

MINTAG PROJECT

MINTAG PROJECT PROGRESS REPORT MARCH 2022 – MARCH 2023, AND ACTIVITY PLAN UP TO MARCH 2024

NAMMCO Secretariat

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Field test in the Faroe Islands © Bjarni Mikkelsen

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1. PROJECT BACKGROUND

The project originally called the Super Tag project was renamed Miniaturized 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 blue, 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.

For the development of the MINTAG, the project will concentrate on 3 species: fin, minke and long-finned pilot whale, with the development of a smaller tag on minke and pilot whales and a larger tag on fin whales. When the MINTAG is successfully developed, it will then also be used on species like Bryde’s, sei and blue whale.

The Project Partners are the Faroe Islands, Greenland, Iceland, Japan and Norway. The project is led by a Steering Group (StG), which refers to the NAMMCO Finance and Administration Committee (FAC). The project is led by Prof. Heide-Jørgensen from Greenland, and the five partners nominated to the StG scientists with expertise in whale satellite tagging. The Fisheries Agency of Japan (FAJ) and the NAMMCO Secretariat (SEC) are also member of the Steering Group.

1.1 PROJECT DEVELOPMENT

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

The project was officially launched on **4 August 2021** with the first meeting of the Steering Group (StG) and with announcements on social media, “*Where do all the whales go?*”.

The tag manufacturer Wildlife Computers (WC) was chosen in **February 2022**, a kick-off webinar was held on 24 February between the StG and WC, and the development of the tag started immediately. A MOU between NAMMCO and WC was signed on **22 June 2022**. The project is divided in three phases, each defined by its terms and financial settlement. The payment to WC of the first instalment for Phase 1 (Development and testing of the MINTAG) was done on **24 July 2022**.

The composition of the StG in terms of persons changed somewhat in the second half of 2022 (changes in staff) and is now composed of the following persons:

- FO: B. Mikkelsen (FAMRI)
- GL: MP Heide Jørgensen (Project Leader) and R. Guldborg Hansen (GINR)
- JP: L. Pastene and K. Konishi (ICR)
- IS: S. Granquist and S.D. Halldórsson (MFRI)
- NO: C. Lydersen (NPI), N. Øien & M. Biuw (MRI)

The Fisheries Agency of Japan (FAJ) and the NAMMCO Secretariat (SEC) are presently represented respectively by the Director of the Whaling Affairs Office, T. Sakamoto, and General Secretary, G. Desportes and intern J. Djukarić.

The first testing of dummy housing and carriers was performed in **July 2022** in Iceland on fin whale carcasses (see below under Item 4. and Appendix 4 for further details).

A Tag Design Workshop (WS), with participation of the StG, WC and the NAMMCO Secretariat was held in Copenhagen in **October 2022**.

The project website was launched on **1 November 2022**.

Different tag and carrier features have been tested by different partners (FO, JP, GL) in **January and February 2023**. Further testing will be carried out in **April 2023** on minke whale carcasses off Norway.

The first deployment of the first MINTAG prototype, version V0b, on live fin and minke whales will be carried out in **summer 2023** off Greenland, Iceland, Japan, and Norway.

1.2 PROJECT TIMELINE

The MINTAG project was launched on 4 August 2021, i.e., with a 9-month delay compared with the timing in the original project description, this in turn resulted in a year delay in most planned activities, especially field work that needs to be carried out during summer months. The choice of the manufacturer, Wildlife Computers (WC), was decided in February 2022.

- The agreement with WC, describing expectations, project schedule and price, was signed on June 2022, with the first instalment paid in summer 2022.
- The production and deployment of the prototype tag V0b was postponed a year, from spring/summer 2022 to spring/summer 2023.
- The large deployment of the final tags by the Faroe Islands, Greenland, Japan, Iceland and Norway, that was originally planned for the summers 2023 and 2024, is now planned for the summers 2024 and 2025.

Table1 presents the present timeline. This delay also resulted in a delay in incurring the planned expenses and therefore in using the allocated funds.

Table 1. 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				Apr & Jun 23																		
DVPT V0b + carrier bs																											
Shipment 25 V0b housing + carrier w.bs									May 23																		
DVPT V1 + carrier bs																											
Shipment 225 V1 housing + carrier w.bs											Feb 24				Feb 25												
Testing: Consortium																											
Tests w. 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																											

The schedule of tag development and deployment is further detailed in Table 2 below.

Table 2. Tag development and deployment from March 2022 - March 2023, and plans for April 2023 - March 2024. Completed activities are in black, while activities planned for the near future are indicated in grey.

