NAMMCO ANNUAL MEETING 32

25-27 March 2025
Fram Centre, Tromsø, Norway

MEETING OF THE COUNCIL

DOCUMENT 15	**UPDATE ON THE MINTAG PROJECT: MARCH 2024-MARCH 2025**
Submitted by	Secretariat / MINTAG Steering Group
Action requested	• Take note • Secure that partners funding is in place to secure appropriate platforms for tagging in summer and autumn 2025 and 2026
Background/content	NAMMCO member countries and Japan agreed in July 2021 to cooperate on a scientific project aiming at developing smaller satellite tags to be used on pilot whales and fast-swimming rorquals, for which long-term satellite tagging had not yet been successful, and for which information on migration, stock structure and mixing were limited or lacking, thus hindering a well-informed management. The project was officially launched on 4 August 2021 by a meeting of the MINTAG Steering Group, composed of scientists from the four NAMMCO member countries and Japan, and representative from the Fisheries Agency of Japan (FAJ) and the NAMMCO Secretariat. The project has developed since, through regular contact of the partners. This document provides the progress report for the period March 2024 to March 2025, as well as an activity plan up to March 2026. In the summer of 2024, the MINTAG project conducted the deployments of the second experimental MINTAG versions on minke and fin whales in Iceland, Japan, and Norway. This document summarises the tests, tagging efforts and challenges encountered. It also presents the plans for the upcoming 2025 tagging season, as well as the developed tag design.

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1. Project background

The primary objective of the project MINTAG is to develop smaller and lighter transdermal satellite transmitter tagging systems than the ones existing on the market today, specifically designed for the study of fast-swimming baleen whales, including blue, fin, minke, sei, Bryde's, and pilot whales. Successful long-lasting tags have not yet been developed for these species, and there is limited knowledge about their wintering movements and migrations, i.e., limited knowledge on stock structure and rate of mixing, thus hindering a well-informed management.

The project focuses on three target species: fin whales, minke whales, and long-finned pilot whales, with the development of a larger tag for fin whale and a smaller tag for minke and pilot whales. Once the MINTAG is successfully developed, it will also be used for species like Bryde's, sei, and blue whales.

The Project Partners involved in this initiative include the Faroe Islands, Greenland, Iceland, Japan, and Norway. The project is overseen by a Steering Group (StG), which reports to the NAMMCO Finance and Administration Committee (FAC) as well as the Fisheries Agency of Japan (FAJ). The project is led by Professor Heide-Jørgensen from Greenland, in cooperation of partner-nominated scientists who have expertise in whale satellite tagging. The FAJ and the NAMMCO Secretariat (Sec) are also members of the Steering Group.

The composition of the StG in terms of members changed somewhat since the project was launched in 2021 (changes in staff) and is now composed of the following persons:

- FO: B. Mikkelsen (FAMRI)
- GL: M. P. Heide Jørgensen (Project Leader, GINR)
- JP: L. Pastene and K. Konishi (ICR)
- IS: S. Granquist and S.D. Halldórsson (MFRI)
- NO: M. Biuw (MRI) and C. Lydersen (NPI)
- FAJ: R. Okazaki
- NAMMCO Sec: G. Desportes, N. El bani Altuna

The tag manufacturer is Wildlife Computers (WC).

2. Project development in the period March 2024 – March 2025

The overall project development, since the cooperation agreement between NAMMCO member countries and Japan was finalised on **1 July 2021,** is presented in Appendix 1.

In **Phase 1** (2023-2023), the tag was developed by the manufacturer following the guideline of the StG.

In **Phase 2** (2023), different tag and launcher features were tested by different partners and the StG tested the MINTAG prototype V0b in the field, which included three variants: Minke, Fin V1, and Fin V2. The first deployment of the first MINTAG prototypes, version V0b, on live fin and minke whales took place in the summer of 2023, from **June to September 2023** in Japan, Greenland and Norway. The remaining tags were deployed in **October 2023** by external collaborators in northern Norway.

As reported in the Progress Report March 2023-March 2024 to Council 31 (Doc. NAMMCO/31/15, 2024), limited results were achieved during the experimental tagging of summer 2023 in terms of tag retention and transmission, combined with partners' restricted field logistics. Therefore, the MINTAG Steering Group decided that the tag housing and electronics needed further modification, and that

further field testing of the tag housing design, Phase 2b, should be conducted in 2024 before a large number of MINTAG tags should be purchased and deployed.

In **Phase 2b** (2024), the focus shifted to testing the MINTAG prototype V0c, which has two variants differentiated by their retention configuration: cone (V0c-C) and petal (V0c-P). The project is finishing Phase 2b, with an evaluation of Phase 2b by the StG in **January 2025**, and the project is entering **Phase 3**, with a larger deployment of tags in the summer of 2025.

2.1. SCHEDULE OF STEERING GROUP'S MEETINGS AND ACTIVITIES

Table 1 below lists the activities of the MINTAG StG (meetings and field work) for the period March 2024-March 2025 and includes an activity plan up to March 2026. The complete list of the StG activities since the project launch in August 2021 can be found in Appendix 1.

Table 1. Summary of MINTAG Activities for the period March 2024-March 2026. Planned activities are marked in grey.

Month Year	Activity	Participants	Description
January 24 – May 24	Tag development	WC	
April 24	StG meeting	StG / Sec	Objective: to discuss the acceptance document and MOU sent by WC, and confirm the tagging plans for the summer/autumn field season [17.04.24, online]
May-July 24	Tag deployment	NO	Deployment of eight V0c tags, on three minke whales, four fin whales, and one was lost, between May and July 2024. The deployments took place during two field campaigns: in the Lofoten Islands [May-June 2024], and in the Barents Sea [July 2024], as part of the Norwegian minke whale survey.
August-September 24	Tag deployment	IS	Deployment of one tag over two periods from mid-August to mid-September, for a total of 10 days. Bad weather significantly hampered the efforts. [15.08-15.09-24, Eyjafjörður, IS]
August-September 24	Tag deployment	JP	Deployments conducted as part of a sighting survey for cetacean abundance estimates in the western North Pacific. Three V0c tags were used: one was successfully deployed on a fin whale, another was lost, and the third was a missed shot but was recovered by the tagging team. [02.08-30.09.24, Northwest Pacific Ocean]
October 24	StG meeting	StG / Sec	Each partner presented the field efforts and the StG discussed potential solutions to the encountered problems. [24.10.24, online]
November 24	Tag deployment	NO	Deployment of two remaining V0c tags on two fin whales [04.11.24, Skjervøy area, NO].
December 24-March 25	Tag deployment	JP	Deployment of eight remaining tags on the journey from Japan to Antarctica and back to Japan. The trial on the outbound journey (December 2024) was unsuccessful due to the impossibility of finding any baleen whales during the time available for tagging. In the inbound journey there will be another chance to deploy the tags (March 2024).
January 25	StG meeting	StG / WC / Sec / A. Zerbini	The StG, WC and external collaborators (A. Zerbini) met to discuss the challenges of the current tag version and

