Caption 6. View from the Atlantic Coastal Ridge at Valkaria looking west into a large contiguously occupied landscape that was unoccupied 7 years ago before it was burned by a wild fire

4.2 Results

Habitat Characteristics and Potential Reserve Units Potential habitat was more contiguous when palmetto-oak was recognized as habitat (Figure 2). There were respectively 3541 ha and 4823 ha of xeric oak and palmetto oak scrub within reserves based on 1999 imagery. There were least 3686 ha of oak and palmetto-oak scrub outside PRUs in 1999. We estimated that 5% of the potential habitat within PRUs was destroyed between 1994 and 1999. Habitat loss rates probably increased since 1999 given that human population expansion rate increases in Brevard County have begun to exceed rapid growth rates in South Florida (Toland 2000, S. Kennedy pers. Comm.

Hereafter, we used potential territories from the grid cell model to describe habitat arrangements within PRUs (Table 4). The percentage of primary, secondary, and tertiary territories in the potential territory model respectively were 66%, 24%, and 10%. Approximately 35% of these potential territories had optimal tree cover (they were savannas); 42% had marginal tree cover (they were woodlands); and 23% of these were unsuitable (they were forests). Most forested territories were primary (Figure 3). The percentages of potential territories that were protected, proposed, and unprotected respectively were 31%, 24%, and 45%. Protected referred to territories purchased for

conservation. Proposed referred to areas proposed for conservation by a land acquisition organization and not habitat polygons designated by Stith (1999) for Florida Scrub-Jay recovery. Proposed areas were also unprotected but unprotected territories here include areas where protection is not proposed by an organization that actually acquires land. Some unprotected areas included public lands (airports, golf courses, parks) that were public lands that did not have plans to permanently protect and manage their scrub. The greatest amount of proposed habitat was in North Brevard where land acquisition efforts had failed to reach agreement with private landowners. (Figure 4). Acquisition in Central Brevard has been limited by recent rapid urbanization that resulted in a high cost of land and excessive fragmentation that diminished its value for many types of organisms not restricted to scrub. Consequently, many once high ranked potential conservation areas have been withdrawn from Central Brevard. The South Brevard-Indian River-St. Lucie metapopulation had the greatest amount of protected habitat but much of it still remains unprotected. There were a large number of potential territories that were unprotected forests or woodlands and therefore were not occupied by Florida Scrub-Jays (Figure 5).

The North Brevard metapopulation had the greatest proportion of potential territories that were forest (Figure 6). The percentages of potential territories that were core, reserve edge, or suburban respectively were 40%, 21%, and 39%. Conservation land acquisition efforts have acquired a high proportion of core territories, where as many unprotected territories bordered roads (suburban; Figure 7). However, a large number of core and edge territories (potential) remained unprotected, especially in areas north of Buck Lake, South of Grant Road and north of the Micco Scrub Sanctuary, and south of St. Sebastian River State Buffer Reserve along the Ten Mile Ridge.

Caption 7. Optimal palmetto-oak.

Figure 2. Oak Scrub, Palmetto-Oak, and Metapopulation Boundaries on the Mainland of Central Florida's Atlantic Coast