Month Year	Activity	Participants	Description
Mar 22	Webinar kick-off (online)	StG / WC / SEC	WC presented their proposal, also providing an update on upcoming opportunities for satellite communication, and discussion of tag design. [24.03.22]
Spring 22 to Fall 22	Tag development to V0a tag	WC	Development of the prototype tag and carrier, based on the experience and information gained from the testing in July 2022 in Iceland on fin whale carcasses, as well as subsequent testing and input received from the StG.
Oct 22	Tag Design WS/StG 4, DK	StG / WC / SEC	Refinement of the tags design, including carriers and biopsy samplers. [25-26.10.22]
Fall 22 to Spring 23	Tag development to V0b tag	WC	Refinement of tags and carriers, based on the Tag Design WS, the testing of different characteristics by partners (FO, JP, GL), and input received from the StG.
Summer 2023	Deployment of V0b tag, NA & NP	GL, IS, JP, NO	Deployment of 10 minke and 15 fin whale MINTAG V0b tags by NAMMCO countries in the North Atlantic and Japan in the North Pacific.
Summer 23 to Spring 24	Tag development to V1a tag	WC	Further development of the tag, based on the experience and information gained from the NO testing on minke whale carcasses, the deployment of V0b tags during summer 2023 and their transmission, and input received from the StG.
Spring to Fall 2024	Deployment of V1a tags, NA & NP	FO, GL, IS, JP, NO	Deployment of 80+ V1a tags in all areas with all partners, also in conjunction with NASS 2024.
Fall 24 to Spring 25	Refinement of V1a tag to V1b tag	WC	Based on experience of deployment and transmission of V1a tags and input received from the StG.
Spring to Fall 2025	Deployment of V1b tags, NA & NP	FO, GL, IS, JP, NO	Deployment of 80+ tags in all areas with all partners.

1.3 PROJECT REPORTING

Several reports have been finalised by the Secretariat and communicated to the FAC, FAJ, and StG. They are listed below:

- Progress Report August 2021-June 2022 (June 2022)
- Schedule of Activities April 2022 – March 2023 [Only to FAJ]
- MINTAG Report 1 – Test of dummy tags on fin whales in Iceland, 10-16 July 2022 (July 2022).
- Update on the MINTAG Project – Year 1 /August 2021-July 2022, also presented to Council 29 as document NAMMCO/29/14 (September 2022).
- **Present Report:** Progress Report March2022 – March 2023, with activity plan up to March 2024, also presented to Council 30 as document NAMMCO/30/15 (March 2023).

2. SCHEDULE OF STEERING GROUP'S MEETINGS AND ACTIVITIES

Table 3 below lists the activities of the MINTAG StG (meetings and field work) for the period March 2022-March 2023, and includes an activity plan up to March 2024. The complete list of the StG activities since the project launch in July 2021 can be found in Appendix 1.

Table 3. StG's activities March 2022 - March 2023, and activity plan April 2023 - March 2024. Completed activities are in black, while planned activities are indicated in grey.

Month Year	Activity	Participants	Description
Mar 22	Webinar kick-off (online)	StG (FO, GL, IS, JP, NO), SEC, WC (CEO, scientists, engineers)	WC presented their proposal, also providing an update on upcoming opportunities for satellite communication and discussion of tag design. [24.03.2022]
July 22	Testing of dummy tag housings (IS)	GL (PL), FO, NO, WC (2 engineers)	Testing of tag housing and carrier characteristics at the Icelandic whaling station on fin whale carcasses. [10-16.07.2022]
Summer - Fall 22	Website development	SEC	Development of the project website by the NAMMCO Secretariat.
Sep 22	StG 4 meeting (online)	StG (FO, GL, IS, JP, NO, FAJ, SEC)	Review of summer test shootings, tag design & meeting with WC, project website, plans & schedule for 2023, data depository, budget. [09.09.2022]
Oct 22	Tag Design WS/StG 4 (DK)	StG (FO, GL, IS, JP, NO, SEC), WC (CEO, scientist, engineer)	Refinement of the tag design, including carriers and biopsy samplers. [25-26.10.2022]
Nov 22	Launch of the MINTAG website	SEC	The website mintag-project.com was launched. [1.11.2022]
Jan 23	Testing of retention cones (FO)	FO	The objective of the test was to investigate how well different retention cones contribute to the anchoring of a minke whale tag in the whale body. [13.01.2023]
Jan 23	StG 5 meeting (DK)	StG (FO, GL, IS, JP, NO, SEC)	Refinement of the tag design, development of tagging protocol for the deployment of the MINTAG V0b in spring-summer 2023. [24.01.2023, during SC29 meeting]
Feb 23	Testing of stop-plates and retention cones (JP)	JP	The objective of the test was to investigate how well the stop-plates and retention cones work. [9.02.2023]
Feb 23	Testing of ballistics (DK)	GL	The purpose was to test the ballistics of the two tags. [28.02.2023]
Mar 23	Reporting to NAMMCO and JP	SEC	Reporting to the Fisheries Agency of Japan and to NAMMCO FAC and Council (30 th Annual Meeting).
Apr 23	Testing of dummy minke whale tag housing characteristics (NO)	NO	Testing of prototype tag and carrier characteristics on carcasses of minke whales in connection with Norwegian minke whaling.
Jun 23	Testing of fin whale tag housing (IS)	FO, GL (PL), IS, NO, WC	Testing of prototype tag and carrier characteristics on carcasses of fin whales at the Icelandic whaling station. [26-29.06.23]
June - August 23	Deployment of 25 V0b prototype tags	GL, IS, NO, JP	Deployment of V0b tag on minke and fin whales in NA and NP.
Fall 23	StG 6 meeting (online)	StG (FO, GL, IS, JP, NO, SEC)	Debriefing of V0b tag deployment in summer 2023.