			decide upon the tagging plans for the upcoming tagging season. [19-20.01.25, Tromsø, NO]
January-May 25	Tag development and production	WC	
Summer-Autum 25	Tag deployment	FO, GL, IS, JP, NO	
Autumn 25	StG meeting	StG / Sec	Evaluation of the results of the tagging
January 26	StG meeting	StG / Sec / WC?	Evaluation of the tags
January 26 – April 26			Preparation of the second tagging season

2.2. PROJECT REPORTING SINCE THE PROJECT WAS LAUNCHED

Besides the report of the Steering Group meetings, several reports have been finalised by the Secretariat and the StG. They are listed below:

- Annual MINTAG report to the NAMMCO Scientific Committee 28 (January 2022, Doc SC/28/21)
- Progress Report August 2021-June 2022, including Schedule of activities April 2022 – March 2023 (July 2022) communicated to FAJ
- MINTAG Report 1 – Test of dummy tags on fin whale carcasses in Iceland, 10-16 July 2022 (July 2022).
- Update on the MINTAG Project – Year 1 /August 2021-June 2022, also presented to Council 29 as document NAMMCO/29/14 (September 2022) and circulated to FAJ
- MINTAG Report – Tag design meeting in Copenhagen 25-26 October 2022, also presented to SC 29 (January 2023, Doc SC/29/17) and communicated to FAJ.
- Annual MINTAG report to the NAMMCO Scientific Committee 29 (January 2023, Doc SC/29/16)
- Progress Report March 2022 – March 2023, with activity plan up to March 2024, also presented Council 30 (Doc NAMMCO/30/15, March 2023) and communicated to the FAJ
- MINTAG Report 8 – Test of dummy tags on fin whale carcasses in Iceland, 7-12 September 2023 (September 2023).
- Annual MINTAG report to the NAMMCO Scientific Committee 30 (January 2024, SC730/)
- Progress Report March 2023 – March 2024, with activity plan up to March 2025, both presented to Council 31 as document NAMMCO/31/15 (March 2024) and communicated to the FAJ.
- Annual MINTAG report to the NAMMCO Scientific Committee 31 (January 2025, SC/31)
- **Present Report**: Progress Report March 2024 – March 2025, with activity plan up to March 2025, both presented to Council 32 as document NAMMCO/32/15 (March 2025) and communicated to the FAJ.

3. Deployment of the V0c and V0b tags in 2024

In 2024, Iceland, Japan and Norway received 10 tags each, five with a cone configuration and five with a petal configuration (Figure 1). While not all tags were deployed in 2024, the V0c tags have shown to perform better compared to the V0b tags deployed in 2023. In addition to the V0c tags used through the MINTAG project in 2024, eight V0b tags and nine V0c tags were deployed through collaborative projects during the same tagging season. Collaborative projects using MINTAG tags have an agreement with the FAC-FAJ that all data from the deployments of the tags (timing and deployment procedures) and the quality and length of the transmissions, as well as any other data that can contribute to the

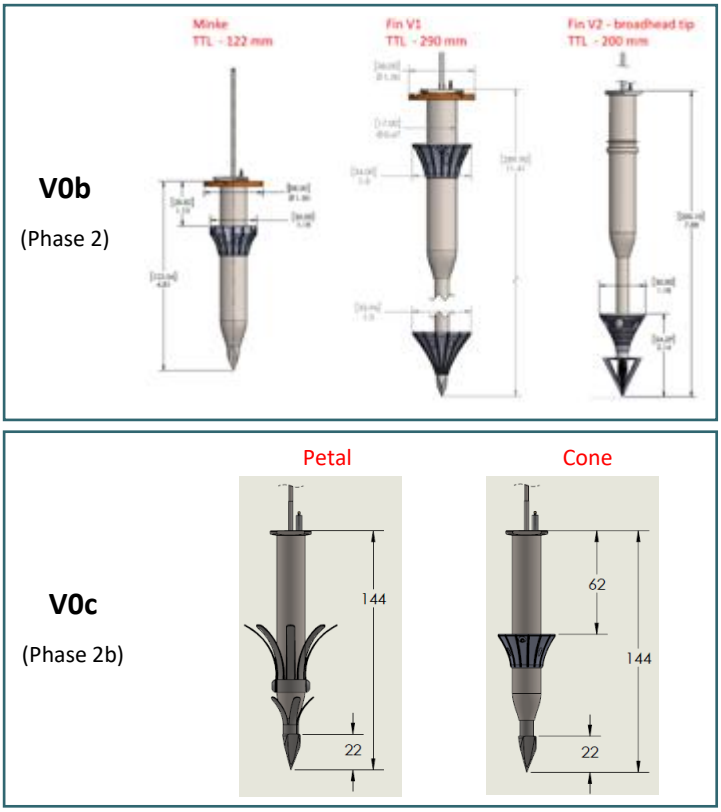

Figure 1. MINTAG prototypes V0b (deployed in 2023 and 2024) and V0c (deployed in 2024 and to be deployed in 2025) (Source: Wildlife Computers).

assessment of the performance of the MINTAG prototypes are made available to the MINTAG Steering Group to help evaluating the performance of the MINTAG and enhance its design and performance.

3.1. SUMMARY OF SUMMER AND AUTUMN 2024 EXPERIMENTAL DEPLOYMENTS

3.1.1. Norway: deployment of V0c on minke and fin whales

The Norwegian MINTAG team, led by Martin Biuw, deployed eight V0c tags between May and July 2024, on three minke whales, four fin whales, and one tag was lost. The deployments took place during two field campaigns: in the Lofoten Islands from May to June, and in the Barents Sea in July as part of the Norwegian minke whale survey. The two remaining tags were deployed in November in Northern Norway on two fin whales.

