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MEETING OF THE COUNCIL

DOCUMENT 14	UPDATE ON THE MINTAG PROJECT – YEAR 1
Submitted by	Secretariat
Action requested	Take note
Background/content	NAMMCO member countries and Japan agreed in July 2021 on conducting in cooperation a project aiming at developing a new satellite tag to be used on fast swimming rorquals and pilot whales, i.e., species demanding a long-range deployment and a tag with as little drag as possible. They agreed both on the terms and the funding of the project. The project was officially launched on 4 August 2021. This document provides a progress report of the project first year.

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MINTAG PROJECT

PROGRESS REPORT AUGUST 2021 - JULY 2022



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1. BACKGROUND & LAUNCHING OF THE MINTAG PROJECT

The project originally called Super-Tag project was renamed Miniature Tag Project or MINTAG Project, as its essence is to develop smaller and lighter satellite transmitter tagging systems than the ones existing on the market today. The objective is to develop a tag (“MINTAG”) adapted to the study of the lesser-known fast swimming baleen whales such as fin, minke, sei and Bryde’s whales, as well as pilot whales. Successful long-lasting tags have not yet been developed for these species, and knowledge on wintering movements and migration are still missing for those species.

The project is a cooperation between the four NAMMCO member countries and Japan. The project partners agreed that the project be led by a Steering Group which would refer to the NAMMCO Finance and Administration Committee. Scientists with expertise in whale tracking were nominated to the Steering Group by the five participating countries as follows.

- FO: B. Mikkelsen (FAMRI)
- GL: MP Heide Jørgense (Project Leader) and R. Guldborg Hansen (GINR)
- JP: L. Pastene and K. Konishi (ICR)
- IS: G. Víkingsson (MFRI)
- NO: C. Lydersen (NPI), N. Øien & M. Biuw (HFI)

The Secretariat of NAMMCO and the Fisheries Agency of Japan (FAJ) are also members of the Steering Group.

The project was officially launched on **4 August 2021** with on that day

- the first meeting of the Steering Group (StG) being held,
- the publication of a blog on the NAMMCO website: <https://nammco.no/topics/where-do-all-the-whales-go-min-tag/>
- announcements on NAMMCO social media.

Tender materials were sent to various potential developer companies, and on the result of the offers (both price, tag performance and suitability for using in the future considering the planned development in the ARGOS satellite system), the StG chose in February 2022 to cooperate with the US company Wildlife Computer (WC).

The development of the tag design, or the thinking behind, started immediately, with a Kick-off seminar between the StG and WC in March 2023. The financial agreement, as a Memorandum of Understanding (MoU), was finally agreed upon and signed on 22 June 2022 by WC Chief Executive Officer (CEO) and NAMMCO General Secretary (GS). The project is divided in three phases, each defined by their terms and financial settlements. The payment to WC of the of the first instalment for Phase 1 (Development and testing of the MINTAG) was done on 24 July 2022.

2. SCHEDULE OF STEERING GROUP MEETINGS AND OTHER ACTIVITIES

The table below provides the timeline of the Steering Group (StG) activities performed or planned in the period of August 2021 – March 2023. Completed activities are in black, while activities planned for the near future are indicated in grey; activities in green are field activities.

Dates	Meetings object	Participating countries / entities	Main items discussed
04.07.21	StG 1	FO, GL, IS, JP, NO	Presentation of participants, review of budget, review of draft tender material to potential manufacturers, review of 1 st project blog, agreement on autumn 2021 and winter 2022 project schedule
24.11.21	StG 2	FO, GL, IS, JP, NO	Review of the manufacturers proposals, formulation of concerns and issues to be raised with the manufacturers
Dec 2021	PL / WC (physical)	Project Leader (PL) and Wildlife Computer (WC) CEO and engineers	Presentation of concerns and question about the production and deliveries
22.02.22	StG 3 (online)	FO, GL, IS, JP, NO	Comparison of the two manufacturers proposal and decision on the manufacturer
24.03.22	Webinar kickoff by WC (online)	StG (FO, GL, IS, JP, NO, Secretariat) + WC CEO, scientists, and engineers	WC presentation of their project, incl. update upcoming opportunities for satellite communication, discussion on tag design
14.06.22	Financial agreement (online)	NAMMCO GS & Deputy Secretary, WC CEO, PL	Discussing the terms of the financial agreement and MoU
17.06.22	Financial agreement (online)	NAMMCO GS, WC CEO & one scientist	Continuing discussing the terms of the financial agreement and MoU
22.06.22	MoU	NAMMCO GS, WC CEO	The MoU between NAMMCO and Wildlife Computers is signed by both parties