Fall 23	Tag Design WS	StG / SEC / WC	Refining the tag design for preparing the V1a MINTAG to be deployed in 2024. [Online or physical, as needed]
Jan 24	StG 7 meeting (IS)	StG / SEC	Refining tag design, development of tagging protocol for the deployment of the MINTAG V1a tag in spring-summer 2024. (During SC30)
Spring 24	StG 8 meeting (online)	StG / SEC	Refining plans and preparing for the summer deployment of ca 100 V1a tags in the North Atlantic and the Pacific.

3. TAG DESIGN WORKSHOP

A Tag Design Workshop (WS) was held 25-26 October 2022 in Copenhagen, Denmark with the StG and staff from Wildlife Computers (CEO, one scientist and one engineer). The purpose of the meeting was to discuss technical issues around the design and testing of the MINTAG satellite transmitter.

It was a ‘hands-on’ meeting where it was possible to look at different prototype designs of the MINTAG system (see photo to the right). Participants had been encouraged to bring their own devices for ‘show-and-tell’.

The goals of meeting were to decide on the details of the MINTAG V0 prototypes to be deployed on fin whale and minke whale in summer 2023.

The group decided on crucial features for the tags design, deployment plans for the V0b dummy tags and came forward with suggestions for a tagging protocol for the deployment of V0b tags in summer 2023.

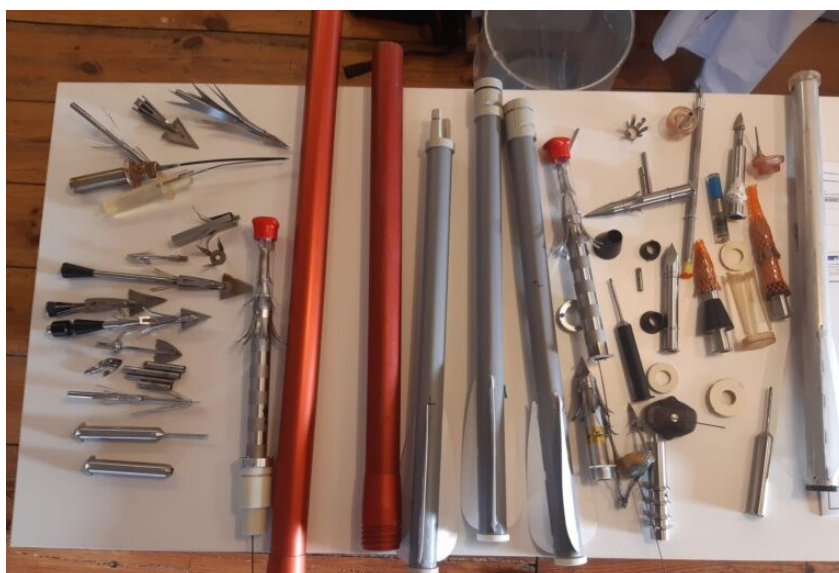


Figure 1. Various design possibilities for tag elements presented to the Tag Design Workshop

4. PROJECT WEBSITE

A website for the MINTAG project was developed by the NAMMCO Secretariat and officially launched the **1 November 2022** under the domain www.mintag-project.com (Figure 4). The MINTAG website can also be reached from the NAMMCO website, where the public is presently incited in following the development of the tag, before being incited in following the whales.



The website (Figure 2) offers information on the project: background and aim, target species, project partners and participating institutes, steering group, and timeline. It provides also updated activities of the StG, both meetings and field tests. The MINTAG website is also used as an archive and data storage for the Project.

The website has attracted 244 users since it was launched on 1 November 2022, with a total of 325 sessions with most users coming from the USA, followed by Norway and Denmark. Audience overview from the 1 November 2022 to 7 March 2023 is presented in Appendix 2.

From summer 2023, the website will follow the deployment of the prototype MINTAG V0b tags on minke and fine whales and the movements of the whales, and visitors will be invited to *Follow the Whales*.