3.1.2. Japan: deployment of V0c on fin whales

The deployments in Japan were conducted as part of a cetacean sightings survey in the western North Pacific. Three tags were used: one was successfully deployed on a fin whale, another was lost, and the third was a missed shot but was recovered by the tagging team. In December 2024, Japan attempted to use the remaining tags in Antarctica without success due to the impossibility of finding any baleen whales during the time available for tagging.

3.1.3. Iceland: deployment of V0c on fin whales

In Iceland the tagging took place over two periods from mid-August to mid-September, for a total of 10 days. Bad weather significantly hampered the efforts, resulting in only one V0c-P tag being

deployed. However, the tag was successfully attached to a minke whale, and the tagging team managed to follow the whale for one hour following deployment.

3.2. COLLABORATIVE PROJECTS: DEPLOYMENT OF V0B

Heide-Jørgensen and Christian Lydersen deployed five V0b Fin V2 tags in 2024 as part of their collaborative projects. Three of the tags were deployed by Heide-Jørgensen in May on bowhead whales in Disko Bay, West Greenland. The remaining two tags were deployed in August 2024 by Christian Lydersen from a helicopter on blue whales in northwest Svalbard.

Heide-Jørgensen and Alex Zerbini also deployed nine V0c-P tags on southern right whales in Argentina. The team intended to also deploy three V0b Fin V2 tags on the same species, but these were not successfully deployed encountering both attachment and launching issues.

3.3. TAGGING PERFORMANCE AND CHALLENGES

In the summer-autumn of 2024, 13 tags were deployed, out of which nine tags transmitted data successfully (Figure 2). Eighteen tags (17 unused and the one that was recovered) have not yet been deployed (partly) because of the limited field resource as the NASS survey took place in the same summer. However, the StG has plans to deploy them in the near future. This means that 69% of the deployed tags transmitted data successfully, compared to the 48% in 2023 (11 out of 23 deployed). Three out of the four unsuccessful tags were shot but did not hit the whale, of which one was recovered. The fourth unsuccessful tag was deployed but it did not transmit.

The tag with the longest duration lasted 231 days, with intermittent transmissions despite being programmed for daily transmissions (tag 187219 deployed by Norway). This whale, spent a considerable amount of time in the southern Barents Sea and migrated south, crossing the North Atlantic Ocean and heading to the Caribbean (Figure 3). While the MINTAG project is still in a development phase, these results represent a breakthrough in the understanding of minke whale movements in the Atlantic.

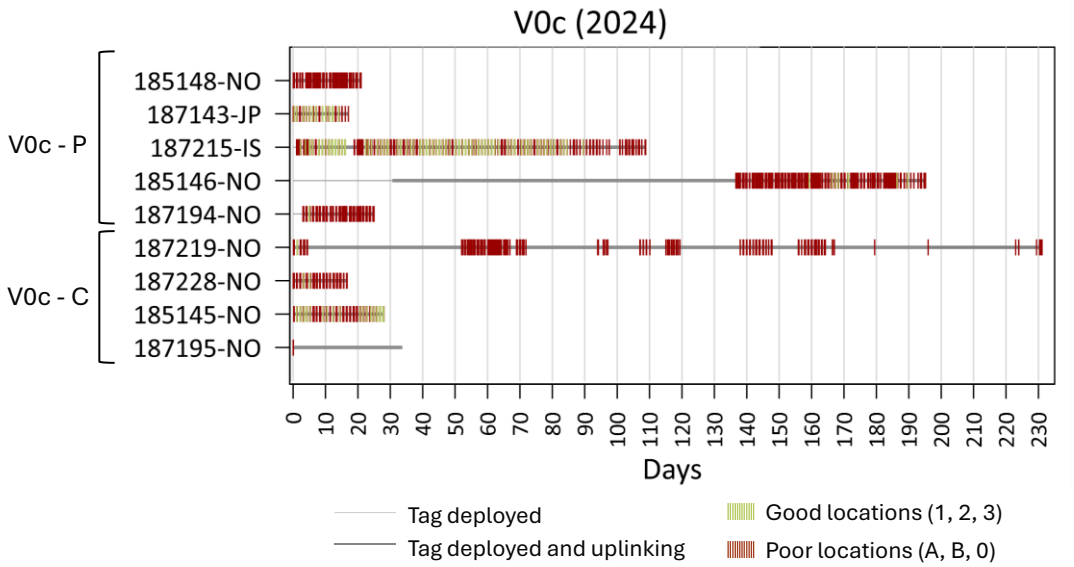

Figure 2. Plot showing the duration of the V0c tags deployed in 2024 as of March 2025. The count starts on the day of deployment (Day 0). The letters after the tag number (PTT ID) indicate the country in which the tags were initially deployed (IS=Iceland; JP=Japan; NO=Norway). Abbreviations: V0c-C=V0c tag with a cone as the retention system; V0c-P=V0c tag with petals as the retention system.

