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Appendix 1

Suggested instructions for tests of count variability

Try to make sure each person is familiar with the main count types to be tested before running the tests. Probably at least one full day, preferably two is required to get each person up to speed.

1. NEST VISIT COUNTS *Priority 1 test.*

Choose three areas (e.g. areas d, 9, 11 of Bull Rock South), each with one count per person on three consecutive days, each observer using a different colour. The areas can be done on different days if necessary. This will test observer variability when using the method without undue disturbance occurring on the same day.

SUGGESTED AREA VISITS FOR COMPARISON OF OBSERVERS

	DAY 1	DAY 2	DAY 3
Area d	obs. 1—green	obs. 2—red	obs. 3—blue
Area 9	obs. 2—red	obs. 3—blue	obs. 1—green
Area 11	obs. 3—blue	obs. 1—green	obs. 2—red

2. LEDGE COUNTS *Priority 1 test.*

Choose four areas of different size (50, 100, 250, 600 birds) at Bull Rock South (e.g. d, 9, 11, 21b) and three counts per three people, preferably all on the same day. This will test variation caused by observer, size of the sector and time of the day (which may affect the number of non-breeders). Alternate people in the four areas, so that you do not do consecutive counts in the same block. Also, when each person returns to the same block for their next count, try to empty your mind of how you counted previously, approach from the other end of the ledge, do not communicate results from each other or compare notes from your earlier counts (use a separate page on the notebook for each count). At the end of each sequence, do a nest visit count. Although this will mean each zone will get 10 visits in the same day, the ledge count method is less intrusive and less time is required per visit. We did one area 15 times during a day in 1996 by this method, and some others 10 times without too obvious an effect. Take care to limit disturbance in the colony (see below section for a few hints). It may not be feasible to do all four areas in one day, so you may have to do the larger area(s) on a separate day. Make sure that each individual area is completed in one day. If the big area (21b) takes longer than one hour per person, the second person should start at the allotted time while the first person is finishing at the other end.

SUGGESTED TIMETABLE OF COUNTS FOR COMPARISON OF OBSERVERS, TIME OF DAY AND DIFFERENT SIZED AREAS

	AREA D 50 NESTS	AREA 9 100 NESTS	AREA 11 250 NESTS	AREA 21b 600 NESTS
TIME	DAY 3	DAY 3	DAY 3	DAY 4
0800	obs. 1	obs. 3	obs. 2	obs. 1
0900	obs. 2	obs. 1	obs. 3	obs. 2
1000	obs. 3	obs. 2	obs. 1	obs. 3
1100	obs. 1	obs. 3	obs. 2	obs. 1
1200	obs. 2	obs. 1	obs. 3	obs. 2
1300	obs. 3	obs. 2	obs. 1	obs. 3
1400	obs. 1	obs. 3	obs. 2	obs. 1
1500	obs. 2	obs. 1	obs. 3	obs. 2
1600	obs. 3	obs. 2	obs. 1	obs. 3
1700	nest visit	nest visit	nest visit	nest visit

Select at least two of these areas (100 and 250 nests) and do one count by one person over a three (minimum) to five (preferable) day period, at the same time period each day, to test for daily variation. It would be easiest to start two days before main test and finish two days after main test (see Bull Rock South notes). Perhaps an early time period could be selected which would mean you could be doing work at a neighbouring colony (e.g. Bull Rock North) for the remainder of the day.

Other areas which could be compared for ledge counts followed by nest visit counts are Bull Rock South (areas a, c, 5a), Bull Rock North (areas 6, 10, 11, 13), Hookers Finger (5a, 5b).

3. BINOCULAR VIEW ACROSS *Priority 2 test.*

At Bull Rock North, select zones that will be visited for nest visit counts (e.g. 5, 6, 7, 10a, 10b, 13, 13a). This will be a comparison of a coarse and accurate counting method. Take care to determine boundaries are the same for each person. Do three counts per person per area simultaneously. Use the first count as a familiarisation of the zone to get a feel for how best to count it without getting confused.

4. BINOCULAR VIEW DOWN *Priority 2 test.*

Select views down on accessible ledges which might be similar to views of inaccessible ledges, usually these are steep views to semi-obscured areas at the bottom level. It is not always apparent from the top that you are missing birds, so this comparison may indicate the proportion of birds that are not counted on inaccessible ledges. For example, Hookers Peninsula (areas 1a, 1b, 1c, 2a, 3a), or Bull Rock North (areas 6, 13a, 14, 7, 8 , 9) are areas which can be viewed from above, then visited for a nest visit or ledge count.

