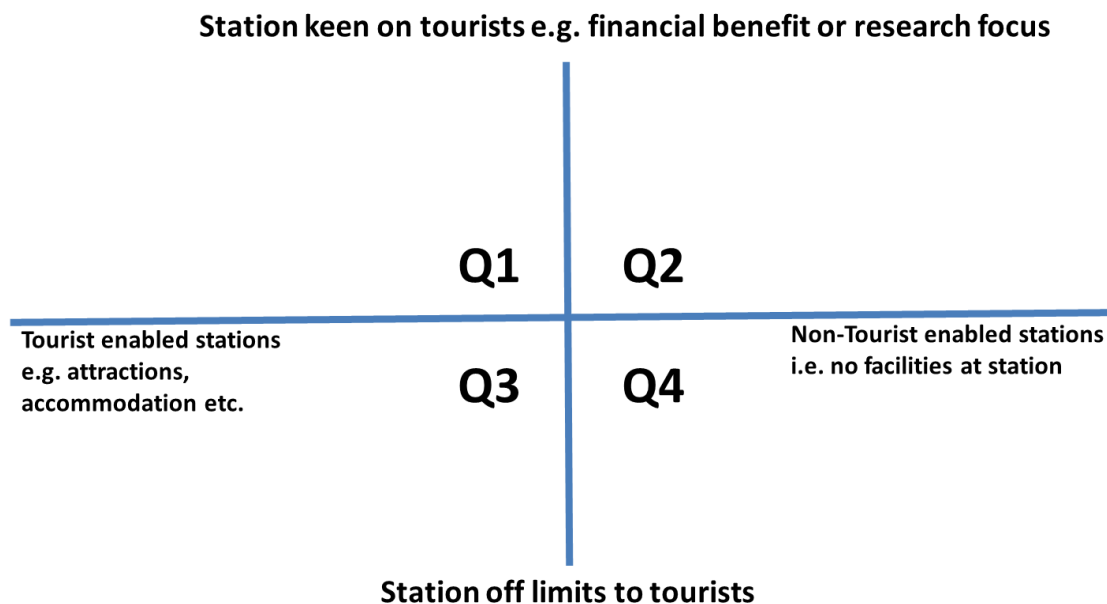
Definition of tourism

For the purposes of INTERACT III a tourist is defined as "a person traveling to and staying in places outside their usual environment for leisure, business or other purposes for not more than one consecutive year". While tourism covers the theory and practice of touring, the business of attracting, accommodating, and entertaining tourists, and the business of operating tours (adapted from https://en.wikipedia.org/wiki/Tourism). Educational and science tourism were recognised as important sectors of the tourism industry for station managers. All researchers visiting the stations via Transnational Access (TA) programs were therefore classed as tourists.

The context of tourism at INTERACT III stations

Tourism interest and infrastructure

In order to understand the breadth and depth required of a best practices guide for handling the impact of tourism at research stations an understanding of the role of tourism at INTERACT III stations is required. A simple participatory matrix tool was employed which allowed station managers to identify the context of tourism at their station along two axis (Fig 2).

Station keen on tourists e.g. financial benefit or research focus

Q1	**Q2**
Tourist enabled stations e.g. attractions, accommodation etc.	**Non-Tourist enabled stations** i.e. no facilities at station
Q3	**Q4**

Station off limits to tourists

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Fig 2. Two-dimensional matrix used to capture station managers' perception of the tourist infrastructure (horizontal axis) and interest (vertical axis. Q1 – Q4 refer to the quadrants of the matrix.

● INTERACT Stations 2020

SVALBARD, NORWAY

1 AWIPEV Arctic Research base
2 CNR Arctic Station "Dirigibile Italia"
3 Ny-Ålesund Research Station – NPI Sverdrup
4 UK Arctic Research Station
5 Netherlands' Arctic Station
6 Adam Mickiewicz University Polar Station – Petuniabukta
7 Czech Arctic Research Station of Josef Svoboda
8 Polish Polar Station, Hornsund

NORWAY

9 Finse Alpine Research Centre
10 Nibio Svanhovd Research Station

SWEDEN

11 Svartberget Research Station
12 Tarfala Research Station
13 Abisko Scientific Research Station

FINLAND

14 Kilpisjärvi Biological Station
15 Pallas-Sodankylä Stations
16 Kolari Research Unit
17 Hyytiälä Forest Research Station
18 Kainuu Fisheries Research Station
19 Oulanka Research Station
20 Värriö Subarctic Research Station
21 Kevo Subarctic Research Station