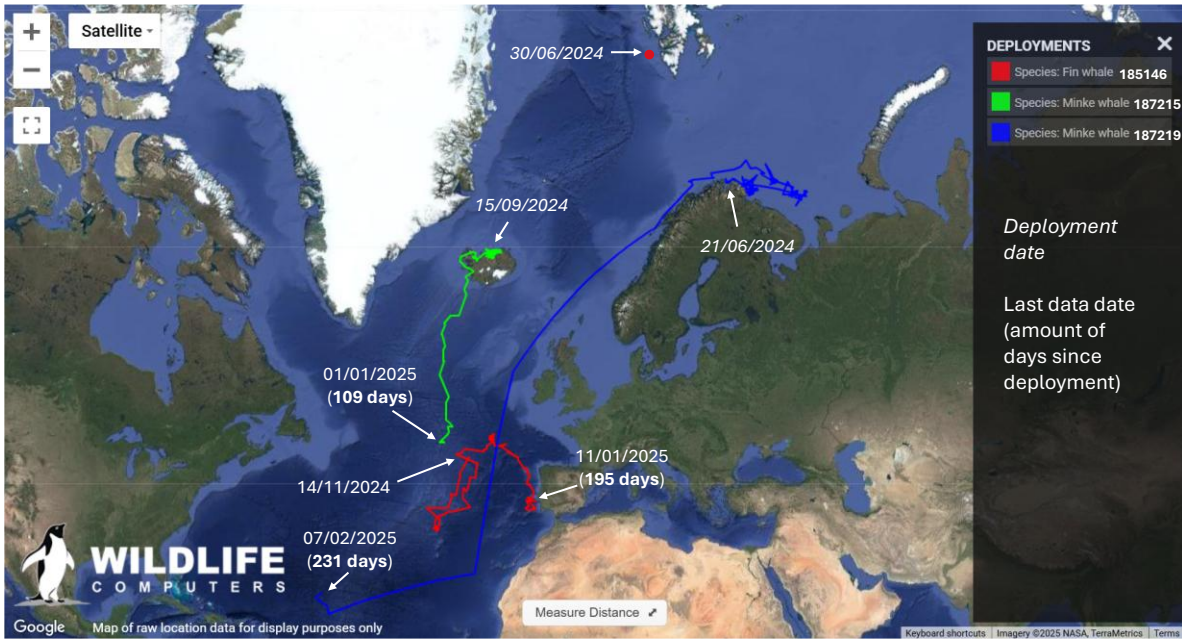

Figure 3. Map showing the three tags with the longest duration of transmissions as of March 2025.

Another tag, which was embedded too deep according to the deployment report, uplinked for the first time 31 days after being deployed and started providing positions 137 days after the deployment (tag 185146 deployed by Norway). This tag, on a fin whale, migrated south of the Azores, before starting a northward movement. The tag transmitted data for 195 days.

The tag with the most continuous transmission transmitted for almost 109 days from the day of deployment (tag 185215 deployed by Iceland) (Figure 3).

The challenges and the tag performance encountered in the 2024 tagging season were addressed in the meeting between the MINTAG StG, WC and external collaborators in January 2025, and measures were discussed to improve the tag performance.

4. Updated plans for deployment of tags during 2025

A key issue in the tagging efforts both in 2023 and 2024 is the urgent need to improve tag placement on whales, which directly affects tag attachment, retention, and the quality of transmissions. If, for example, the tag is placed too low on the whale body, it will not be dry long enough to enable a full transmission when the whale surfaces. Consequently, the primary focus for the 2025 tagging season will be experimenting with and modifying the carrier to improve the ballistics, as the shape and the distribution of the weight of has an influence on the flight of the pair carrier-tag.

All five MINTAG partner countries expressed commitment to conduct tagging in 2025, although logistical details remain to be finalised within individual teams.

Since the 2024 field efforts did not provide sufficient data to determine whether petals or cone retention systems were more effective, testing of both V0c tag designs will continue in 2025. Additionally, new tags AT-SPOT-421A (a smaller version, to be confirmed, of the V0c-P MINTAG) and AT-SPOT-422A (similar to the Fin V2 tag, but featuring double batteries), may also be tested. This is

pending discussion and final approval of the FAC and FAJ. Table 2 includes an overview of tags needed by each team for the 2025 season.

Table 2. Tags needed by each team for the 2025 tagging season, as of 4 February 2025 (as of 3 March 2025, this is yet to be confirmed due to the high price). Teams will also exchange tags if tagging opportunities are missing. *In italics: tags remaining from last tagging season.* Abbreviations: CL=Christian Lydersen, MB=Martin Biuw.

	FO	GL	IS	JP	NO (CL)	NO (MB)
V0c-P	0	0	*4*	*4*	5	10
V0c-C	5	0	*5*	*4*	5	10
AT-SPOT-421A	5	10	0	5	0	5
AT-SPOT-422A	0	0	0	5	0	5

5. Changes in project schedule

The initial timeline of the project proposed in 2021 can be found in Appendix 2.

The MINTAG project was launched on 4 August 2021, i.e., ca. 9 months later than described in the original project description, resulting in a year-long delay in most planned activities, especially tag development and fieldwork, and associated expenses.

Following the low rate of successful deployment of V0 tags in the summer of 2023, the StG agreed that more tag development was required and that the summer of 2024 should be used to further test of prototype tags and tag design, before deciding about a final tag design and moving forward with deploying a larger number of tags. This decision resulted in a further delay of a year of the first large tag deployment, which overall was postponed from 2022 to 2025, with the End Project Symposium postponed from 2026 to 2027.

The revised (by March 2025) and initial and Time Schedule of the project can be found in Table 3 and Appendix 2, respectively.

Table 3. Updated timeline of the MINTAG project per March 2025.

	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 V0c + carrier																											
Shipment 30 V0c housing + carrier												May 24															
Shipment ca.35 V0c housing + carrier																May 25											
Shipment ca. 35 AT-SPOT housing + carrier																	Sept 25										
DVPT V1 + carrier bs																											
Shipment ca. 80 V1 housing + carrier w.bs																			Feb 26								
Testing: Consortium																											
Tests w. 10 dummy V0 tag																											
DVPT instrumentation protocol																											
Deploy 25 V0b								25																			
Deploy 13 V0c												13															
Deployment Tags: Consortium																											
Deploy 52 V0c																52											
Deploy 35 AT-SPOT																	35										
Deploy ca. 80 V1																				ca. 80							
Data collection: Consortium / ARGOS																											
25 V0b - Argos time																											
30 V0c - Argos time																											
35 V0c - Argos time																											
35 AT-SPOT - Argos time																											
ca. 80 V1 - Argos time																											
Analysis: Consortium																											
Database (NAMMCO SEC)																											
Analysis																											
Writing																											
Dissemination: Consortium																											
Website (NAMMCO SEC)																											
Education material (NAMMCO SEC)																											
Workshop at SMM26																											
Publication																											
Project Seminars & Workshop																											
Reporting SC/Council/FAJ																											

6. Project dissemination

The MINTAG website, launched the 1 November 2022, offers information on the project: background and aim, target species, project partners and participating institutes, StG, and timeline. It provides also updated activities of the StG, both meetings and field tests, as well as maps with the tracks of the tagged whales (Figure 3). The MINTAG website is also used as an archive and data storage for the Project.