5. VIEW DOWN *Priority 2 test.*

Do appropriate comparisons of views down from the ledge above with visiting the ledge for nest visit counts (several parts of colonies were counted by this

technique only in 1995). Only one paired comparison is required per area but if you have time and enthusiasm do at least three areas three times per person to test the variability of this technique. Suggested areas for comparison are Bull Rock South (areas 11, 13, 14, 17, 18), Bull Rock North (12).

6. Other paired comparisons *Priority 3.*

Do comparisons in colonies other than Bull Rock South and Bull Rock North (i.e. grey-headed mollymawk colonies) of nest visit and ledge counts.

7. TELESCOPE *Priority 3 tests.*

Choose two people that are the most proficient or experienced with counts through telescopes to do the telescope views of Courrejolles Peninsula. It may take two days to count all the grey-headed sectors because of weather and light conditions. If it is at all possible do some overlap between observers, plus replicate (×3) per person per sector. Also, in smaller sectors, count the Campbell mollymawks as well so that comparisons can be made with counts of photos.

Appendix 2

Photographs, maps and diagrams of Campbell Island mollymawk colonies

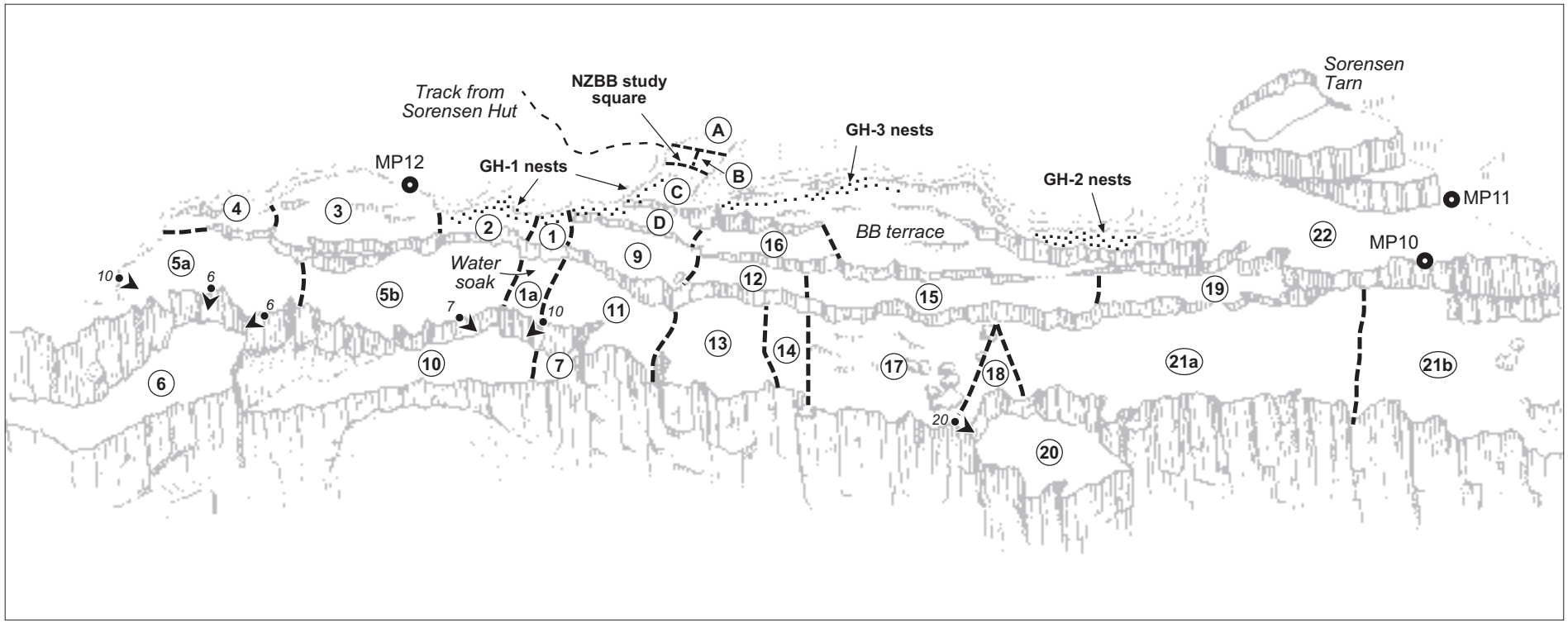

Figure A1. Bull Rock South mollymawk colony—schematic diagram based on an oblique (hence the foreground ledges appear larger relative to the more distant top ledges) aerial photograph series taken on 15 November 1990.