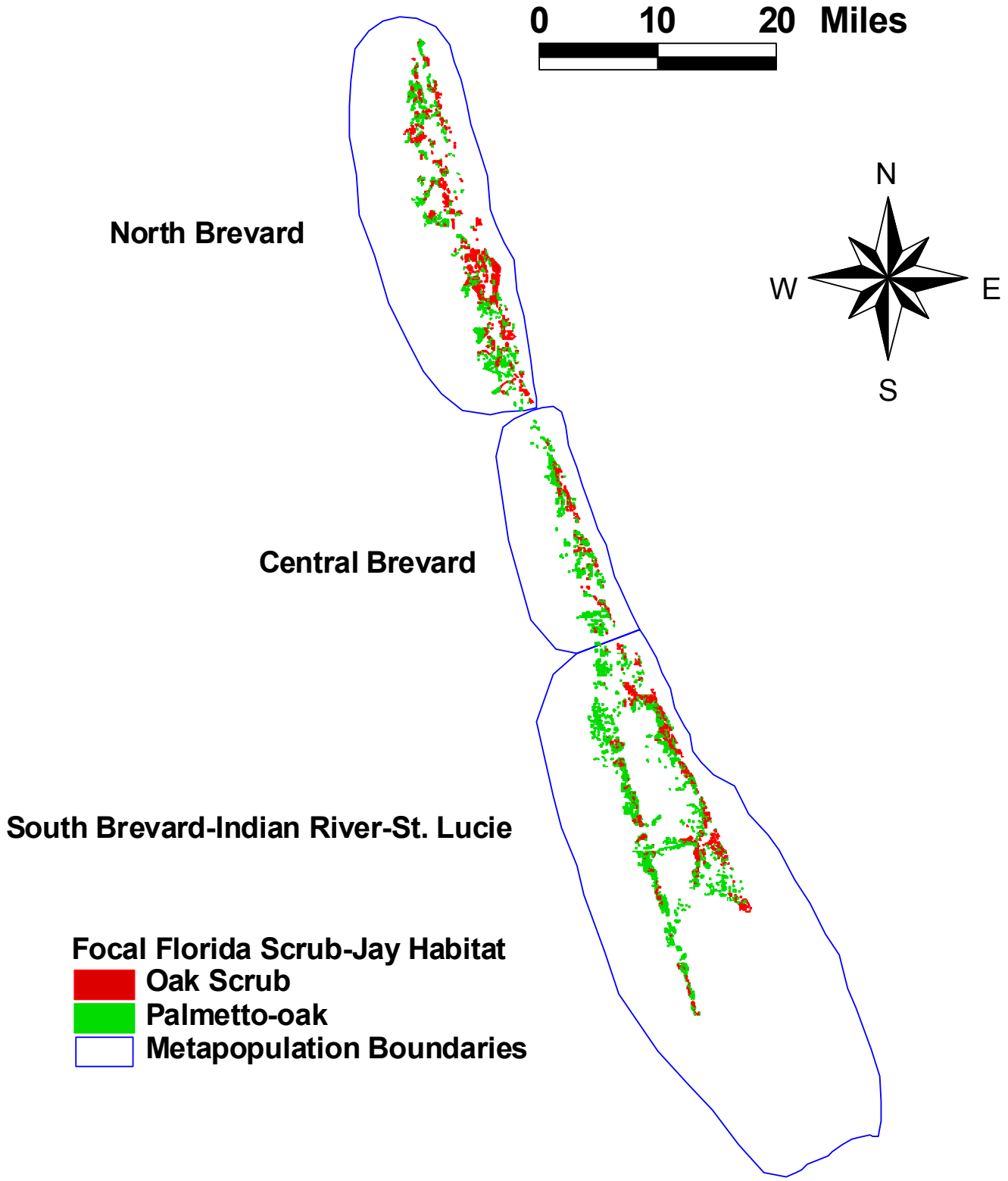


Table 4. Habitat Attributes of Territories in Potential Reserve Units (PRUs) [a.]

PRU	Potential Territories [b]	Protected [c]	Proposed [d]	Reserve Core [e]	Reserve Edge [f]	Suburb [g]	Optimal [h]	Unsuitable [i]
1	10	0	4	6	1	3	5	0
2	2	0	0	0	0	2	0	0
3	29	0	0	22	2	5	18	2
4	6	0	0	0	4	2	2	0
5	1	0	0	0	0	1	0	1
6	3	0	0	0	1	2	0	1
7	1	0	0	0	1	0	0	1
8	7	0	0	0	0	7	0	0
9	15	15	0	13	2	0	8	2
10	4	4	0	2	2	0	0	0
11	1	0	0	0	0	1	0	1
12	2	0	0	0	0	2	0	2
13	6	0	0	1	0	5	0	5
14	3	2	0	0	2	1	0	2
15	18	10	8	13	1	4	0	4
16	2	0	0	0	1	1	0	2
17	5	0	0	1	0	4	0	5
18	20	0	20	14	0	6	0	2
19	5	0	0	0	1	4	0	5
20	14	2	12	1	9	4	0	4
21	19	5	10	2	7	10	0	12
22	14	0	14	4	0	10	0	2
23	2	0	1	0	0	2	0	0
24	53	2	35	12	16	25	0	22
25	1	0	0	0	0	1	0	1
26	2	0	0	0	0	2	0	2
27	3	0	0	0	0	3	0	3
28	2	0	0	0	0	2	0	0
29	35	5	22	5	8	22	4	5
30	4	0	0	0	1	3	0	1
31	19	0	0	6	6	7	0	1
32	7	0	0	2	0	5	0	7
33	3	0	0	0	1	2	0	2
34	2	0	0	0	2	0	0	0
35	2	0	0	0	1	1	0	1

