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MRV *Alba na Mara*

Survey 1117A

## **PROGRAMME**

7-17 July 2017

**Loading:** Fraserburgh, 5 July, 2017

**Boarding:** Fraserburgh, 7 July, 2017

**Unloading:** Fraserburgh, 17 July, 2017

In setting the survey programme and specific objectives, etc the Scientist-in-Charge needs to be aware of the restrictions on working hours and the need to build in adequate rest days and rest breaks as set out in Marine Scotland's Working Time Policy (Lab Notice 34/03). In addition, the Scientist-in-Charge must formally review the risk assessments for the survey with staff on-board before work is commenced.

In the interest of efficient data management it is now mandatory to return the survey report, to I Gibb and the Survey Summary Report (old ROSCOP form) to M Geldart, within four weeks of a survey ending. In the case of the Survey Summary Report a nil return is required, if appropriate.

### **Personnel**

P Boulcott	MSS (SIC)
M Watson	MSS
F Kent	SNH
F Manson	SNH

**Project:** 11 days, SP020Q

### **Sampling Gear & Equipment**

- 1 x Seacam HD video camera (MSS to supply)
- 1 x Digital Stills camera - Kongsberg OE14-408 (Seatronics hire by SNH)
- 1 x Table drop frame (Seatronics hire by SNH)
- 4 x LED lights and cables (MSS to supply)
- 2 x Line lasers + cables (MSS to supply)
- 1 x Armoured TV umbilical cable (MSS to supply) + spare
- 2 X Day Grab and grab table, 1mm sieves
- 2 empty cages for the storage of formalin samples

### **Overview**

Survey 1117A serves work carried out by Scottish Natural Heritage investigating the distribution and quality of benthic biotopes around Scotland. Data are required to underpin the management of the new suite of marine protected areas and to meet commitments prescribed by the Scottish MPA Monitoring Strategy. The 1117A survey aims in particular to establish the extent of benthic habitats on the north east coast of Scotland.

## Objectives

1. To establish quantitative baseline monitoring data on the Noss Head horse mussel bed (previous DDV tows were completed in strong current speeds with no camera 'set-down' and are not considered to represent a suitably robust baseline).
2. To develop our understanding of the extent of the horse mussel beds outside the Noss Head NC MPA using quantitative drop-camera sampling.
3. To refine our understanding of the extent of the burrowed mud habitat in the Southern Trench NC MPA proposal using quantitative drop-camera sampling and some limited grab sampling.
4. To trial the EMFF drop video camera system if available.

If survey work in the Southern Trench and off Noss Head is made impossible by poor weather, contingency sites have been planned in the Moray Firth SAC to identify the habitat type around ship mooring areas. Additional areas where 'gap filling' work could usefully improve the existing knowledge-base have also been identified off Peterhead where recent surveys have identified *Sabellaria* (Ross worm) reefs. Seabed samples collected using a day grab will be subject to PSA and infaunal analysis. The infaunal samples will be stored in 4% formalin.

## Embarkation

Scientists will join the vessel on 7 July. Weather permitting, *Alba na Mara* will survey areas within the Southern Trench MPA proposal, Noss Head NC MPA and surrounding areas and sites off Peterhead.

## Benthic survey

A benthic survey of the seabed at various sites to the north, east and south of the Noss Head NC MPA will be the main objective for survey 1117A.

The benthic survey off Noss Head will target the areas highlighted in Figures 1-3 using the drop video system. Stations targeting horse mussel beds will be 30-60m BCD. Stations in survey box NH\_02 will validate an area of predicted horse mussel bed which has been mapped by SHE Transmission using multi-beam but not ground-truthed. The HD drop camera system will be deployed from the aft of the vessel taking video tows across each box. Planned stations are either short drops to validate the presence of a feature or longer 'monitoring' tows providing greater coverage of the survey areas. The camera frame will be landed at regular intervals to allow still photographs to be taken along each video transect. Longer DDV 'tows' (up to 1hr duration) undertaken in these survey boxes should be restricted to current speeds <1 knot. At greater speeds the footage becomes unsuitable for monitoring purposes. It may be possible to undertake brief 'drops' (shorter 5-10 minute runs with the camera - still with multiple 'set-downs') in current speeds up to ~1.5 knots to provide an indication of the seabed habitats present, but more detailed, quantitative sampling must target lower current speeds.

Stations in survey boxes NH\_01, NH\_05 and NH\_06 will target potential horse mussel beds that are known by local creel fishermen. Video stations have not been specified here but will run across the boxes with the tide. NH\_03 and NH\_04 are within the NC MPA. Work in the latter area will confirm the southern extent of the bed via shorter, 5-10 minute tows (see Figure 3). The HD camera system will be fitted with two line lasers to allow species densities to be estimated for future monitoring in both areas. Species type, density and substrate type (assessed visually) will be classified for each video transect post-survey.