SWITZERLAND

22 Alpine Research and Education Station Furka

AUSTRIA

23 Station Hintereis
24 Sonnblick Observatory

CZECH REPUBLIC

25 Krkonoše Mountains National Park

POLAND

26 Karkonosze Mountains National Park
27 M&M Kłapa Research Station

RUSSIA

28 Lammin-Suo Peatland Station
29 Khibiny Educational and Scientific Station
30 The Arctic Research Station
31 Mukhrino Field Station
32 Numto Park Station
33 Khanymey Research Station
34 Beliy Island Research Station
35 Willem Barentsz Biological Station
36 Igarka Geocryology Laboratory
37 Kajbasovo Research Staton
38 Aktru Research Station
39 Evenkian Field Station
40 International Ecological Educational Center "Istomino"
41 Research Station Samoylov Island
42 Spasskaya Pad Scientific Forest Station
43 Elgeeii Scientific Forest station
44 Chokurdakh Scientific Tundra Station
45 Orotuk Field Station
46 Avachinsky Volcano Field Station
47 North-East Science Station
48 Meinypil'gyno Community Based Biological Station

KYRGYZ REPUBLIC

49 Adygine Research Station
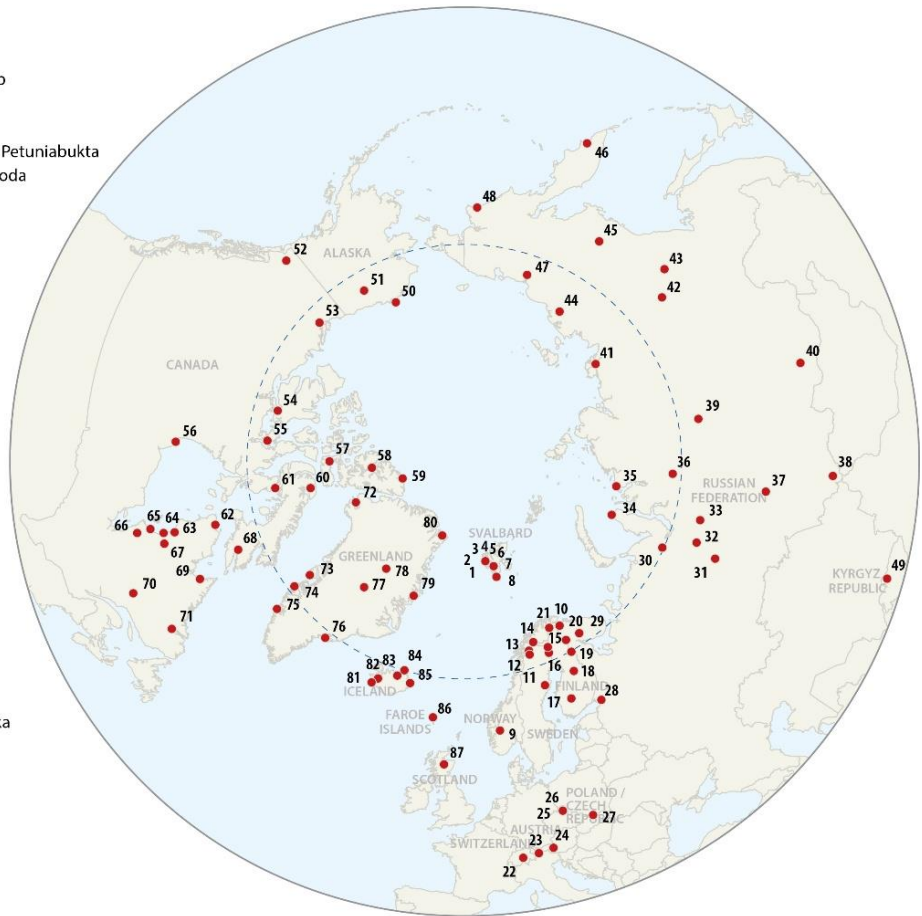
ALASKA

50 Barrow Arctic Research Center/
   Barrow Environmental Observatory
51 Toolik Field Station

CANADA

52 Kluane Lake Research Station
53 Western Arctic Research Centre
54 Canadian High Arctic Research Station
55 M'Clintock Channel Polar Research Cabins
56 Churchill Northern Studies Centre
57 Flashline Mars Arctic Research Station
58 Polar Environment Atmospheric Research Laboratory
59 CEN Ward Hunt Island Research Station
60 CEN Bylot Island Field Station
61 Igloolik Research Center
62 CEN Salluit Research Station
63 CEN Boniface River Field Station
64 CEN Umiujaq Research Station
65 CEN Whapmagoostui-Kuujjuarapik Research Station
66 CEN Radisson Ecological Research Station
67 CEN Clearwater Lake Research Station
68 Nunavut Research Institute
69 CEN Kangiqsualujjuaq Sukuijarvik Research Station
70 Uapishka Research Station
71 Labrador Institute Research Station