PRU	Potential Territories [b]	Protected [c]	Proposed [d]	Reserve Core [e]	Reserve Edge [f]	Reserve Suburb [g]	Reserve Optimal [h]	Reserve Unsuitable [i]
36	39	15	20	10	18	11	15	7
37	4	0	0	0	3	1	2	0
38	1	0	0	0	0	1	0	1
39	1	0	0	0	0	1	0	0
40	5	0	0	0	2	3	1	2
41	3	0	0	1	2	0	0	0
42	1	0	0	0	0	1	0	0
43	2	0	0	0	2	0	0	0
44	1	0	0	0	0	1	0	0
45	2	0	0	0	0	2	0	0
46	2	0	0	0	0	2	0	2
47	8	0	0	2	2	4	0	1
48	2	0	0	0	0	2	1	0
49	2	0	0	0	0	2	0	0
50	1	0	0	0	0	1	0	0
51	2	0	0	0	0	2	0	0
52	10	0	0	1	9	0	2	0
53	2	0	0	0	2	0	0	0
54	2	0	0	0	1	1	2	0
55	2	0	0	0	2	0	0	1
56	3	0	0	0	0	3	0	0
57	5	0	0	0	0	5	0	4
58	1	1	0	0	0	1	0	1
59	1	0	0	0	0	1	0	1
60	2	0	0	0	0	2	0	2
61	5	0	0	0	0	5	0	0
62	10	0	0	3	1	6	2	0
63	2	0	0	0	0	2	0	0
64	30	15	5	5	17	8	0	22
65	28	10	14	18	8	2	2	8
66	1	0	0	0	0	1	1	0
67	1	0	0	0	1	0	0	0
68	39	16	7	17	15	7	12	6
69	5	1	4	2	2	1	1	1
70	9	0	8	5	2	2	2	1
71	1	0	0	0	1	0	0	1

PRU	Potential Territories [b]	Protected [c]	Proposed [d]	Reserve Core [e]	Reserve Edge [f]	Suburb [g]	Optimal [h]	Unsuitable [i]
72	1	0	0	0	0	1	0	1
73	23	2	21	19	4	0	7	1
74	1	0	0	0	0	1	0	0
75	2	0	0	0	0	2	0	0
76	1	0	0	0	0	1	0	0
77	3	0	0	1	0	2	0	3
78	2	2	0	2	0	0	0	0
79	35	33	0	26	0	9	13	1
80	11	0	0	0	6	5	0	3
81	6	6	0	3	0	3	0	2
82	1	0	0	1	0	0	0	0
83	11	11	0	7	0	4	2	1
84	9	9	0	8	0	1	2	3
85	39	39	0	39	0	0	0	8
86	13	6	0	2	7	4	2	3
87	44	44	0	43	0	1	20	1
88	1	0	0	0	0	1	0	1
89	3	0	0	0	2	1	0	3
90	2	0	0	0	1	1	0	0
91	2	2	0	0	0	2	0	1
92	30	7	0	20	0	10	3	0
93	1	0	0	0	0	1	0	0
94	1	1	0	1	0	0	1	0
95	6	4	0	1	3	2	3	1
96	1	0	0	0	0	1	0	0
97	1	0	0	0	0	1	0	0
98	4	0	0	0	0	4	0	0
99	14	0	0	1	1	12	0	1
100	2	0	0	0	0	2	0	0
101	2	0	0	0	1	1	0	1

Entries are the number of potential territories. [a] Landscapes having enough (>10 ha) scrub to support at least one Florida Scrub-Jay territory. [b] Estimated as the area of oak and palmetto-oak divided by the average territory size (10 ha). [c] Florida Department of Environmental Protection, Brevard County Environmentally Endangered Lands Program (EELs), or St. Johns River Water management District. [d] Proposed for conservation by EELs or the Florida Greenways proposal. [e] Number of potential territories not adjacent to roads or suburbs. [f] Number of potential territories adjacent suburbs. [g] Number of potential territories adjacent to roads suburbs. [h] Number of territories at optimal height. [i] Number of territories that were unsuitable because of interlocking tree canopies.

Figure 3. The number of potential territories (y-axis) in relation to tree and cover and oak cover. Savanna, woodland, and forest respectively had 0-15%, 16-65%, and >65% tree canopy cover. Primary territories had oak scrub on well-drained soils. Secondary and tertiary territories occurred entirely on poorly-drained soils. Secondary territories had patches of >50% scrub oak cover that were >0.4 ha.