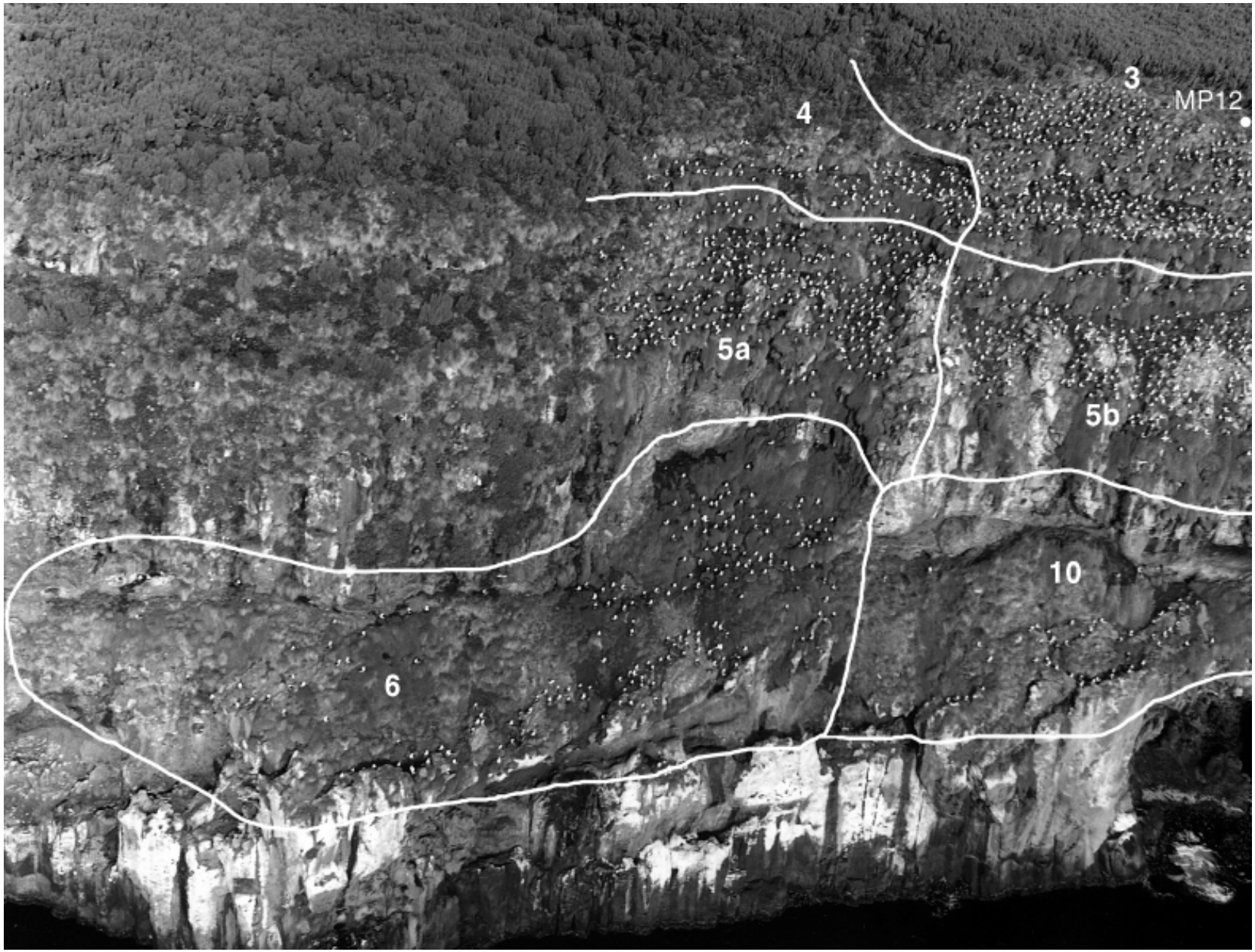

Figure A2a. Aerial photographs (Figures A2a–d) of Bull Rock South colony with counting zones (see Figure A1 for details). *Photo: R. Moffat, 6 December 1989.*