HD video will be collected from the Southern Trench and surrounding area (Figure 4) to improve confidence in habitat mapping here. Grab samples may be collected to confirm the presence of a feature from the video footage.

Sampling areas MF\_01 and MF\_02 provide contingency for bad weather (Figure 5). HD video and grab sampling will be used in MF\_01 to determine the habitat here as this is an area in the Moray Firth SAC used for anchoring by ships.

Survey box Sab\_01 (Figure 6) may be surveyed by *Oceana* (survey dates: 20 June - 5 July), however, depending on the outcome of the survey, further sampling in this area by the *Alba na Mara* may be useful.

### **Operations**

Daily scientific sampling will occur between 06:00 and 18:00 hours (all times UTC). Opportunities for the vessel to top up on freshwater will be taken opportunistically. However, *Alba na Mara* may be required to dock overnight at a suitable locality for this purpose.. Unloading will occur in Fraserburgh harbour on the morning of the 17 July.

Normal contact will be maintained with the Laboratory.

Submitted:  
P Boulcott  
27 June 2017

Approved:  
I Gibb  
3 July 2017

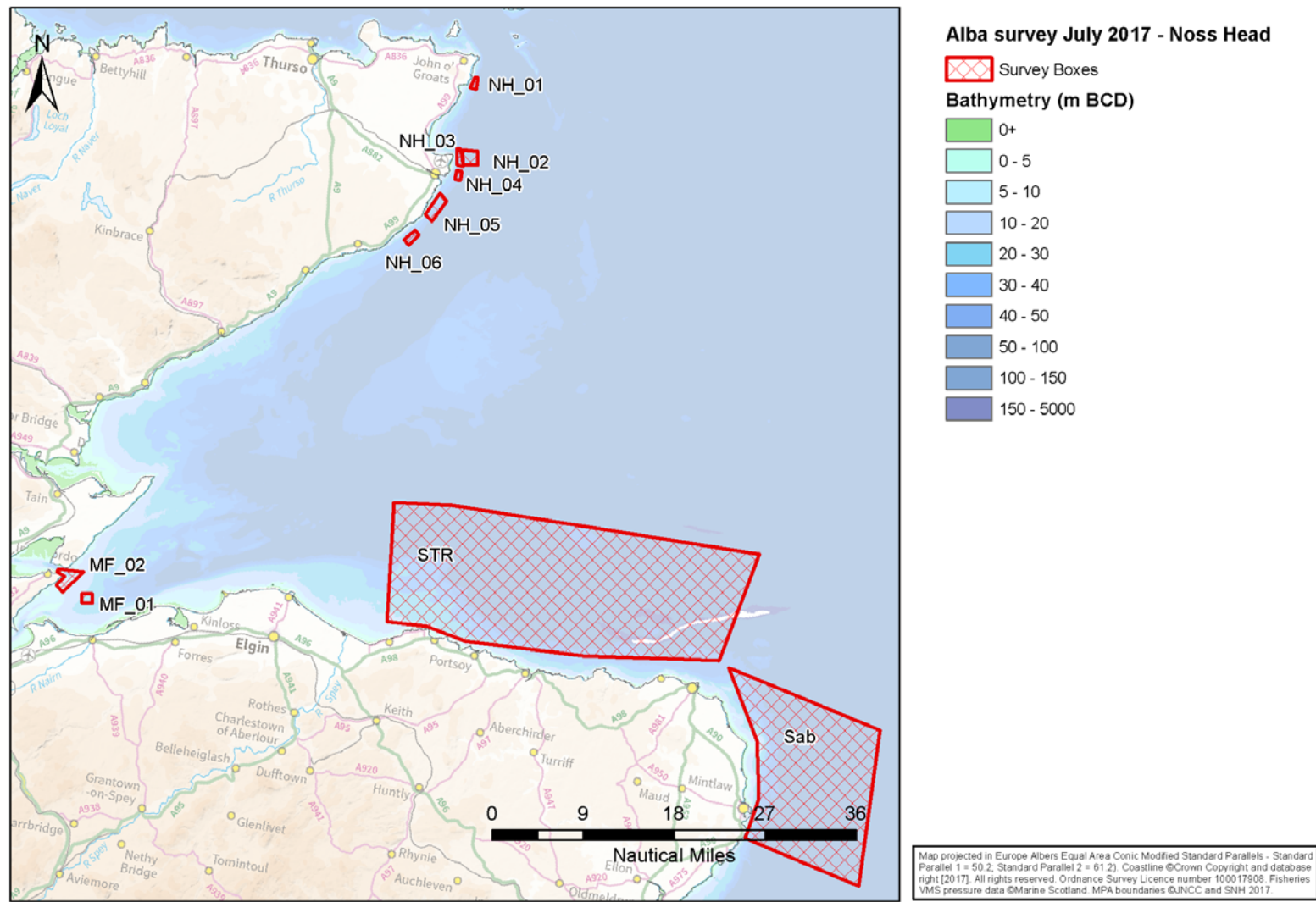


Figure 1: Overview of the 1117A sampling area on the north east coast of Scotland.