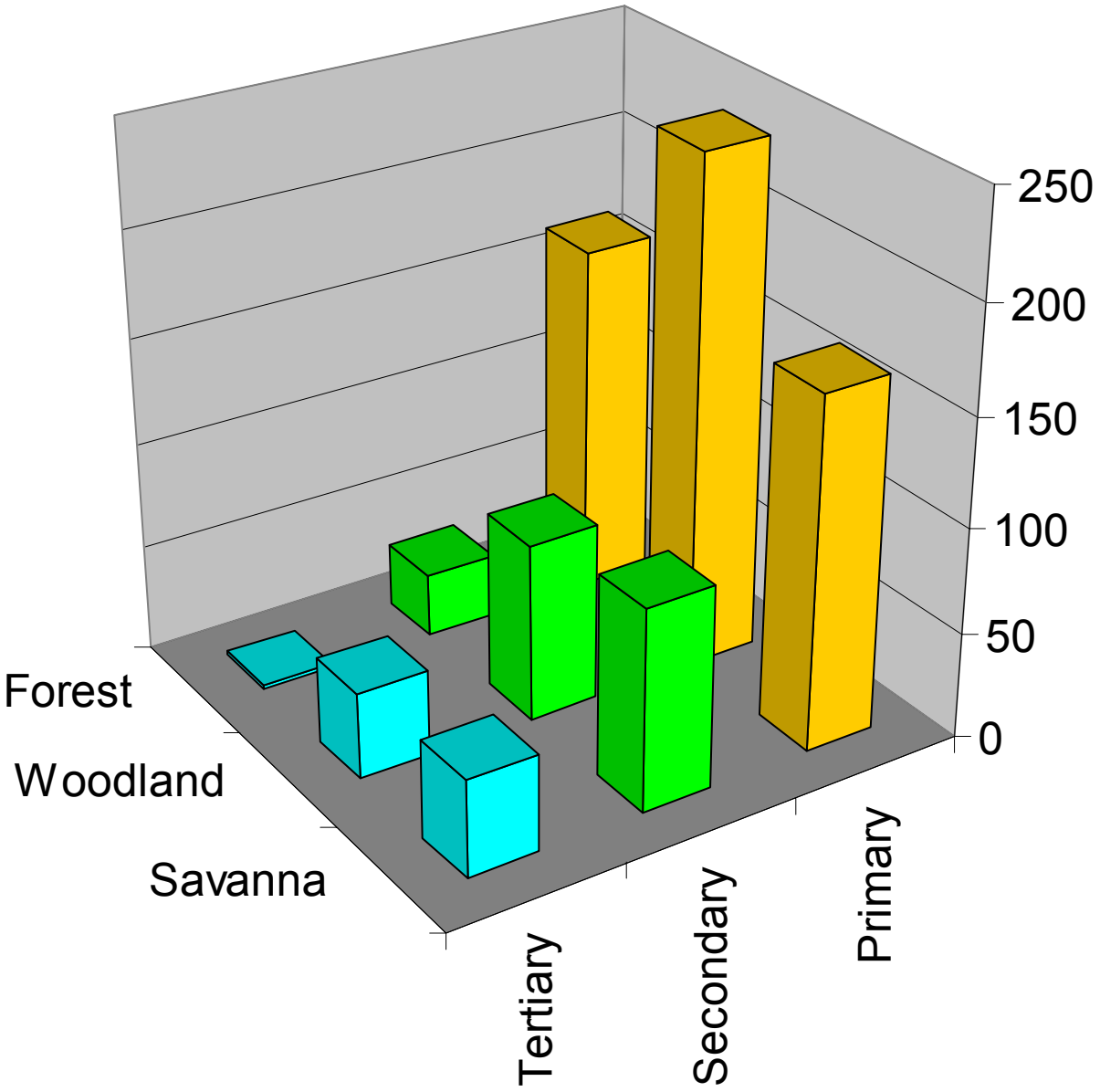
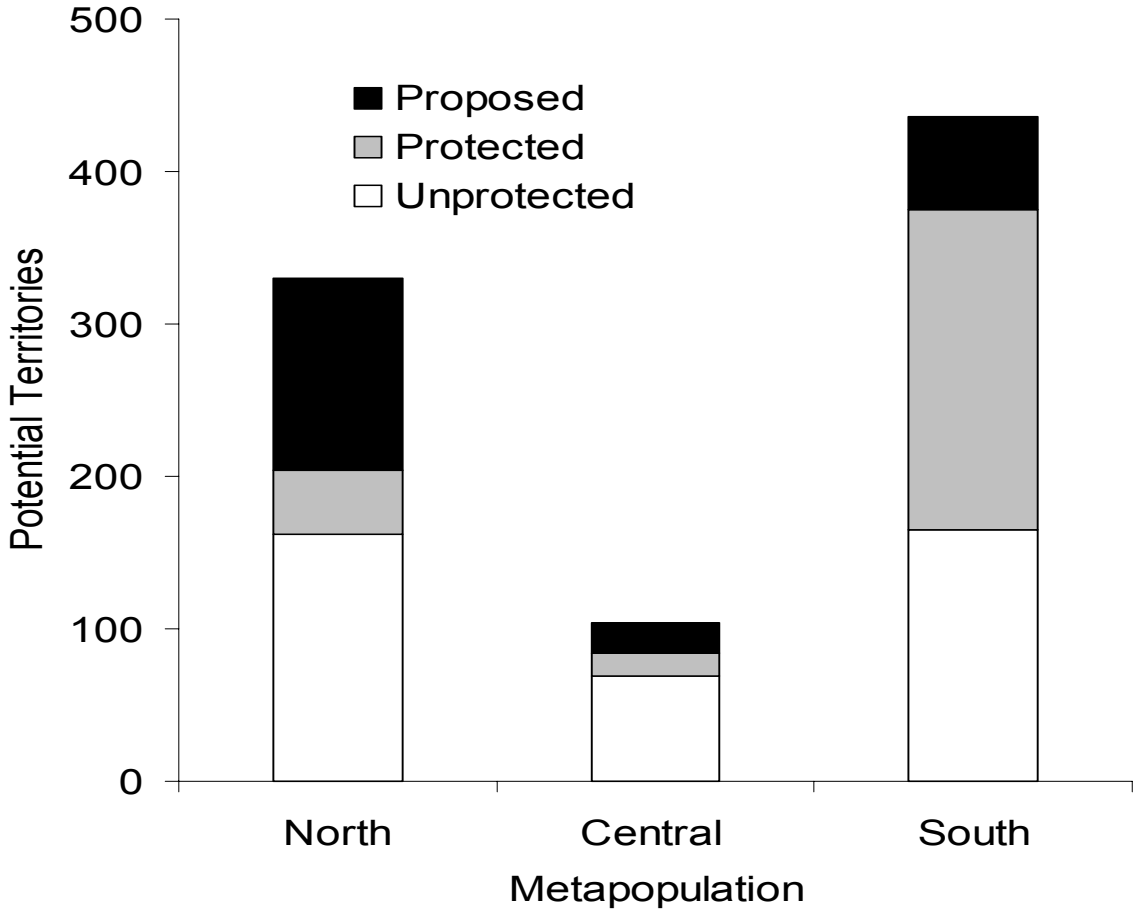