During the 2024 tagging season, due to the limited number of submissions by tagging teams regarding the field work and tagging efforts, the focus of promoting the project shifted to sharing the whale tracks.

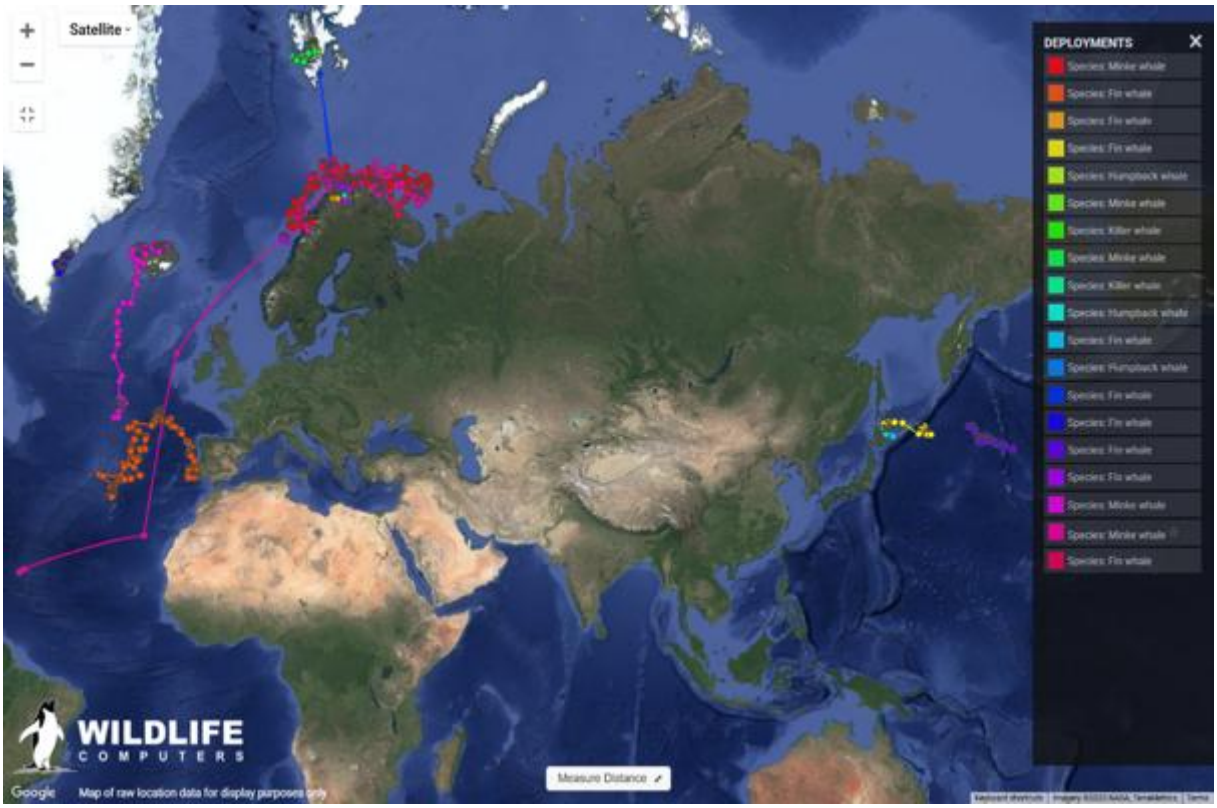

Figure 4. Tracks of tagged whales that successfully transmitted location data during 2023 and 2024.

Since its launch on November 1, 2022, the website has attracted approximately 2,900 users. The number of active users has increased over time, with approximately 1,700 users in the last 12 months (February 2024 to February 2025) compared to around 1,000 for the same period the previous year. Most visitors to the page arrive through referrals (i.e., through links shared on other websites), likely from the NAMMCO website, Instagram, or Facebook, where updates are posted. The users are primarily from the USA, Norway, Iceland, Japan, and the Netherlands (Figure 4). The most popular page on the site is the "Follow the Whales" page, where the tracks of the tagged whales are displayed (Figure 3).