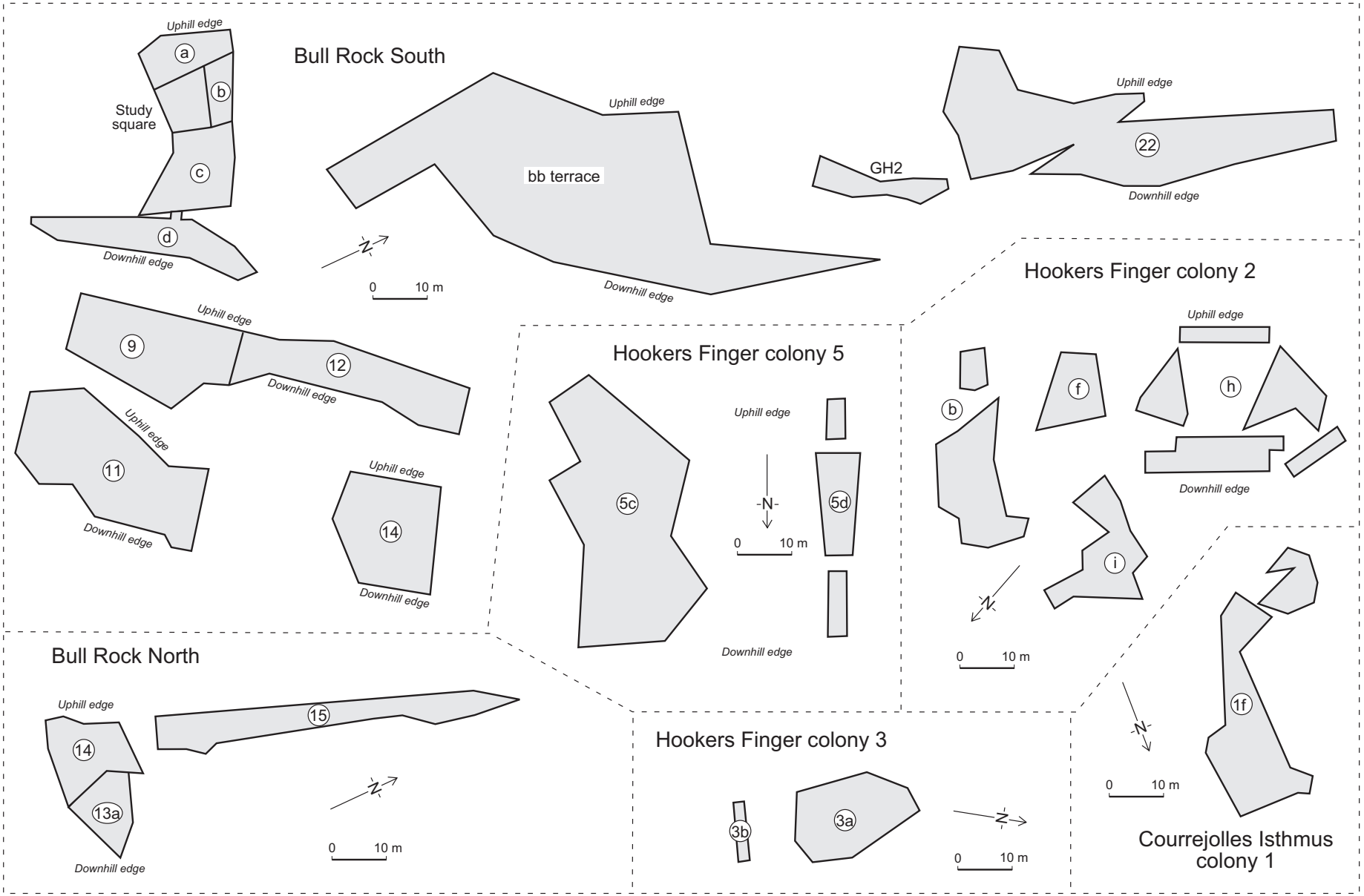

Figure A40. Approximate dimensions of selected count zones at Bull Rock South, Bull Rock North, Hookers Finger and Courrejolles Isthmus.