

SUPPLEMENTAL MATERIAL

Table 1: Beach names present in data but not present in Figure 1, and the solutions for estimating their coordinates.

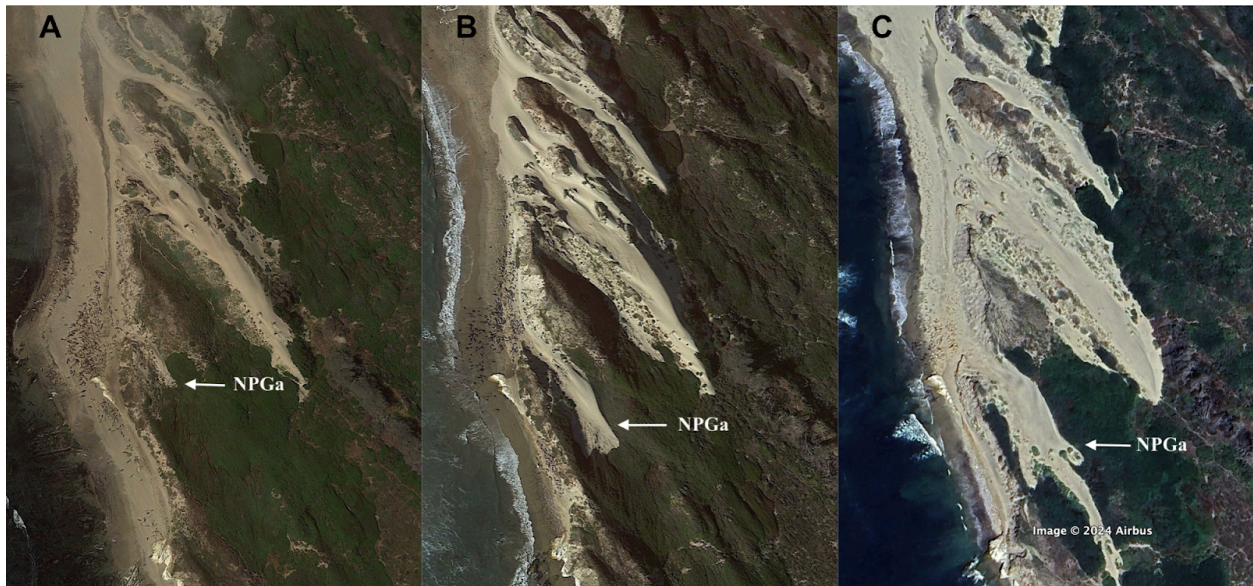
Beach names	# observed	Issue	Solution
NPG	5	Non-specific gully name	Coordinate values assigned to center NPG0 and NPG1 as these were the only named gullies at the time of resight
NP2/3	2	Non-specific beach name	Coordinate values assigned in between NP2 and NP3
MBB	11	Non-specific beach name	Coordinate values assigned in between MBBL and MBBU
BBS	18	Non-specific beach name	Coordinate values assigned in between BBSL and BBSU
BM	1	Non-specific beach name	Coordinates values assigned in between following cluster of possible sites: BMB, BMNN, BMD, BMN, BMC, BMS
SBEU	3	Too specific	Additional coordinate values attributed to SBE, in 'upper' region
SBEL	2	Too specific	Additional coordinate values attributed to SBE, in 'lower' region
TSBE	1	Too specific	Additional coordinate values attributed to TSB, in 'eastern' region
NNPG3	1	Typo	Given same coordinate values as NPG3
NPG2	1	Beach name changed	Coordinates based off 2005 image
NPG3	1	Beach name changed	Coordinates based off 2005 image

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NPG2B	1	Beach name changed (last resight in 2013)	Coordinates based off 2005 image
APBN	1	Uninterpretable	Omitted

Table 2: Natal and pupping sites of known mom-pup pairs compared in the context of three broader regions of Año Nuevo colony; Northern (includes all beaches north of NPC), Central (includes beaches between BBNN and MBBU), and Southern (includes all beaches south/east of BMB, including inland regions). ‘*Beaches*’ column identifies all beaches that make up each region. Beach names in **bold** are those observed as a natal and/or pupping site and are plotted in Figure 5. *Italicized* beach names were entered as an observed natal and/or pupping site, but do not exist in Figure 1. Names of beaches are ordered from northernmost to southernmost. For more information on italicized beaches, see Table 1.

Region	Beaches	Maximum Region Distance (m)	Natal (n)	Pupping (n)	Difference (%)
Northern	NPC, NP , NPGa, NP0 , NPG0 , NPG1 , NP1 , NP2 , NP3 , NP4 , NPG4 , NPD , NP5 , NP6 , <i>NNPG3</i> , <i>NP2/3</i> , <i>NPG</i> , <i>NPG2B</i> , <i>NPG2</i> , <i>NPG3</i>	960	32	38	+15.79
Central	BBN , BBNS , MBBU , MBBL , BBNN, <i>MBB</i>	512	29	15	-48.28
Southern	BMB , BMNN , BMD , BMN , BMC , BMS , BBSU , APGw , BBSL , AP , APG , TSW , SBW , SBE , TSC , TSD , TSE , TSB , FSB , P1 , <i>BM</i> , <i>SBEU</i> , <i>SBEL</i> , <i>TSBE</i> , <i>BBS</i>	856	63	77	+18.18



Supplementary Figure 1. Satellite images of Año Nuevo Reserve’s northern region (elevation 26 ft, eye altitude 1642). Image A was taken on 5/9/2018 (Google Earth Pro, 2018). Image B was taken 9/27/2021 (Google Earth Pro, 2021). Image C was taken on 9/17/2023 (Airbus, 2024). Images ordered sequentially show the expansion of gully NPGa over time.