11-15.07.22	Testing of dummy tag housing (physical)	PL, FO, NO, WC engineers	Testing of tag housing and carrier at the Icelandic whaling station on a fin whale carcass
Summer & Fall 22	Website development	NAMMCO Sec	Development of the project website by the NAMMCO Secretariat
09.09.22	StG meeting (online)	Project StG (FO, GL, IS, JP, JFA, NO NAMMCO Sec)	Review of summer test shootings, tag design & meeting with WC, project website, plans & schedule for 2023, data depository, budget
Summer & Fall 22, winter & spring 23	Tag development	WC	Development of the prototype tag and carrier, based on the experience and information gained during the summer testing
25-26.10.22	Tag design seminar (physical, DK)	StG / WC	Refinement of the tag design, including carriers and biopsy samplers
November 22	StG meeting (online)	Project StG (FO, GL, IS, JP, JFA, NO, NAMMCO Sec)	Reflecting on the tag design seminar and defining final requirements for the tag.
February 23	StG meeting (online)	Project StG (FO, GL, IS, JP, JFA, NO, NAMMCO Sec)	Development of tagging protocol for the deployment of the MINTAG V0b in spring-summer 2023.
March 23	Reporting to Japan & NAMMCO Council	NAMMCO Sec and StG	Reporting to the Fisheries Agency of Japan and to the Council of NAMMCO (30 th Annual Meeting)
Spring 23	Testing on carcasses	FO, GL, IS, JP, NO, WC	Testing of prototype tag and carrier on carcasses of minke and fin whales
Spring-Summer 23	First tag deployment at sea	FO, GL, IS, JP, NO	Deployment of 25 MINTAG V0b by all participating countries, NAMMCO countries in the North Atlantic and Japan in the North Pacific.

3. CHANGES IN PROJECT SCHEDULE

Due to the delay in finalising an agreement between NAMMCO countries and with Japan, the launching of the project was deferred to August 2021. This in turns delayed contacting potential manufacturers and choosing one. It also became apparent that the coming changes in the constellation of Argos satellite warranted waiting for a year for finalising the tag to take advantage of the most updated technology. The production and deployment of the prototype tag was postponed a year, from spring/summer 2022 to spring/summer 2023, as would also be the production of the final tags and their deployment.

The deployment of the first prototype (25 V0b tags) will be delayed from summer 2022 to summer 2023. The large deployment of the final tags (225 V1 tags) by the Faroe Islands, Greenland, Japan, Iceland and Norway, that was originally planned for the summers 2023 and 2024, are now planned for the summers 2024 and 2025.

The analysis and publication of the results are now expected to be carried out in 2026 and 2027, with an End-of-project Symposium being held in the last quartal of 2027.

The year 2022 has been, however, and continue to be used for tag housing development and testing in situ and in the field, and conception work.

The table below show the current schedule of events and new timeline of the project.