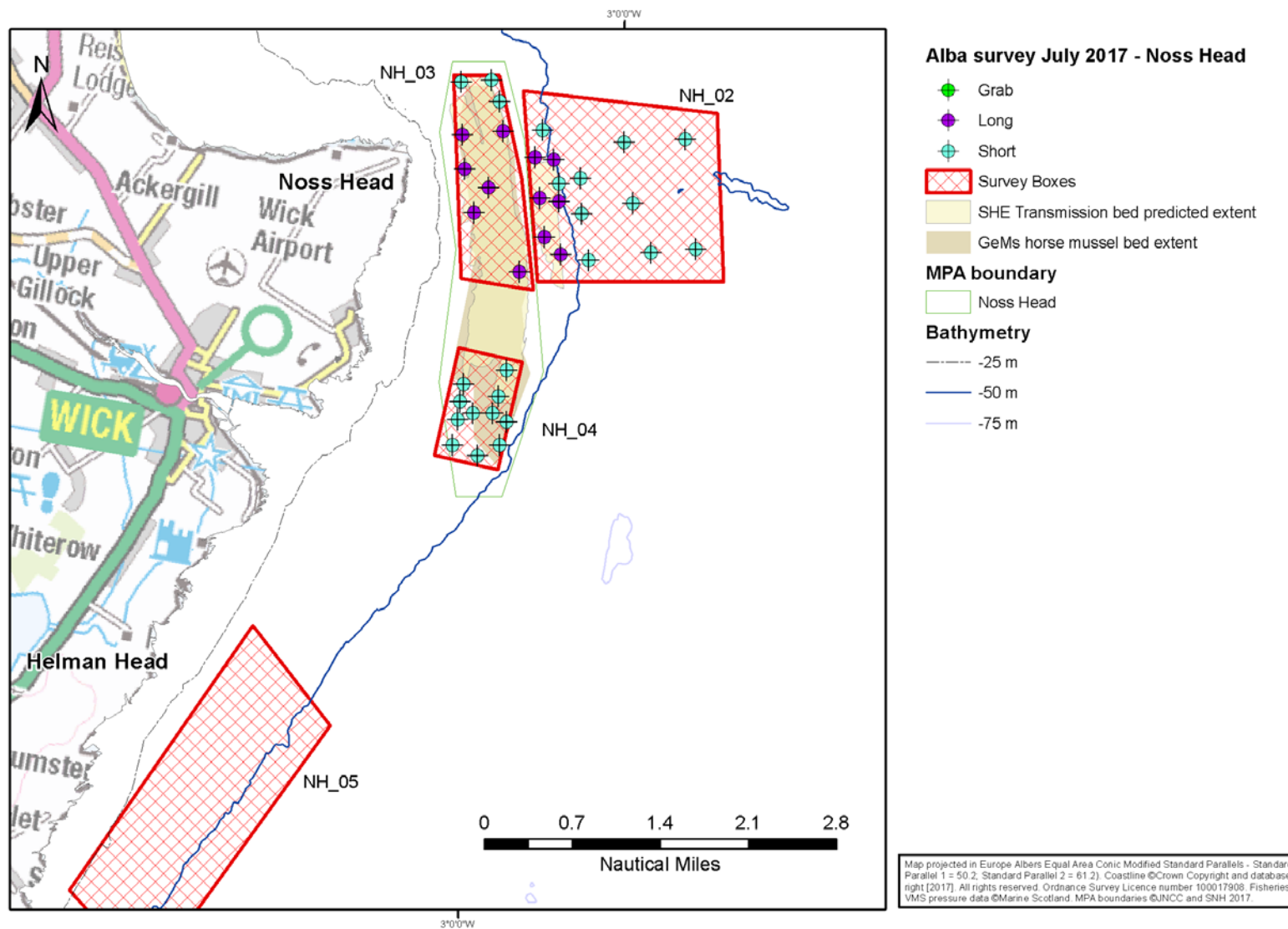
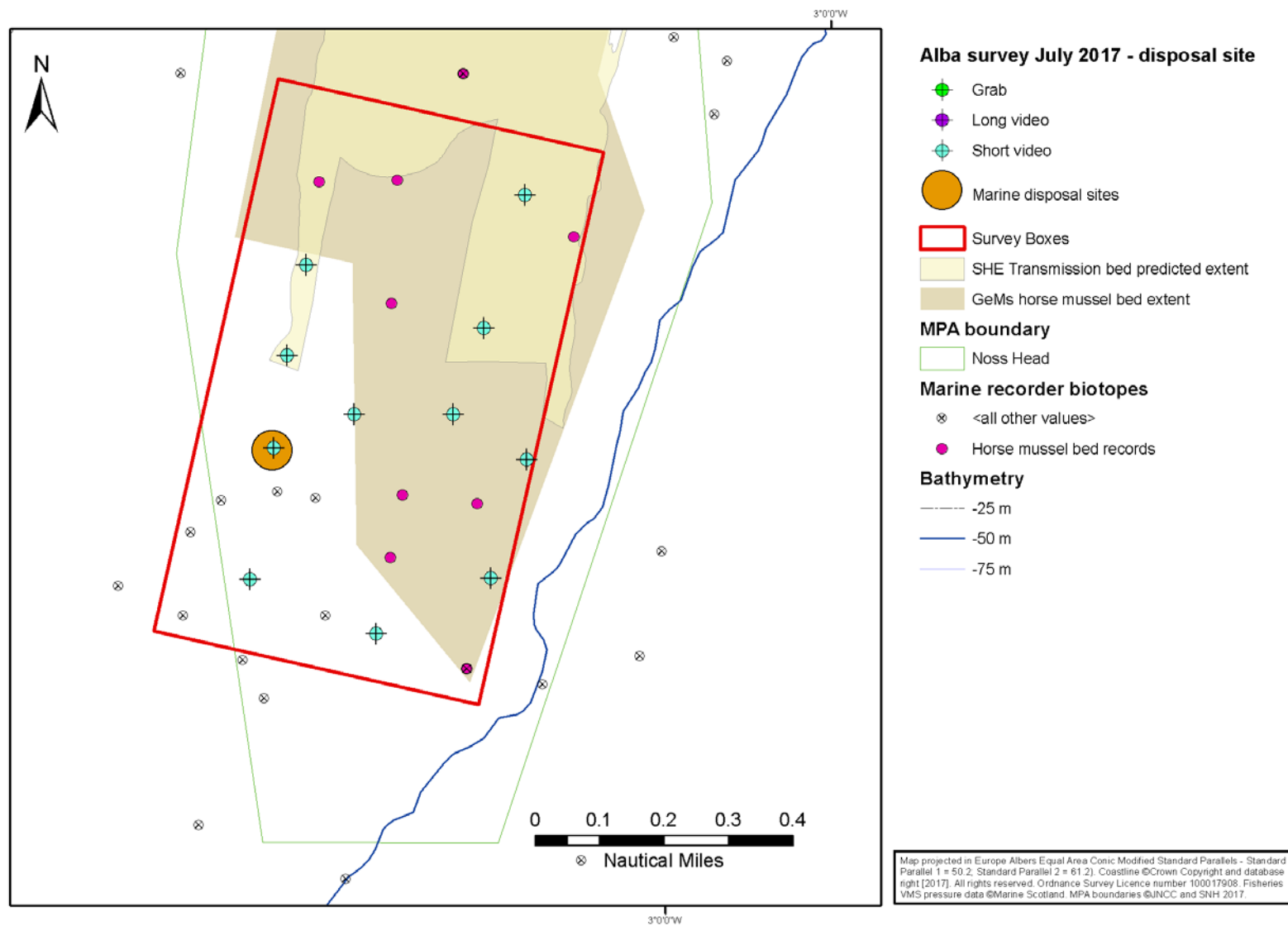