GREENLAND

72 DMI Geophysical Observatory – Qaanaaq
73 Arctic Station
74 Arctic DTU, ARTEK Research Station
75 Greenland Institute of Natural Resources
76 Sermilik Research Station
77 Summit Station
78 EGRIP Field Station
79 Zackenberg Research Station
80 Villum Research Station

ICELAND

81 Sudurnes Science and Learning Center
82 Litla-Skard
83 China-Iceland Arctic Observatory
84 RIF Field Station
85 Skálanes Nature and Heritage Center

FAROE ISLAND

86 Faroe Islands Nature Investigation

SCOTLAND

87 ECN Cairngorms

Figure 3 Location and number of INTERACT III stations (exacted from INTERACT 2020. INTERACT Station Catalogue 2020 Eds Arndal, MF and Topp-Jorgensen, E. DCE – Danish Centre for Environment and Energy, Aarhus University, Denmark. 190 p.
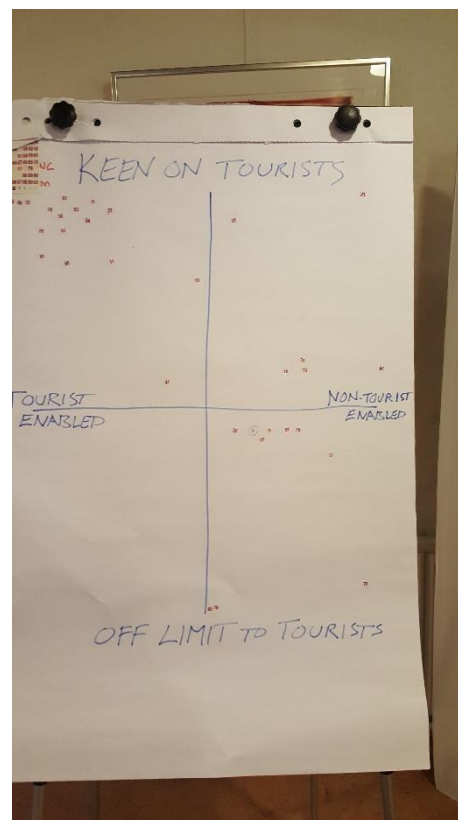
The vertical axis captured the interest of the station management in tourism and the horizontal axis the infrastructure of the station to service tourists. As the context of tourism in the surrounding area to the station often also has a bearing relevant to the best practise for sustainable tourism the managers were asked to complete two matrices (i) focused on the actual situation at their station (not potential) and (ii) the current situation in the surrounding area. Those attending the meeting placed a sticky label with the number of their station according the 2020 INTERACT Station Catalogue (Fig 3). They were also invited to answer for other stations they knew well.

By organizing stations along these two dimensions, a better idea was gained of the extents to which tourism may influence research at INTERACT stations. It is recognised that the information provided is subjective and the exact location in each quadrant imprecise depending on the personal perception of the individual participating. Consequently, for analysis a simple four quadrant approach was adopted with stations (or surrounding areas) located in each quadrant

Not all station managers were present at the meeting (~50%) but this was sufficient to determine that best practices guides for handling the impact of tourism at research stations must consider all points on the gradients of interest and infrastructure (Fig 4).

(a)   (b)

Figure 4 Distribution of INTERACT III stations on a two-dimensional matrix. The vertical axis captured the interest of the station management in tourism and the horizontal axis the infrastructure of the station to service tourists (a) at the research station and (b) in the area surrounding the station .

While this analysis was sufficient to determine the scope for the best practice manuals it was not considered sufficiently rigorous to report in a published article. Conversations with partipcants enabled a more rigorous set of criteria to be developed which could be applied to the information held in the INTERACT 2020 Station Catalogue.

An excel file containing the classification of all sites was circulated to all station managers as a check on the accuracy of the data and their interest in becoming a co-author of a peer-reviewed article. Each quadrant (Fig 2) was classified as follows,

- Q1 station favourable to tourists and with tourist enabled infrastructure (>20 beds);
- Q2 station interested in tourism e.g. research focus but without infrastructure (<20 beds);
- Q3 station has tourism infrastructure (>20 beds) but is not keen to interact with the full range of tourists, primarily only educational or scientific tourism, no relevant tourism research focus and
- Q4 has neither infrastructure nor interest in tourism and may in fact be rather hostile towards them as the presence of unexpected tourists can present significant dangers to remote stations.