Revised timeline of the MINTAG project

	2021		2022				2023				2024				2025				2026				2027				2028+
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
Steering Group																											
Launch, Tender																											
Choice Manufacturer / signature					May 22																						
Tag development WLC																											
DVPT V0 + carrier																											
Shipment 10 V0 housing + carrier w.bs					Jul 22																						
DVPT V0b + carrier bs																											
Shipment 25 V0b housing + carrier w.bs								Feb 23																			
DVPT V1 + carrier bs																											
Shipment 225 V1 housing + carrier w.bs										Feb 24					Feb 25												
Testing: Consortium																											
Deploy 10 dummy V0 tag																											
DVPT instrumentation protocol																											
Deploy 25 V0b									25																		
Deployment Tags: Consortium																											
Deploy 225 V1											125				100												
Data collection: Consortium / ARGOS																											
25 V0b - Argos time																											
125 V1 - Argos time																											
100 V1 - Argos time																											
Analysis: Consortium																											
Database (NAMMCO SEC)																											
Analysis																											
Writing																											
Dissemination: Consortium																											
Website (NAMMCO SEC)																											
Education material (NAMMCO SEC)																											
Publication																											
Project Workshop																											
Reporting SC/Council/FAJ																											

4. MINTAG FINANCIAL UPDATE

As a consequence of the delays described above, direct expenses for the project (cost of the tag development (Phase 1) and the field work) started being incurred in 2022 instead of 2021, although partners' in-kind cost, i.e., working hours, started running in 2021.

The funding expected from the participating countries has been received according to the project original timeline. Funding for 2021 have been received according to plan, and requests for 2022 funding was sent medio July (see under item 4.2 for details).

The project has its own specially dedicated bank account, administered by the NAMMCO Secretariat. Unused money in 2021 and 2022 - because of the delay in the start of the project, and tag development and field work - will be put on hold and used to fund the 'extra' year of the project, i.e., 2027.

4.1 PROJECT-BASED COOPERATION BETWEEN NAMMCO AND JAPAN

A project-based cooperation agreement between NAMMCO member countries and Japan was finalised on **1 July 2021**.

Under this agreement NAMMCO received from Japan NOK 1,692,363 on 21.12.2021. The cooperation-related funding is kept on a dedicated bank account administered by the NAMMCO Secretariat, and subject to auditing in line with international accounting standards.

For the year 2021 and according to the project original MINTAG budget, NOK 545,000 was redrawn for covering project direct costs and were paid into the MINTAG dedicated bank account.

For the year 2022, the request for the funding was sent to the Japanese Embassy in Oslo in July 2022 and NOK 1,166,666 was received on 24.08.2022. This funding, complemented by unused 2021 Japanese funds (NOK 646,334), was transferred to the MINTAG account to meet Japan's funding for 2022 (NOK 1,813,000).

4.2 AGREED CONTRIBUTIONS AND PAYMENT STATUS

The table below shows the funding agreed upon and received for the MINTAG project by the project partners in 2021 and 2022.

In 2022, NAMMCO received from Japan less than the agreed 2022 contribution for the MINTAG project, therefore some of the project funding received in surplus in 2021 was used to compensate.

To the date of 29 August 2022, funding was not yet received from the Faroe Islands, Greenland, and Norway.

Country	MINTAG Funding 2021		MINTAG Funding 2022		
	Agreed	Received	Agreed	Requested	Received by 29.08.22
Faroe Islands	85,000	85,000	74,000	74,000	
Greenland	40,000	137,950	234,000	136,050	
Iceland (Marine & Freshwater Research Institute)	-	-	50,000	50,000	50,000
Norway	595,000	595,000	910,000	910,000	
NAMMCO	50,000	50,000	150,000	150,000	150,000
Japan 2022 funding	545,000	545,000	1,813,000	1,166,666	1,813,000
Total	1,315,000	1,412,950	3,231,000	2,486,716	2,013,000

4.3 BUDGET AND EXPENSES

The planned expenses have been increased compared with the original budget. One issue for the project is the present inflation, as well as the changes in exchange rates between countries, notably with the US, which may sensibly increase the cost of the tag development.