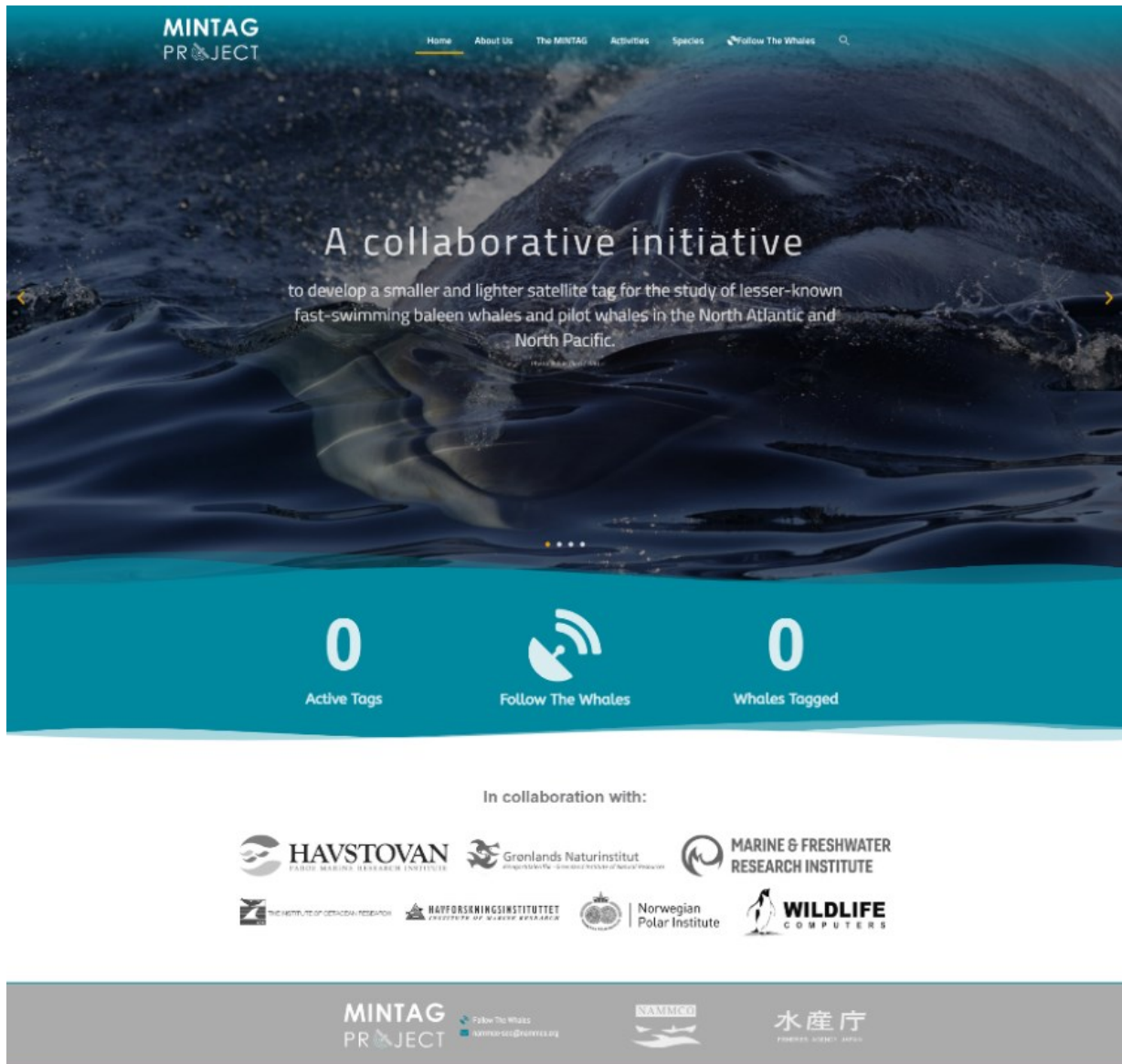


Figure 2. Homepage of the MINTAG website

5. FIELD TESTS OF TAG CHARACTERISTICS ON DEAD WHALES

Several tests were conducted by the StG and partners, in agreement with the StG, to help decide on modification and improvement to the tags' and carriers' design. A list of these trials can be found in Table 4 and further details of each trial can be found in Appendix 4 and on the MINTAG Website [here](#) under *Activities*.

Table 4. List of field trials and tests. Completed activities are in black, while planned activities are indicated in grey.

July 22	Testing of dummy tag housings (IS)	StG: GL/PL, FO, IS, NO, 2 WC engineers	Testing of tag housing and carrier characteristics at the Icelandic whaling station on fin whale carcasses. [10-16.07.2022]
Jan 23	Testing of retention cones (FO)	FO	The objective of the test was to investigate how well different retention cones contribute to the anchoring of a minke whale tag in the whale body. [13.01.2023]
Feb 2023	Testing of stop-plates and retention cones (JP)	JP	The objective of the test was to investigate how well different stop-plates and retention cones work. [9.02.2023]
Feb 2023	Testing of ballistics (DK)	GL	The objective was to test the ballistics of the different housing. [28.02.2023]
April 23	Testing of minke whale tag housing (NO)	NO	Testing of prototype tag and carrier characteristics on carcasses of minke whales in connection with Norwegian minke whaling.
June 23	Testing of fin whale tag housing (IS)	StG: GL/PL, FO, IS, NO, WC engineers	Testing of prototype tag and carrier characteristics on carcasses of fin whales at the Icelandic whaling station. [26-29.06.2023]

6. DEPLOYMENT OF VOB TAGS ON LIVE WHALES

The first VOb tags will be deployed in summer (June to September) 2023, with the deployment of the smaller tag on minke whales and maybe pilot whales and the larger tag on fin whales.