Figure 4. Number of potential territories by metapopulation and protected status. Protected territories occurred in areas purchased for conservation. Proposed territories were only proposed for acquisition. No acquisition has yet been proposed by conservation acquisition organizations for unprotected territories.



The percent of potential territories that were short, optimal, tall mix, or tall respectively were 3%, 16%, 44%, and 37%. Few suburban or reserve edge territories were optimal and most potential core territories were tall mix (suboptimal; Figure 8). Most potential territories in the North Brevard metapopulation were tall (Figure 9). Most protected territories were tall mix (Figure 10). Most unprotected territories were tall mix or tall. Most primary territories were tall, especially compared to secondary territories (Figure 11). Figure 12 provides PRUs overlaid on 1999 photography.

Territory Clusters. Five territory clusters occupied in 1992 were not occupied in 2001. The boundaries of PRUs and territory clusters did not directly overlap because many Florida Scrub-Jays occur in habitat fragments (e.g., Palm Bay) that were not within PRUs (Figure13). The delineation of clusters relied on suitable oak and palmetto-oak, whereas the PRUs boundaries relied on all oak and palmetto-oak. Figure 14 provides potential territory clusters overlaid on 1999 photography.

Caption 8. Malabar was an open savanna (A: 1943) that became forest and overgrown scrub with few openings (B: 1994), except along man-made edges.