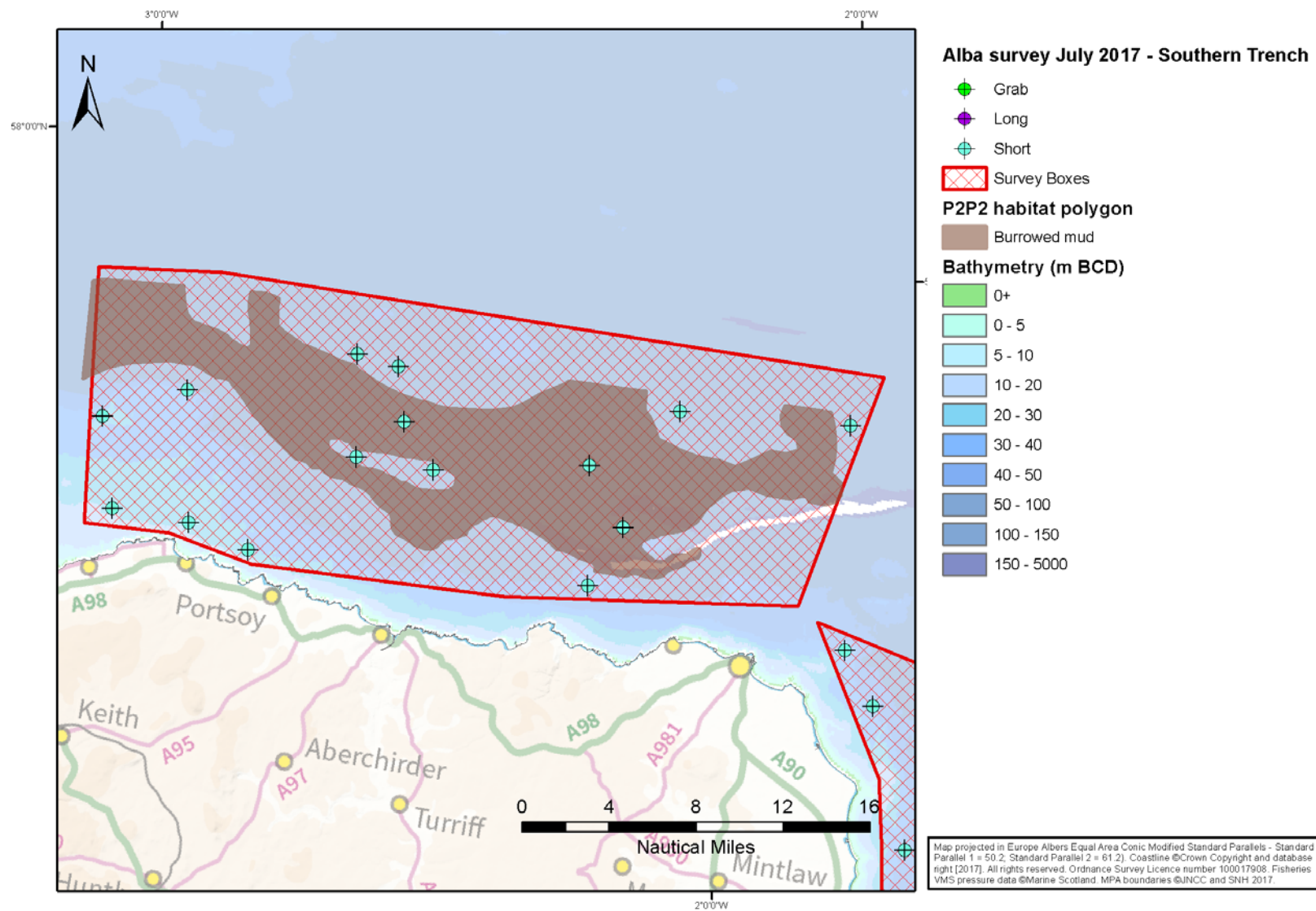