The deployment of 10 minke whale tags will be being equally shared by Norway and Iceland, while the deployment of 15 fin whale tags will be equally shared by Greenland (in East Greenland), Norway (in Svalbard) and Japan (in the Sea of Okhotsk).

The deployment will follow the whale tagging protocol agreed upon by the StG at its last meeting in January 2023.

7. MINTAG FINANCIAL UPDATE

Table 4 provide the overall budget of the project, and the repartition between partners, agreed upon in July 2021, before the launching of the Project.

Table 4. Overall budget of the MINTAG project and repartition between partners.

Overall project	TOTAL COST	NO	FO	GL	IS	Commission	NAMMCO Total	JAPAN
Direct	10,315,000	2,737,500	159,000	484,000	50,000	755,000	4,185,500	6,129,500
%		26.5%	1.5%	4.7%	0.5%	7.3%	41%	59%
In kind	16,116,000	8,024,000	1,080,000	2,774,000	1,790,000	-	13,668,000	2,448,000
%		49.8%	6.7%	17.2%	11.1%	0.0%	85%	15%
Total	26,431,000	10,761,500	1,239,000	3,258,000	1,840,000	755,000	17,853,500	8,577,500
%		40.7%	4.7%	12.3%	7.0%	2.9%	68%	32%

7.1 BUDGET REVISION

Some changes to the original budget were made when the agreement with WC was signed, based on the real cost agreed with the manufacturer (prices given in US dollars). Some expenses that had not been accounted for in the original project description were also added.

A change in cost originates in the change in exchange rate between US dollars and NOK, which is not favourable to the project, and may significantly increase the cost of the US produced development and tags. Table 5 below provides the original itemised project budget and illustrates the increased in costs resulting from the increase in exchange rate.

Table 5 Original project budget, added costs, and changes due to an increasing exchange rate.

ITEMS	Original Project Budget	Anticipated budget w. WC as manufacturer			
		WC / US \$	By 250222	By 240722	By 170323
Revised cost					
Development costs	1,980,000				
Purchase 10 dummy tags	20,000	210,000	1,915,200	2,093,700	2,240,700
Purchase 25 V0b test tags + five carriers	625,000				
Purchase 5 extra carriers	?	2,000	18,240	19,940	21,340
Purchase 225 V1 tags	5,625,000	438,750	4,001,400	4,374,338	4,681,463
Purchase 85 carriers w. biopsy samplers	?	34,000	310,080	338,980	362,780
ARTS guns	?		60,000	60,000	60,000
Argos cost**	705,000		2,794,500	2,794,500	2,794,500
Scientists to test sites/carcasses	150,000		500,000	500,000	500,000
Meeting with WLC	?				
Freight, customs, brokerage	?		50,000	50,000	50,000
Unchanged cost					
Project administration	620,000		620,000	620,000	620,000
Database + website	390,000		390,000	390,000	390,000
Project workshop	200,000		200,000	200,000	200,000
Total	10,315,000		10,859,420	11,441,458	11,920,783

*Exchange rate taken as \$: 9,12, as highest over past year til 250222 - when WC prices we communicated

**New Argos price calculated using a max budget of 63€/month/tag (as given by Argos), but very optimistically assuming all tags deployed the same month, July for V0b tags in 2023, and May for V1 tags in 2024 and 2025, and then working until the end of the following year. It is then assumed a coefficient of 10% failure. Argos informed that the price will likely go down.

7.2 ALLOCATION OF FUNDS BY PARTNERS

The MINTAG project was launch on 4 August 2021, i.e., ca. 9-month later than described in the original project description, in turn this resulting in a year delay in most planned activities, especially field works. As a consequence, the direct project expenses, i.e., cost of the development work by WC and field work by the partners, started in 2022 instead of 2021.

Despite the delay in the project and therefore in incurring expenses, the five partners approved the suggestion of the Secretariat that the transfer of the agreed funding follows the initial schedule. The protracted use of the funds would hopefully cover costs until the end of the project in 2027.

Table 6 provide the detail of the partner funding by 15 March 2023. The Fishery Agency of Japan (FAJ) could not commit to the agreed funding for the financial year 2023-2024, because of financial uncertainties and unfavourable exchange rate. However, FAJ is presently trying to find ways of securing the missing funding (NOK 555,329).

Table 6. Detail of the partners' funding by 15 March 2023.

PARTNERS' FUNDING per 15 MARCH 2023 (NOK)						
Country	Funding 2021		Funding 2022		Funding 2023	
	Agreed	Received	Agreed	Received	Agreed	Committed
Faroe Islands	85,000	85,000	74,000	74,000	-	
Greenland	40,000	137,950	234,000	134,850	70,000	
Iceland (MRI)	-	-	50,000	49,950	-	
Norway	595,000	595,000	910,000	910,000	700,000	
NAMMCO	50,000	<i>(transferred in</i>	150,000	200,000	175,000	175,000
Japan	545,000	<i>2022)</i>	1,813,000	2,358,000	1,963,000	1,407,671
Total	1,315,000	817,950	3,231,000	3,726,800	2,908,000	

7.3 2022 ACCOUNT

The MINTAG project has its own dedicated bank account, administered by the NAMMCO Secretariat, on which funds are deposited or transferred and kept until used.