Figure 5. The number of potential territories (y-axis) in relation to tree cover and protected status. Savanna, woodland, and forest respectively had 0-15%, 16-65%, and >65% tree canopy cover. Protected territories occurred in areas purchased for conservation. Proposed territories were only proposed for acquisition. No acquisition has yet been proposed by conservation acquisition organizations for unprotected territories.

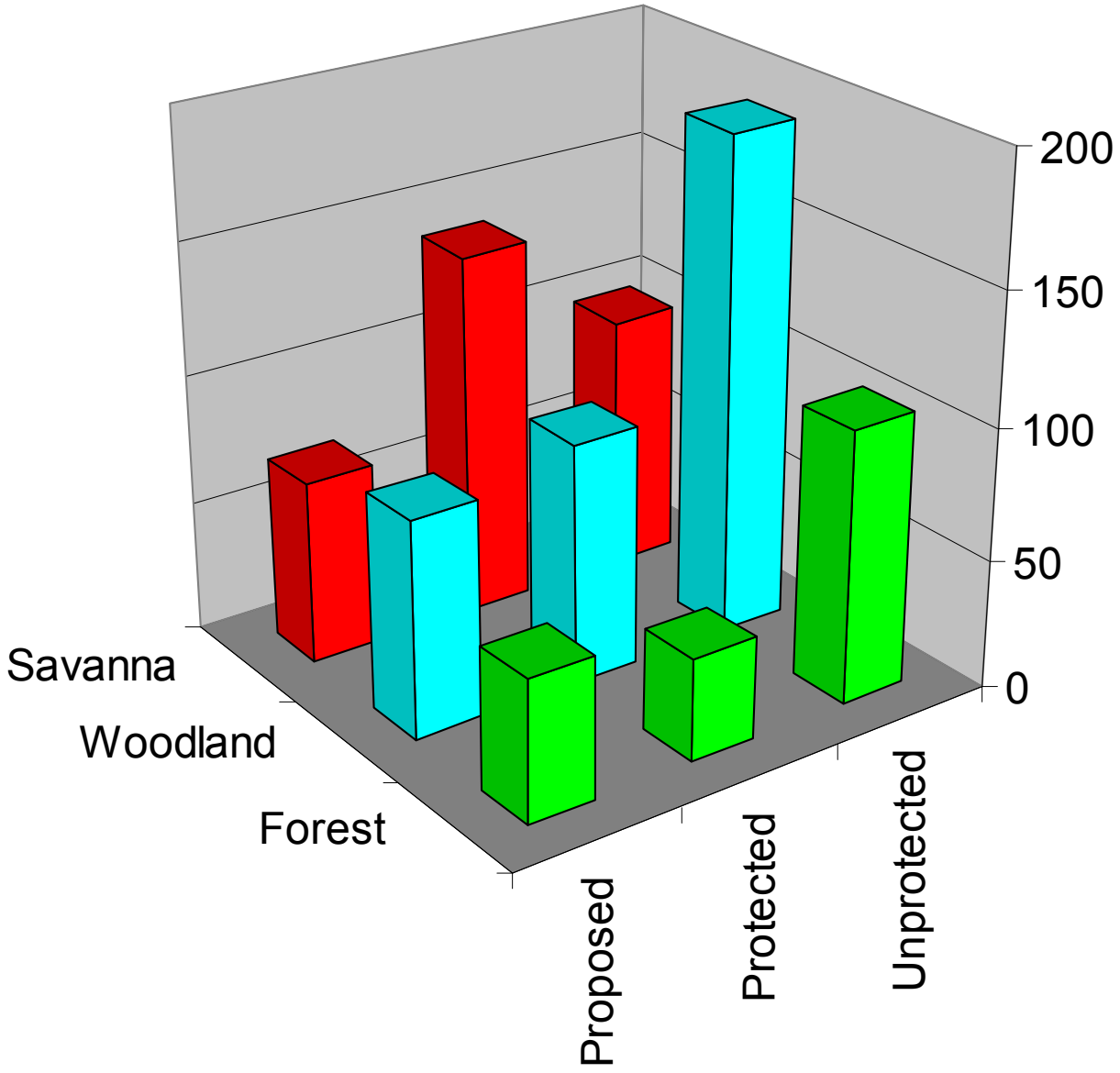


Figure 6. The number of potential territories (y-axis) in relation to metapopulation and tree cover. Savanna, woodland, and forest respectively had 0-15%, 16-65%, and >65% tree canopy cover.