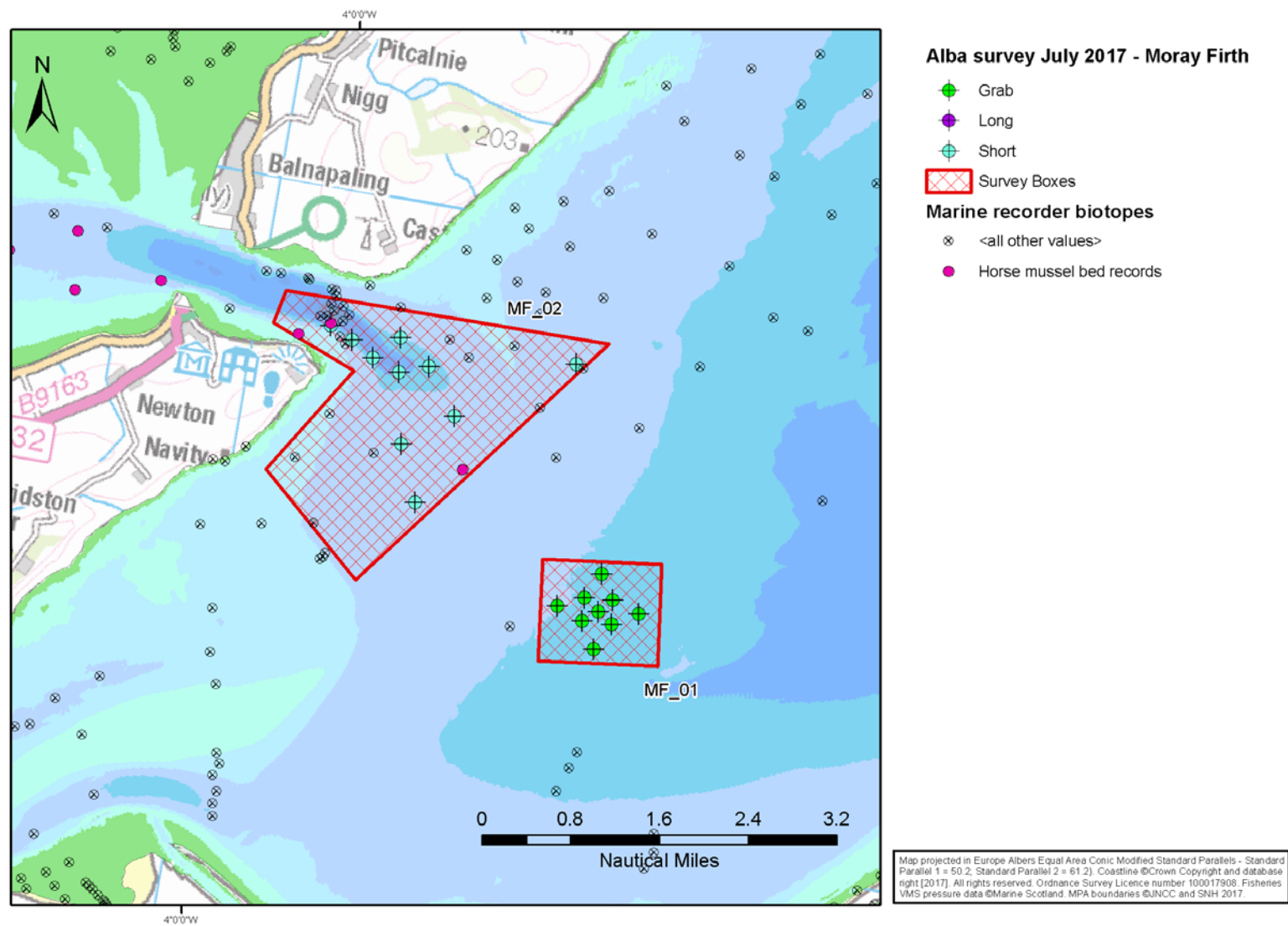
Figure 2: Key sampling areas off Noss Head, investigating horse mussel beds.