ITEMS	Original budget	Wildlife Computer	
		WC / US \$	NOK Planned 240722 (9.97)
Development costs, incl. dummy tag for testing in 2022 and 2023, and related carriers, as well 25 prototype tags (V0b9) and 5 V0B carriers	2,625,000	105,000	2,093,700
Purchase 225 V1 tags	5,625,000	438,750	4,374,338
Purchase 85 carriers	?	34,000	338,980
Biopsy samplers	?		
ARTS guns	?		150,000
Argos cost**	705,000		2,794,500
Scientists to test sites/carcasses	150,000		500,000
Meeting with WLC	?		
Freight, customs, brokerage	?		50,000
Unchanged cost			
Project administration	620,000		620,000
Database + website	390,000		390,000
Project workshop	200,000		200,000
Total	10,315,000		11,511,518

So far, the first payment to Wildlife Computer (80% of the first settlement of \$105,000, NOK 814,556) and expenses related to the testing at the Icelandic Whaling Station amount in total to ca. NOK 950,000.

5. FIELD TESTING AT THE ICELANDIC WHALING STATION IN JULY 2022

The overall objective was to test on fin whale carcasses at the whaling station in Iceland the best deployment of dummy tags and of specific characteristics (carriers, biopsy tip system, stop plate, penetration depth, barbs, retention, flight performance).

Kristján Loftsson, from Hvalur hf, is gratefully acknowledged for providing access to the whaling station and the whales and made this testing possible.

The testing was done in the period 10-16 July 2022, and scientists from the project Steering Group and Iceland participated as well engineers from Wildlife Computer.

- Andy Leask (Wildlife Computers (WC), US) [right on photo above].
- Colin Hunter (Wildlife Computers, US) [next right on photo]
- Mads Peter Heide-Jørgensen (Project Leader, Greenland Institute of Natural Resources, Greenland) [the gunman]
- Bjarni Mikkelsen (Faroe Marine Research Institute, Faroe Islands) [3rd from left on photo]
- Nils Øien (Institute of Marine Research, Norway) [second from left on photo]
- Sverrir Daníel Halldórsson (Marine and Freshwater Research Institute (MFRI), Iceland) [left on photo]



Participants in the MINTAG testing at the Icelandic Whaling Station in July 2022

Test could be performed on seven whales, three females and four males of different sizes. A total of 28 shots were performed, and their characteristics and results were duly documented both in writing and with photos and videos.

The testing was considered invaluable for the progress of the project and the design of successful tags. The specific layering of the dermis and blubber, and the intersection to the muscle layer, cannot easily be modelled, and no other animals can be used as proxy for whale skin. Even within cetaceans there are huge variations in the thickness of epidermis, the blubber layer, and the composition of the muscle layer. Although the sample size was only of seven large whales, considerable differences were noted, notably between the males and the big females.

Overall, the Group considered that important lessons were learned about the basic functioning of the tags and which characteristics function best. The Group recommended a set of other tests that should also be performed. It also became clear that the fin whales, even the one with the thinnest blubber

layer, were different from minke whales, and the Group recommended that some of the tests conducted in this study be repeated on minke whales.

Based on the experience from the trials, with the understanding that the possible range of test trials were not exhausted, the Group draw possible tag designs that should be discussed by the MINTAG Steering Group.

A detailed report of the testing was finalized with the help of the Secretariat and circulated to the participants, Wildlife Computers, Kristján Loftsson at Hvalur hf, the MINTAG Steering Group, and Japan Fisheries Agency, on 29 July 2022.



Photo shots 3.1 and 3.2. Both shots (3.1 above and 3.2 below) resulted in a bended shaft

6. PROJECT DISSEMINATION

During the summer 2022, the Secretariat developed a tentative project website in cooperation with the StG participants, which will be presented to the StG at its meeting in September.

During the fall 2022, the StG should also develop a dissemination plan.

The Project website should become accessible to the public in early fall 2022.

7. SHORT EVALUATION OF THE PROGRESS OF THE MINTAG PROJECT

Although the launching of the project was delayed compared with the expectations, the project is now in track and progressing well. Wildlife Computer, the chosen manufacturer, has given priority to the on the design of the tag and the housing.

The next step will be a two-day Tag design seminar in Copenhagen in October 2022, where engineers from Wildlife Computers and the scientists from the Steering Group can progress with the design, based on the experience gained during the summer testing.