The account for 2022 and the liability on the MINTAG account are given in Table 7 below (No direct expenses were incurred in 2021).

Table 7. MINTAG Accounts 2022

ITEMS	BUDGET (NOK)		ACCOUNTS 2022 (NOK)
	WC products / US \$	Expected expenses at 240722 /NOK (9.97)	
Development costs, incl. dummy tag for testing in 2022 and 2023, and related carriers, as well 25 V0b prototype tags and 5 V0B carriers	105,000	1,046,850	1,022,258
	105,000	1,046,850	
Purchase of 5 extra carriers	2,000	19,940	
Purchase 225 V1 tags	438,750	4,374,338	
Purchase 85 carriers w. biopsy sampler	34,000	338,980	
ARTS guns (see Figure 3)		60,000	59,174
Argos cost**		2,794,500	
Scientists to test sites/carcasses		500,000	128,696
Meeting with WLC			19,853
Freight, customs, brokerage		50,000	
Project administration		620,000	245,858
Database + website		390,000	2,612
Project workshop		200,000	
Total		11,441,458	1,478,451
INCOME 2021 -2022			3,726,800
RESULT per 15 MARCH 2023 (MINTAG account)			2,248,349

Figure 3 shows the ARTS guns, that is used for tagging whale, being used during the field trial in the the Faroe Islands.



Figure 3. ARTS gun for tagging whales provided by the project and used in the Faroes test.

8. SHORT EVALUATION OF THE PROGRESS OF THE PROJECT

Although the launching of the project was delayed compared with the expectations, the project is now in good track and progressing well. The summer 2022 testing in Iceland on fin whale carcasses, the Tag Design WS, and the multiple field tests of different tag functions significantly helped refining and tuning the design of the VOB prototype.

Three external projects, including members of the StG, have expressed their interest in participating in the testing of the V1a tag version by deploying it in 2024 on other species and areas. One of the proposed projects is particularly interesting, as the whale are moving in a restricted area for a few months and can therefore be resighted which will allow to follow the impact and retention of the tag. FAJ and FAC will decide whether and in which conditions these cooperations should go ahead.

The StG, under the leadership of Heide-Jørgensen (GL), seems to function and discuss well, showing engagement in the project. The cooperation between the StG and WC has been efficient, with a WC team well engaged and interested in the project and prioritising it.

What remains essential for the project is that the funding from the partners originally agreed upon, both in kind and direct, continues to be delivered.

APPENDIX 1. STG'S MEETINGS AND ACTIVITY JULY 21 - MARCH 23 AND PLANS TO MARCH 2024.

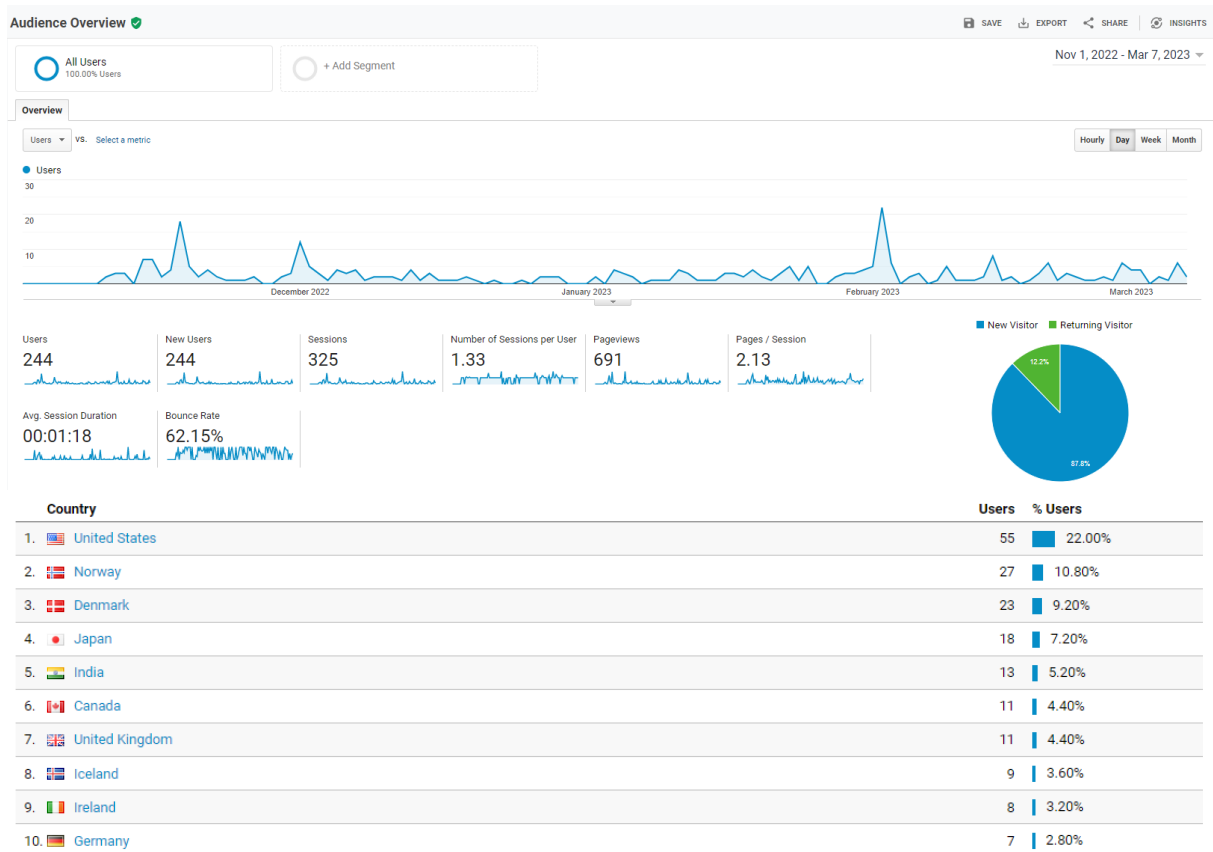
The table below provide an overview of the StG's meeting and other activities since the launching of the project in July 2021. Completed activities are in black, while planned activities are indicated in grey.