**Figure 3:** Sampling area to at the southern end of the Noss Head NC MPA. Proposed sites mark locations for short video tows.



**Figure 4:** Southern Trench burrowed mud predicted polygon and proposed video sampling stations for 2017.



**Figure 5:** Moray Firth contingency sampling areas (MF\_01; ship anchorage grab stations, MF\_02; horse mussel bed records - short video tows).



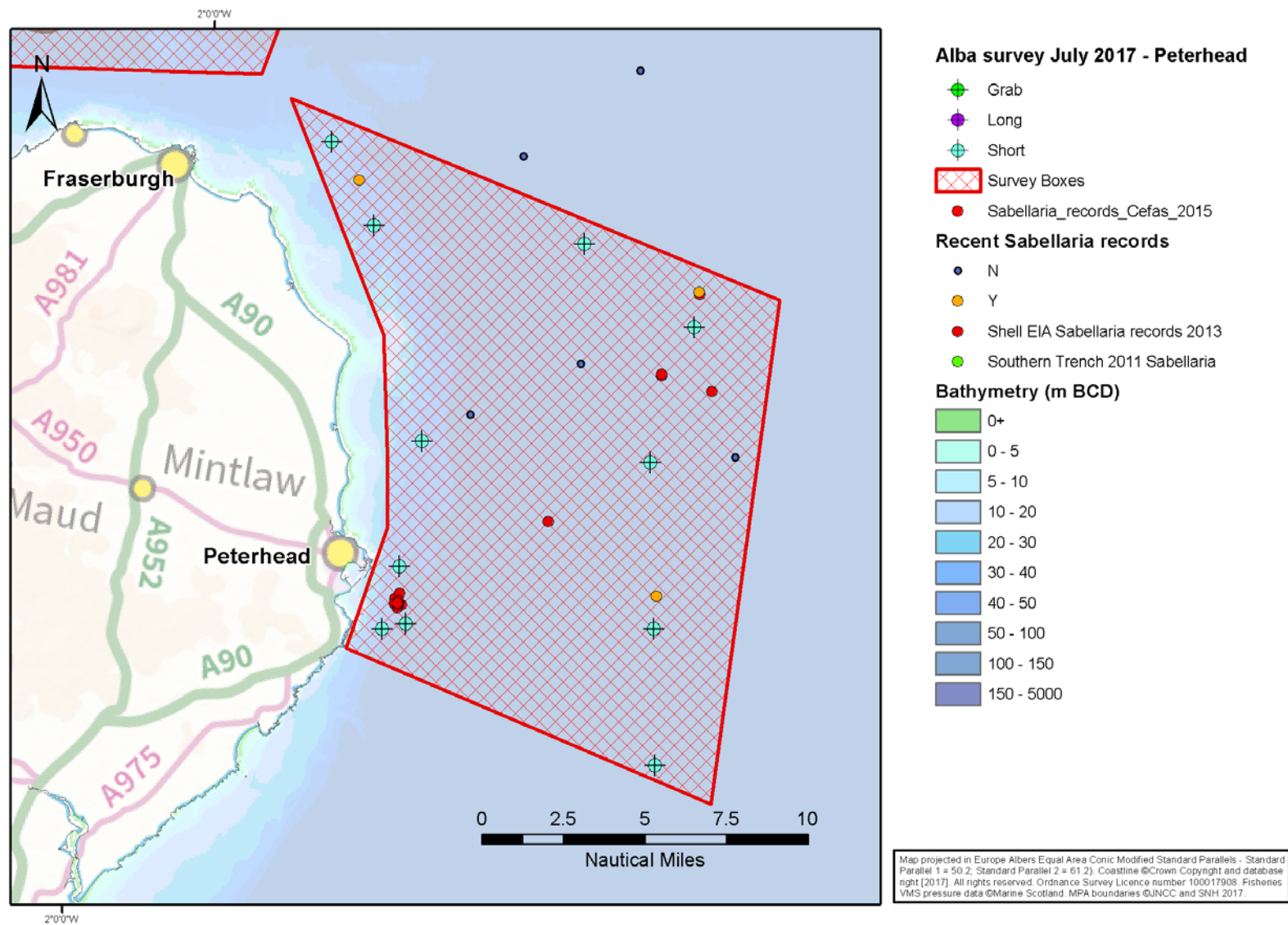


Figure 6: Contingency sampling areas off Peterhead (short video and grab sample stations).

Station	Lat	Lon	Area	Description	Length
STR_V15	57.826526620	-2.553507441	STR	Check burrowed mud extent	Short
STR_V14	57.871086650	-2.165189776	STR	Gap filling	Short
STR_V13	57.882555890	-1.919307646	STR	Check burrowed mud extent	Short
STR_V12	57.776170171	-2.216405763	STR	Check burrowed mud extent	Short
STR_V11	57.818387067	-2.279908671	STR	Check burrowed mud extent	Short
STR_V10	57.727889040	-2.251819915	STR	Gap filling - high VMS dredge pressure	Short
STR_V09	57.870811824	-2.637516942	STR	Check burrowed mud extent	Short
STR_V08	57.867201494	-2.575933456	STR	Check burrowed mud extent	Short
STR_V07	57.793280557	-2.612747091	STR	Check burrowed mud extent	Short
STR_V06	57.794103131	-2.500052330	STR	Check burrowed mud extent	Short