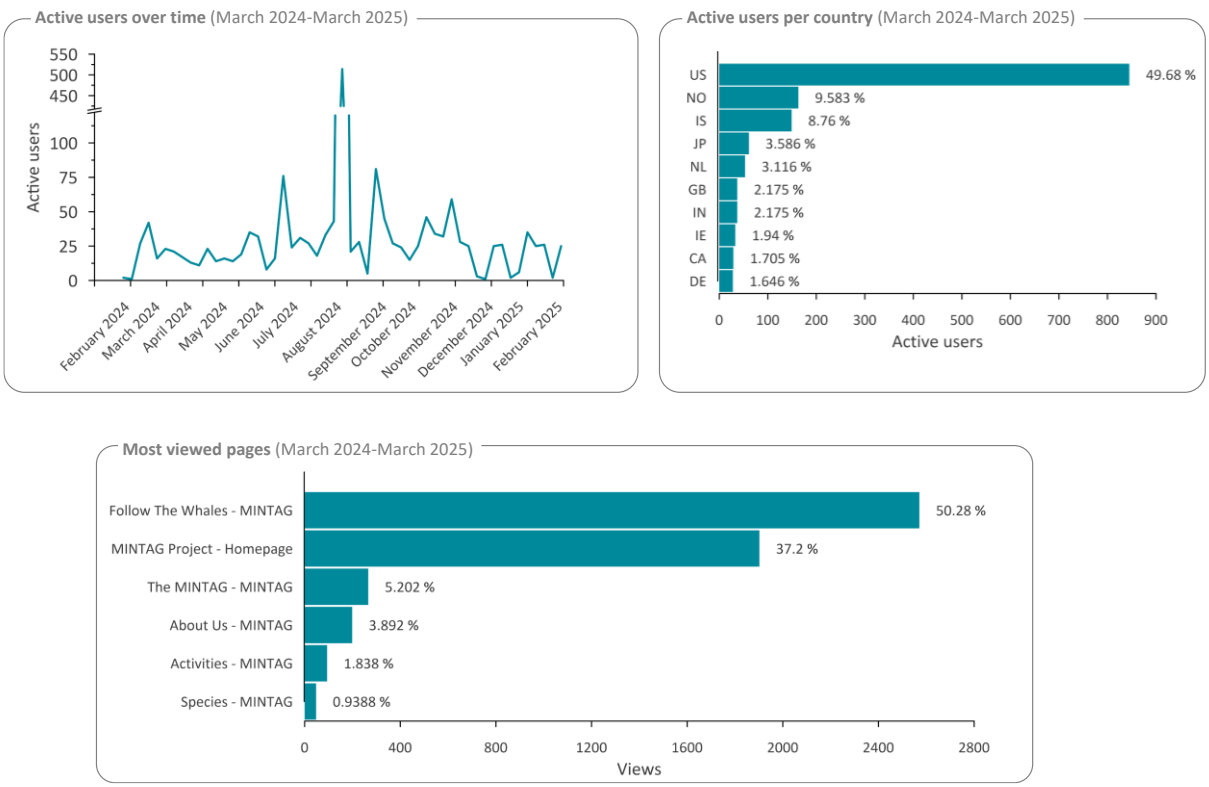

Figure 5. MINTAG Website audience demographics and interests' overview for the period from 3 March 2024 to 3 March 2025 (source: Google Analytics).

The StG plan to disseminate the advances of the project and development of the miniaturised tags to the scientific community during a workshop on remote deployment of transdermal tags at the 26th Biennial Conference on the Biology of Marine Mammals in October 2026. The workshop, that members of the StG will co-organise, aim at discussing the benefits of transdermal tags (such as the MINTAG), the technological progress and view for the future, but also facilitating cooperative work for further development.

7. Financial update

7.1. PARTNER'S FINANCIAL DIRECT CONTRIBUTIONS

The overall initial budget of the MINTAG project and the repartition between partners, agreed upon in July 2021 before the launch of the Project, is provided in Table 4.

Table 4. Overall agreed 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 %

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, tag development as well as field work. Consequently, the direct project expenses, i.e., tag development and field work, started in 2022 instead of 2021.

Despite the delay in the project and therefore in incurring expenses, **the five partners agreed that the transfer of the committed funding would follow the initial schedule.** The protracted use of the funds would hopefully cover costs until the end of the project, now delayed to 2027.

Table 5 provide the detail of the partner funding by 31 March 2025. The Fishery Agency of Japan (FAJ) could not commit to the agreed funding for the financial year 2023-2024 and 2024-2025, because of financial uncertainties and unfavourable exchange rate (Overall under-contribution of -1,254,997 NOK). However, the Institute of Cetacean Research of Japan committed to compensate for the deficit incurred by buying tags.

Fund requisition for the financial year 2025 for NAMMCO partners and the financial year 2025-2026 for Japan will be sent in April.

Table 5. *Funding committed and allocated by the 6 partners to the MINTAG project up to March 2025*

PARTNERS' PLANNED and COMMITTED FUNDING 2021-2026 by 31 Decembre 2024													
Country	Total Funding Agreed	Funding 2021		Funding 2022		Funding 2023		Funding 2024		Funding 2025		Funding 2026	
		Agreed	Received	Agreed	Received	Agreed	Received	Agreed	Received	Agreed	Received	Agreed	Received
Faroe Islands	159,000	85,000	85,000	74,000	74,000	-		-		-		-	
Greenland	484,000	40,000	137,950	234,000	134,850	70,000	69,950	70,000	69,950	70,000		-	
Iceland (MRI)	50,000	-	-	50,000	49,950	-		-		-		-	
Norway	2,737,500	595,000	595,000	910,000	910,000	700,000	700,000	332,500	332,500	150,000		50,000	
Japan	6,129,500	545,000	545,000	1,813,000	1,813,000	1,963,000	1,430,408	1,645,500	923,095	113,000		50,000	
NAMMCO direct	755,000	50,000	50,000	150,000	150,000	175,000	175,000	180,000	180,000	100,000		100,000	
Total Direct	**10,315,000**	**1,315,000**	**1,412,950**	**3,231,000**	**3,131,800**	**2,908,000**	**2,375,358**	**2,228,000**	**1,505,545**	**433,000**		**200,000**	
Secretariat in kind	-	-	54,815	-	115,215	-		-	75,120	-		-	
Total		**1,315,000**	**1,467,765**	**3,231,000**	**3,247,015**	**2,908,000**	**2,462,263**	**2,228,000**	**1,505,595**	**433,000**		**200,000**	

This includes: a) what was left on the Japanese account at the end of 2022 (503,755NOK), b) what was received in 2023 (903,916NOK), c) the interests accrued in 2023 (22,737NOK).

This includes: a) what was received in 2024 (903,923NOK), b) the interests accrued in 2024 per 31.12.24 (19,172NOK).

7.2. CHANGES IN PROJECT BUDGET

Some changes to the itemisation of the original budget were made when the agreement with WC was signed, based on the actual 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.

Since then, a significant increase in cost of the tag development (paid in US$) and of the satellite transmission (paid in Euros) originated from the increase in exchange rate between NOK and US$ and Euro.

Following the unsuccessful deployment of V0 tags in the test summer of 2023, the need for further modifications to the tag housing design resulted in an additional cost of US$ 100,000 USD in project development, i.e., a total development cost of US$ 310,000, instead of the US$ 210,000 originally budgeted for. This decision resulted in delaying the acquisition of tags by an additional year, from 2024 to 2025 (Prototype tags used in test year 2023 and 2024 were included in the tag development costs).

Table 6 shows the initial project cost itemisation, and the revision carried out on 17 April 2024 and 1 February 2025 to compensate for the increase in development cost and exchange rate.

On 17 April 2024, the original planned project budget was maintained, and the initial numbers of tags and carriers to be purchased, 225 and 75 respectively, were decreased to 170 and 55 respectively.

On 1 February 2025, the budget was revised

- considering the fundings actually received and planned from the partners, that generate to date a total funding contribution of NOK 9,058,203 instead of NOK 10,315,000 (NOK - 1,256,797).
- assuming that the maximum price of MINTAGs and carriers will be 2000$ and 400$ unit respectively
- considering the expenses actually incurred to 1 February 2025

The number of tags that the project could purchase was decreased to 130 tags and 45 carriers plus miscellaneous tools (dummy tags for shooting tests, replacement deployment cups, etc.). This number, however, does not include the tags that may be bought by Japan to compensate for its under-contribution.