Month year	Activity	Participants	Description
Aug 21	StG 1 (online)	FO, GL, IS, JP, NO, SEC	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. [04.08.2021]
Nov 21	StG 2 (online)	FO, GL, IS, JP, NO, SEC	Review of the manufacturers proposals, formulation of concerns and issues to be raised with the manufacturers. [24.11.2021]
Dec 21	PL / WC (physical)	Project Leader (PL) and WC CEO and engineers	Presentation of concerns and questions about the production and deliveries.
Feb 22	StG 3 (online)	FO, GL, IS, JP, NO	Comparison of the two manufacturers proposal and decision on the manufacturer. [22.02.2022]
Mar 22	Webinar kickoff by WC (online)	StG (FO, GL, IS, JP, NO, SEC) + WC CEO, scientists, and engineers	WC presentation of their project, incl. update upcoming opportunities for satellite communication, discussion on tag design. [24.03.2022]
Jun 22	Financial agreement (online)	NAMMCO GS & Deputy Secretary, WC CEO, PL	Discussing the terms of the financial agreement and MoU. [14.06.2022]
Jun 22	Financial agreement (online)	NAMMCO GS, WC CEO & one scientist	Continuing discussing the terms of the financial agreement and MoU. [17.06.2022]
June 22	MoU	NAMMCO GS, WC CEO	The MoU between NAMMCO and Wildlife Computers is signed by both parties. [22.06.2022]
July 22	Testing of dummy tag housing (IS)	PL, FO, NO, WC engineers	Testing of tag housing and carrier characteristics at the Icelandic whaling station on fin whale carcasses. [10-16.07.2022]
Summer - Fall 22	Website development	NAMMCO Sec	Development of the project website by the NAMMCO Secretariat.
Sep 22	StG 4 meeting (online)	StG (FO, GL, IS, JP, NO, FAJ, SEC)	Review of summer test shootings, tag design & meeting with WC, project website, plans & schedule for 2023, data depository, budget. [09.09.2022]
Oct 22	Tag Design WS/StG 4 (DK)	StG / WC / SEC	Refinement of the tag design, including carriers and biopsy samplers. [25-26.10.2022]
Nov 22	Launch of the MINTAG website	SEC	The website mintag-project.com was launched. [1.11.2022]

Jan 23	Testing of retention cones (FO)	FO	The objective of the test was to investigate how well different retention cones contribute to the anchoring of a minke whale tag in the whale body. [13.01.2023]
Jan 23	StG 5 meeting (DK, during SC29)	StG (FO, GL, IS, JP, NO, SEC)	Refinement of the tag design, development of tagging protocol for the deployment of the MINTAG V0b in spring-summer 2023. [24.01.2023, during SC29 meeting]
Feb 2023	Testing of stop-plates and retention cones (JP)	JP	The objective of the test was to investigate how well the stop-plates and retention cones work. [09.02.2023]
Feb 2023	Testing of ballistics (DK)	GL	The purpose was to test the ballistics of different tags. [28.02.2023]
March 23	Reporting to NAMMCO and JP	NAMMCO Sec and StG	Reporting to the Fisheries Agency of Japan and to the FAC and Council of NAMMCO (30 th Annual Meeting)
April 23	Testing of dummy minke whale tag housing characteristics (NO)	NO	Testing of prototype tag and carrier characteristics on carcasses of minke whales in connection with Norwegian minke whaling.
June 23	Testing of fin whale tag housing (IS)	FO, GL (PL), IS, NO, WC	Testing of prototype tag and carrier characteristics on carcasses of fin whales at the Icelandic whaling station. [26-29.06.23]
June-August 23	Deployment of 25 V0b prototype tags	IS, NO, JP	Deployment of V0b tag on minke and fin whales in North Atlantic and North Pacific.
Fall 2023	StG 6 meeting (online)	StG / SEC	Debriefing of V0b tag deployment in summer 2023.
Fall 2023	Tag Design WS	StG / WC / SEC	Refining the tag design for preparing the V1a MINTAG to be deployed in 2024. [Online or physical, as needed]
Jan 2024	StG 7 meeting (IS, during SC30)	StG / SEC	Refining tag design, development of tagging protocol for the deployment of the MINTAG V1a tag in spring-summer 2024. (During SC30)
Spring 2024	StG 8 meeting (online)	StG / SEC	Refining plans and preparing for the summer deployment of ca 100 V1a tags in the North Atlantic and the Pacific.