STR_V05	57.720711167	-2.944013525	STR	Gap filling - high VMS pressure	Short
STR_V04	57.708746806	-2.741558327	STR	Gap filling - high VMS pressure	Short
STR_V03	57.720993622	-2.832107428	STR	Gap filling - high VMS pressure	Short
STR_V02	57.788747353	-2.982409870	STR	Gap filling	Short
STR_V01	57.820199284	-2.868567468	STR	Check burrowed mud extent	Short
Sab_V11	57.427614044	-1.469753735	Sab	Check for Sabellaria	Short
Sab_V10	57.682970462	-1.617629506	Sab	Check for Sabellaria	Short
Sab_V09	57.650320082	-1.501193319	Sab	Check for Sabellaria	Short
Sab_V08	57.579008768	-1.521206726	Sab	Check for Sabellaria	Short
Sab_V07	57.495953733	-1.492157004	Sab	Check for Sabellaria	Short
Sab_V06	57.477744567	-1.725682467	Sab	Check for Sabellaria	Short
Sab_V05	57.473099351	-1.747003171	Sab	Check for Sabellaria	Short
Sab_V04	57.505826814	-1.740482418	Sab	Check for Sabellaria	Short
Sab_V03	57.570389015	-1.739513678	Sab	Check for Sabellaria	Short
Sab_V02	57.712819909	-1.872369526	Sab	Check for Sabellaria	Short
Sab_V01	57.674434455	-1.818948352	Sab	Check for Sabellaria	Short
NH_V36	58.465725867	-3.016397469	NH_02	Old horse mussel bed gap	Long
NH_V35	58.472324379	-3.030487280	NH_02	Old horse mussel bed gap	Long
NH_V34	58.483570952	-3.027112881	NH_02	Old horse mussel bed gap	Long