Table 6: Initial and Revised expenses budget per 17 April 2024 and 1 February 2025

Initial Budget		**Revised Budget as of 17 April 2024**		**Revised Budget as of 1 February 2025**	
Initial Bubget (06.07.21)		**Revised Bubget (17.04.24)**		**Revised Bubget (01.02.25)**	
Contributions		**Contributions**		**Contributions**	
Norway	2,737,500	Norway	2,737,500	Norway	2,737,500
Greenland	484,000	Greenland	484,000	Greenland	482,700
Iceland	50,000	Iceland	50,000	Iceland	49,500
Faroes	159,000	Faroes	159,000	Faroes	159,000
Japan	6,129,500	Japan	6,129,500	Japan	4,874,503
NAMMCO	755,000	NAMMCO	755,000	NAMMCO	755,000
Total Contributions	**10,315,000**	**Total Contributions**	**10,315,000**	**Total Contributions**	**9,058,203**
Expenses		**Expenses**		**Expenses**	
Development costs	2,625,000	Development costs	3,149,742	Development costs	3,156,342
Scientists to test sites and meetings with Wildlife Computers	150,000	Scientists to test sites and meetings with Wildlife Computers	200,000	Scientists to test sites and meetings with Wildlife Computers	200,000
Purchase of tags, carriers, and other accessories	5,625,000	Purchase of tags, carriers, and other accessories	4,058,972	Purchase of tags, carriers, and other accessories	3,239,600
Freight, customs, brokerage	0.00	Freight, customs, brokerage	52,000	Freight, customs, brokerage	52,000
ARTS guns	0.00	ARTS guns	64,000	ARTS guns	64,000
Argos costs/CLS	705,000	Argos costs/CLS	1,578,924	Argos costs/CLS	1,138,850
Project administration	620,000	Project administration	620,000	Project administration	620,000
Database and website	390,000	Database and website	390,000	Database and website	390,000
End of project workshop	200,000	End of project workshop	200,000	End of project workshop	200,000
Total Expenses	**10,315,000**	**Total Expenses**	**10,313,638**	**Total Expenses**	**9,060,792**

7.3. COST AND EXPENSES FROM 2021 TO 2024

Table 7 presents the expenses incurred from 2022 to 2024 (no expenses were incurred in 2021), and gives the status of the funding and the expenses by 31 December 2024.

Table 7: MINTAG yearly expenses and overall financial status by 31 December 2024

Expenses 2024		Expenses 2023		Expenses 2022	
Development costs 2024	-1,080,561.80	Development costs 2023	-1,034,824.60	Development costs 2022	-814,556.00
Scientists to test sites and meetings with Wildlife Computers 2024	-705.60	Scientists to test sites and meetings with Wildlife Computers 2023	-30,290.00	Scientists to test sites and meetings with Wildlife Computers 2022	-136,370.90
ARTS guns 2024	0.00	ARTS guns 2023	0.00	ARTS guns 2022	-63,146.00
Argos costs/CLS 2024	-23,191.97	Argos costs/CLS 2023	-13,458.68	Argos costs/CLS 2022	0.00
Project administration 2024	-105,712.05	Project administration 2023	-179,772.00	Project administration 2022	-3,095.06
Database and website 2024	-72,012.09	Database and website 2023	-4,051.97	Database and website 2022	0.00
Total Expenses 2024	**-1,282,183.51**	**Total Expenses 2023**	**-1,262,397.25**	**Total Expenses 2022**	**-1,017,167.96**
In-kind contribution from NAMMCO 202	75,120.00	**In-kind contribution from NAMMCO 202**	0.00	**In-kind contribution from NAMMCO 202**	115,215.00

Status as of 31 December 2024

Status of the Project (31.12.2024)	
Contributions	
Norway	2,537,500.00
Greenland	412,700.00
Iceland	49,950.00
Faroes	159,000.00
Japan	4,711,503.00
NAMMCO	555,000.00
Total Contributions	**8,425,653**
Expenses	
Development costs	-2,929,942.40
Scientists to test sites and meetings with Wildlife Computers	-167,366.50
Purchase of tags, carriers, and other accessories	0.00
Freight, customs, brokerage	0.00
ARTS guns	-63,146.00
Argos costs/CLS	-36,650.65
Project administration	-288,579.11
Database and website	-76,064.06
End of project workshop	0.00
Total Expenses	**-3,561,748.72**

8. Short evaluation of the progress of the project

Despite challenges in 2023 and the limited number of tags deployed in 2024, the MINTAG project is beginning to show promising results, both in the development of smaller transdermal tags and in advancing scientific understanding of fast-swimming rorqual movements. The tag manufacturer, WC, acknowledged that the project has significantly accelerated progress in creating smaller and more efficient tags by its large funding, although it has not yet achieved the goal of a year-long tag duration.

Although still in its "testing phase", the project has already benefitted the broader scientific community, and the StG remains optimistic about the project's outcomes. However, **continued success depends on the sustained delivery of both direct and in-kind funding** (i.e., funding of the fieldwork for the deployment of the tags) **as originally agreed upon by the project partners, as well as WC, the tag manufacturer, keeping to this engagement.**

APPENDIX 1: Overview of project activities since July 2021

The table below provide an overview of the StG's meeting and other activities since the launching of the project in August 2021.

Month Year	Activity	Participants	Description
August 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 1st project blog, agreement on autumn 2021 and winter 2022 project schedule. [04.08.2021]
November 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]
December 21	PL / WC (physical)	Project Leader (PL) and WC CEO and engineers	Presentation of concerns and questions about the production and deliveries.
February 22	StG 3 (online)	FO, GL, IS, JP, NO	Comparison of the two manufacturers proposal and decision on the manufacturer. [22.02.2022]
March 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]
June 22	Financial agreement (online)	NAMMCO GS & Deputy Secretary, WC CEO, PL	Discussing the terms of the financial agreement and MoU. [14.06.2022]
June 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 launcher 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.
September 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]
October 22	Tag Design WS/StG 4 (DK)	StG / WC / SEC	Refinement of the tag design, including carriers and biopsy samplers. [25-26.10.2022]
November 22	Launch of the MINTAG website	SEC	The website mintag-project.com was launched. [1.11.2022]