APPENDIX 2. ACTIVITY ON THE MINTAG WEBSITE

Audience overview from the 1st of November to 7th March 2023



APPENDIX 3. FIELD TESTING OF VARIOUS CHARACTERISTICS OF THE TAGS AND CARRIERS

More information on the various field tests, with videos and photos, can be found on the MINTAG Website [here](#) under *Activities*.

1. SUMMARY OF THE FIRST FIELD TEST BY THE STG IN JULY 2022 IN ICELAND

A first field test was conducted at the whaling station in Iceland in the period 10-16 July 2022. The objective was to test the deployment of dummy tags and specific characteristics of the carrier and tag (biopsy tip system, stop plate, penetration depth, barbs, retention, flight performance) on fin whale carcasses.

This field test was reported in the Document NAMMCO/29/04 to Council in September 2022 and is only resumed here.

Three scientists from the project Steering Group and one from Iceland, as well as two engineers from WC, participated. Tests could be performed on seven whales, three females and four males of different sizes. A total of 28 shots were executed, 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 report “MINTAG REPORT 1 -Test of dummy tags on fin whales in Iceland, 10-16 July 2022” was circulated the Steering Group and the five project partners (FO, GL, IS, JP, NO).



Figure A3.1. July 2022 test team at the Icelandic haling station and test tags after shooting

2. TEST BY THE FAROE ISLANDS IN JANUARY 2023

The objective of the test was to investigate the relative effect of two sizes of retention cones on the MINTAG minke whale tag housing. The retention property was assessed by measuring the pull (kg) needed to extract the tag out of the skin and muscle mass (Figure A3.2).

The test was performed on a 465 cm long Sowerby’s beaked whale (*Mesoplodon bidens*) on 13 January 2023. The animal washed ashore in a fresh condition and was estimated to have been dead for about three days. The animal was considered well suited for testing, without the decomposition state having any, or only very minor, impact upon the comparability of the test with a fresh or live animal.

Four trial shots were performed. The test documented that a force of 100 kg could not pull a MINTAG minke whale tag (Photo 1), fitted with a medium or large size retention cone, anchored on the inside of the fascia, out of the body of a small sized whale. This showed that the MINTAG minke tag fitted with one retention cone and no barbs seemed to be tightly or well anchored in a whale body.



Figure A3.2. Testing the pull (kg) needed to extract the tag from the whale body

3. TEST BY JAPAN IN FEBRUARY 2023

The objective of the test was to investigate the performance of wooden stop-plates and of solid and hollow retention cones in penetration and retention abilities. The shooting test was conducted on 9th February in Yokohama, Japan using the blubber of Bryde’s whale and muscle as targets (Figure A3.3). A total of 13 shots were fired with shooting distances in 7, 10 and 15 m, and air pressure varied from 10 to 18 bar.

A conclusion on wooden stop-plates could not be drawn due to a lack of adequate penetration in many shots. However, retention functions were all good when the cones were inserted into blubber tissue and the flight of both types of retention cones were good, but the tag equipped with the hollow cone seemed to have a better ballistic performance.



Figure A3.3. Shooting scene with the target of blubber and grass mats (7m in distance)

4. TEST BY GREENLAND IN FEBRUARY 2023

A test shooting to test the ballistics of the tags was conducted in the suburb of Copenhagen on the 28th of January 2023. In total, 7 shot were fired on a target of 6 Rockwool batts from 20 m with a pressure between 10-12 bar (Figure A3.4).

The test showed that the aluminium carrier worked fine and the minke tag hit the target precisely from a distance of 20 m. The hollow cone on the fin whale tag performed better on average than the solid cone, as observed during the test in Japan. It is therefore recommended to use hollow cones. Suggestions to improve the resin holder were also made.

It was also noted that more equipment is needed to do more opportunistic tests.



Figure A3.4. Test setup

5. UPCOMING TEST BY NORWAY IN APRIL 2023

Test will be performed on minke whale carcasses taking advantage of the start of the Norwegian minke whaling season in April.

The features to be tested will be agreed upon by the StG, based on the experience of the other tests.