Station	Lat	Lon	Area	Description	Length
NH_V33	58.482072115	-3.037135063	NH_03	Old horse mussel bed gap	Long
NH_V32	58.485123105	-2.996396765	NH_02	East of predicted new bed	Short
NH_V31	58.478145349	-3.010769062	NH_02	Just off predicted new bed	Short
NH_V30	58.474745815	-3.003617649	NH_02	East of predicted new bed	Short
NH_V29	58.486957500	-2.981422426	NH_02	East of predicted new bed	Short
NH_V28	58.472936458	-2.973523246	NH_02	East of predicted new bed	Short
NH_V27	58.471420356	-2.984508790	NH_02	East of predicted new bed	Short
NH_V26	58.477416462	-2.991331662	NH_02	East of predicted new bed	Short
NH_V25	58.484676651	-3.017355830	NH_02	North of predicted new bed	Short
NH_V24	58.479388316	-3.005571385	NH_02	Just off predicted bed	Short
NH_V23	58.468909049	-2.999653493	NH_02	Just off predicted bed	Short
NH_V22	58.468992589	-3.007007455	NH_02	Predicted horse mussel bed - validate	Long
NH_V21	58.470868301	-3.011773319	NH_02	Predicted horse mussel bed - validate	Long
NH_V20	58.475812783	-3.009907444	NH_02	Predicted horse mussel bed - validate	Long
NH_V19	58.475769393	-3.014822094	NH_02	Predicted horse mussel bed - validate	Long
NH_V18	58.481124916	-3.013246637	NH_02	Northern extent of new bed	Long
NH_V17	58.480953322	-3.017974554	NH_02	Northern extent of new bed	Long
NH_V16	58.475856052	-3.028095624	NH_03	Centre of old bed predicted extent	Long
NH_V15	58.477742395	-3.034980897	NH_03	Edge of old bed predicted extent	Long
NH_V14	58.487297573	-3.029441469	NH_03	Edge of old bed predicted extent	Short
NH_V13	58.489939051	-3.032376063	NH_03	Edge of old bed predicted extent	Short
NH_V12	58.488906445	-3.039892115	NH_03	Edge of old bed predicted extent	Short
NH_V11	58.449837585	-3.025024811	NH_04	Edge of Gems bed	Short
NH_V10	58.441631833	-3.024861188	NH_04	Southern edge of disposal site	Short
NH_V09	58.440861536	-3.018228108	NH_04	Southern edge of Gems predicted old bed	Short
NH_V08	58.446290911	-3.021326498	NH_04	Southern edge of Gems predicted old bed	Short
NH_V07	58.445060157	-3.024900780	NH_04	Centre of disposal site	Short
NH_V06	58.447465128	-3.025131446	NH_04	SSE predicted bed but outside Gems	Short
NH_V05	58.445977051	-3.012535362	NH_04	Eastern edge of Gems old bed	Short

Station	Lat	Lon	Area	Description	Length
NH_V04	58.442813697	-3.013188599	NH_04	Eastern edge of Gems old bed	Short
NH_V03	58.446764590	-3.016511823	NH_04	Edge of SSE predicted bed but inside Gems	Short
NH_V02	58.449091955	-3.015828942	NH_04	Inside Gems old bed but on edge of SSE bed	Short
NH_V01	58.452644731	-3.015027990	NH_04	Inside Gems and SSE predicted polygons	Short
MF_V10	57.685180250	-3.923075845	MF_02	MF/Sutors horse mussel hunt	Short
MF_V09	57.668377269	-3.966907266	MF_02	MF/Sutors horse mussel hunt	Short
MF_V08	57.660225898	-3.959881263	MF_02	MF/Sutors horse mussel hunt nr wrk	Short
MF_V07	57.673969569	-3.953782822	MF_02	MF/Sutors horse mussel hunt	Short
MF_V06	57.683591257	-3.992978452	MF_02	Sutors horse mussel hunt - old record near disp	Short
MF_V05	57.682114463	-3.986358754	MF_02	Sutors horse mussel hunt	Short
MF_V04	57.683850893	-3.972990076	MF_02	Sutors horse mussel hunt	Short
MF_V03	57.680467352	-3.963716226	MF_02	Sutors horse mussel hunt	Short
MF_V02	57.678741114	-3.971585034	MF_02	Sutors horse mussel hunt	Short
MF_V01	57.680075941	-3.979524632	MF_02	Sutors horse mussel hunt	Short
MF_G09	57.655256328	-3.904392894	MF_01	MF Anchor marks	Grab
MF_G08	57.649266674	-3.914920137	MF_01	MF Anchor marks	Grab
MF_G07	57.644024730	-3.902494412	MF_01	MF Anchor marks	Grab
MF_G06	57.648189872	-3.898970991	MF_01	MF Anchor marks	Grab
MF_G05	57.647790715	-3.907308038	MF_01	MF Anchor marks	Grab
MF_G04	57.651289602	-3.907848078	MF_01	MF Anchor marks	Grab
MF_G03	57.650542648	-3.892023955	MF_01	MF Anchor marks	Grab
MF_G02	57.651783763	-3.900050006	MF_01	MF Anchor marks	Grab
MF_G01	57.649670035	-3.903346847	MF_01	MF Anchor marks	Grab