January 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]
January 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]
February 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. [09.02.2023]
February 23	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 (30th Annual Meeting)
March 23	Ballistics tests	StG (GL)	Objective: to test the ballistics of the fin whale tag [28.03.23, DK]
June 23	Ballistics tests	StG (GL) / WC	Objective: to test to precision of the minke and fin whale tags during target shooting and to test the ballistics of a fin whale tag with only a 10 cm shaft. [28-29.06.23, DK]
June 23	Tag deployment	JP	Deployment of five fin whale tags on fin whales [05-15.06.23, southern Okhotsk Sea, JP] ▪ Lost after deployment: 0/5 ▪ Transmitted location: 2/5
August 23	Tag deployment	GL	Deployment of five fin whale tags on fin whales [08-17.08.23, East Greenland, GL] ▪ Lost after deployment: 1/5 ▪ Transmitted location: 1/5
August-September 23	Tag deployment	NO	Deployment of three minke whale tags (MWT) on minke whales and one fin whale tag (FWT)on a fin whale. [15.08-15.09.23, Svalbard, NO] ▪ Lost after deployment: 0/3 (MWT), 1/1 (FWT) ▪ Transmitted location: 2/3 (MWT), 0/1 (FWT)
August-September 23	Tag deployment	NO	Deployment of one minke tag on a fin whales [31.08-20.09.23, Barents Sea, NO] ▪ Lost after deployment: 0/1 ▪ Transmitted location: 1/1
September 23	Deployment tests	StG / WC	Objective: to test the deployment of dummy tags on fin whales at the whaling station in Iceland. [7-12.09.23, Hvalfjörður, IS]
October 23	StG 7 meeting to discuss the deployments during the summer of 2023	StG / Sec	Each partner presented the field efforts and the StG discussed potential solutions to the encountered problems. [10.10.23, online]
October 23	Tag deployment	NO (External Group)	Deployment of eight tags (unused tags) on killer and humpback whales [16-21.10.23, Skjervøy, NO] ▪ Lost after deployment: 2/6 (MWT), 0/2 (FWT) ▪ Transmitted location: 4/6 (MWT), 1/2 (FWT)

			▪ Remaining tags after field season: two broken FWT
November 23	Summary of deployment in Skjervøy	StG / Sec / External Group	Audun Rikardsen (external group), who deployed the remaining tags in Skjervøy, presented the performance of the field efforts. [28.11.23, online]
November 23	Performance of the electronics of the tags	StG / WC / Sec	WC presented their experiments and results to test the tag performance. [28.11.23, online]
January 24	StG 8 meeting to decide on the new design and upcoming plans	StG / WC / Sec	The StG and WC met to decide upon the new tag design for the upcoming tagging season. [21-22.01.24, Hafnarfjörður, IS]
March 24	Reporting to NAMMCO and JP	NAMMCO Sec and StG	Reporting to the Fisheries Agency of Japan and to the FAC and Council of NAMMCO (31st Annual Meeting)
January 24 – May 24	Tag development	WC	
April 24	StG meeting	StG / Sec	Objective: to discuss the acceptance document and MOU sent by WC, and confirm the tagging plans for the summer/autumn field season [17.04.24, online]
May-July 24	Tag deployment	NO	Deployment of eight V0c tags, on three minke whales, four fin whales, and one was lost, between May and July 2024. The deployments took place during two field campaigns: in the Lofoten Islands [May-June 2024], and in the Barents Sea [July 2024], as part of the Norwegian minke whale survey.
August-September 24	Tag deployment	IS	Deployment of one tag over two periods from mid-August to mid-September, for a total of 10 days. Bad weather significantly hampered the efforts. [15.08-15.09-24, Eyjafjörður, IS]
August-September 24	Tag deployment	JP	Deployments conducted as part of a sighting survey for cetacean abundance estimates in the western North Pacific. Three V0c tags were used: one was successfully deployed on a fin whale, another was lost, and the third was a missed shot but was recovered by the tagging team. [02.08-30.09.24, Northwest Pacific Ocean]
October 24	StG meeting	StG / Sec	Each partner presented the field efforts and the StG discussed potential solutions to the encountered problems. [24.10.24, online]
November 24	Tag deployment	NO	Deployment of two remaining V0c tags on two fin whales [04.11.24, Skjervøy area, NO].
December 24-March 25	Tag deployment	JP	Deployment of eight remaining tags on the journey from Japan to Antarctica and back to Japan. The trial on the outbound journey (December 2024) was unsuccessful due to the impossibility of finding any baleen whales during the time available for tagging. In the inbound journey there will be another chance to deploy the tags (March 2024).
January 25	StG meeting	StG / WC / Sec / A. Zerbini	The StG, WC and external collaborators (A. Zerbini) met to discuss the challenges of the current tag version and decide upon the tagging plans for the upcoming tagging season. [19-20.01.25, Tromsø, NO]
January-May 25	Tag development	WC	
February 25	Reporting to FAC and FAJ	NAMMCO Sec / StG	

APPENDIX 2: Original (2021) MINTAG plan

Note that this table is now outdated and that an updated version is presented under item 5 of this report.

	2021		2022				2023				2024				2025				2026		2026++
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	
Steering Group																					
STG meeting	Jul	Dec																			
Launch, Tender																					
Choice Manufacturer																					
Contract signed		**Dec 22**																			
Tag development WLC																					
DVPT V0 + carrier																					
Shipment 10 V0 housing + carrier w.bs					?																
DVPT V0b + carrier bs																					
Shipment 25 V0b housing + carrier w.bs					**Jul 22**																
DVPT V1 + carrier bs																					
Shipment 225 V1 housing + carrier w.bs					**Aug 22**			**Apr 23**				**Apr 24**									
Testing: Parties																					
Deploy 10 dommy V0 tag																					
DVPT instrumentation protocol																					
Deploy 25 V0b					25																
Deployment Tags: Parties																					
Deploy 225 V1 - (1)(2)(3)						50		100				75									
Data collection: Consortium / ARGOS																					
25 V0b - Argos time																					
75 V1(1) - Argos time																					
100 V1(2) - Argos time																					
75 V1(3) - Argos time																					
Analysis: Consortium																					
Database (NAMMCO SEC)																					
Analysis																					
Writing																					
Dissemination: Consortium																					
Website (NAMMCO SEC)																					
Education material																					
Publication																					
Project Workshop																					
Reporting SC/Council/FAJ																					