For the area surrounding the research station

- Q1 favourable to tourists, major economic factor in the region and with tourist enabled infrastructure e.g. hotels, local nature guides e.g. Natural Park or cultural attractions;
- Q2 interested in tourism or developing tourism but currently without much infrastructure;
- Q3 has limited interest in tourism or tourism infrastructure e.g. hotels are focused to service a specific business sector e.g. mining interests, oil companies or when other forms of tourism are not encouraged , and
- Q4 has neither infrastructure nor interest in tourism e.g. National Park focused in nature with no or little wish to enable visitors or regional exclusion zone requiring permit to enter.

Issues raised by station managers

In addition to the formal sessions, many opportunistic discussions were held to determine the context of tourism at stations i.e. during meal breaks, the excursion and the informal evening sessions. These discussions revealed a wide range of opinions as to the opportunities and threats posed by tourists and the influence they have on the research conducted at stations.

The positive aspects of tourism mentioned by station managers most often related to:

- the economic advantages tourism represented both for the research station and the surrounding areas,
- the possibility of harnessing tourists for citizen science project or ecosystem renovation projects and

- the fulfilment of the outreach/impact duty many research stations are obliges to fulfil as part of their funding.

The negative aspects of tourism cited most often related to

- (un)intentional interference with the monitoring activities or experiments at stations
- assumption of a level of entitlement to stay and demand assistance of station staff

It was agreed that a best practice guide must be focused on the issues relevant to research stations as there were many practical guides for general tourism e.g. Association of Arctic Expedition Cruise Operators (AECO) https://www.aeco.no/guidelines/). It was further agreed that the guides should suggest solutions and not only be a collation of the problems. The triple behaviour change tools of regulation. awareness and nudging were considered relevant to structure suggested solutions for the best practice guide.

Structuring the best practice guide in sections focused on different aspects of the work at stations was considered potentially useful because it was considered that if tourists were made more aware they would be less likely to interfere e.g. explain the use of equipment they may encountered may reduce the temptation to interfere (touch or breath on equipment). An initial suggestion of categories are detailed in Table 1

Category of research	Aspects relevant to best practices for how research stations can make tourists respectfully aware of station operations (D2.13)
Vegetation	Human or vehicle tracks resulting in erosion
	Spread of alien species
Air	Physical interference with equipment
	Human sources of contamination e.g. CO_2
	Vehicle/machinery sources of contamination e.g. NOx
Water	Physical interference with equipment
	Human sources of contamination e.g. biological waste
	Vehicle/machinery sources of contamination e.g. oil
Biodiversity	Presence of humans disturbing animal behaviour
	Vehicle/machinery disturbance to animal behaviour
	Light pollution disturbing animal behaviour e.g. moth traps
	Noise pollution disturbing animal behaviour even at a distance e.g. shy nocturnal animals
	Drones disturbing animal behaviour
	Physical interference with equipment e.g. camera traps, acoustic recorders

Conclusions and next steps

During the formal session, it was agreed that the best practice guide for handling the impact of tourism at research stations and in the surrounding study area should

contain both the issues or problems but also solutions. It was recognised that solutions may be:

- regulatory (e.g. requiring permit to enter a research zone),
- raising awareness (e.g. appropriate signage, maps etc.) or
- in the form of nudging to improve the behaviour of tourists around research stations (e.g. appropriate landscaping to encourage all tourists to use a particular route which can be maintained with boardwalks thus protecting other sensitive vegetation or experiments or study animal breeding areas.

In addition to producing the two pocket guides focused on (i) handling effects of tourism at research stations and in adjacent local communities (D2.12) and on educating tourists how to behave around research station, including the wider study areas and in the local communities (D2.13) a desire to produce a research paper was expressed by participants. It was agreed, that all stations should have the opportunity to participate in the creation of a scientific paper but it was not mandatory. A questionnaire approach to collate data was deemed the most inclusive approach given the distributed locations of INTERACT III stations and few possibilities of face-to-face meetings.

It was further discussed that the number of authors should be limited to one or two from each station and that the data set produced in Task 2.6 would be certified (i.e. given a DOI) and consequently be available for everyone to write country or issue specific papers which would not require all station managers to be authors.

The task lead of WP2.6 (Jan Dick) was charged with drafting a questionnaire suitable to collecting information for a research article to be discussed at the next Station manager's forum 21-25 Sept 2020.