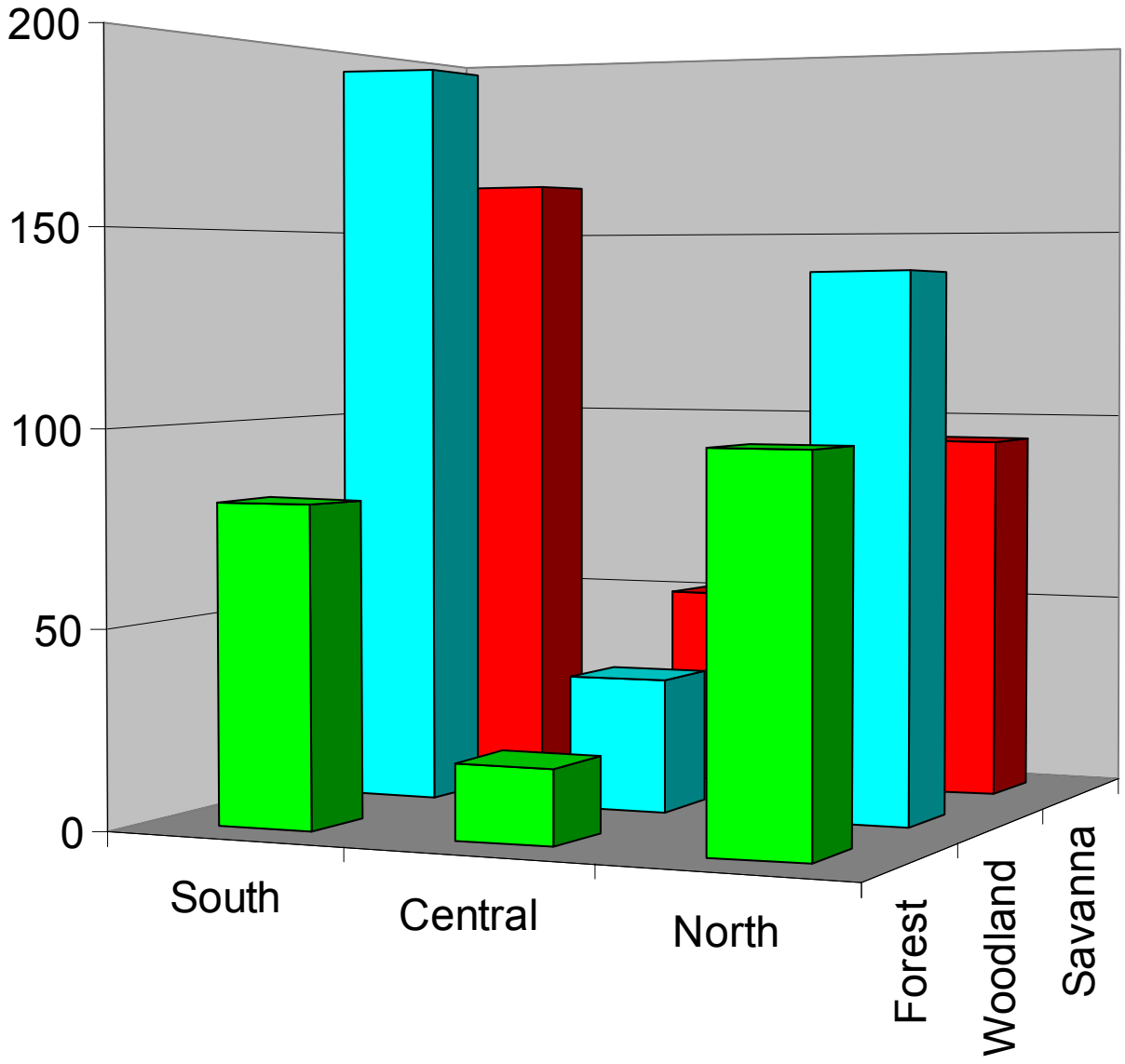


Figure 7. The number of potential territories (y-axis) in relation to protected status and edge. Protected territories occurred in areas purchased for conservation. Proposed territories were only proposed for acquisition. No acquisition has yet been proposed by conservation acquisition organizations for unprotected territories. Core territories were surrounded by other potential territories, pine flatwoods, marshes or other natural communities. Edge territories bordered human landscapes but not roads where traffic exceeded 35 mph. Suburban territories bordered busy roads.

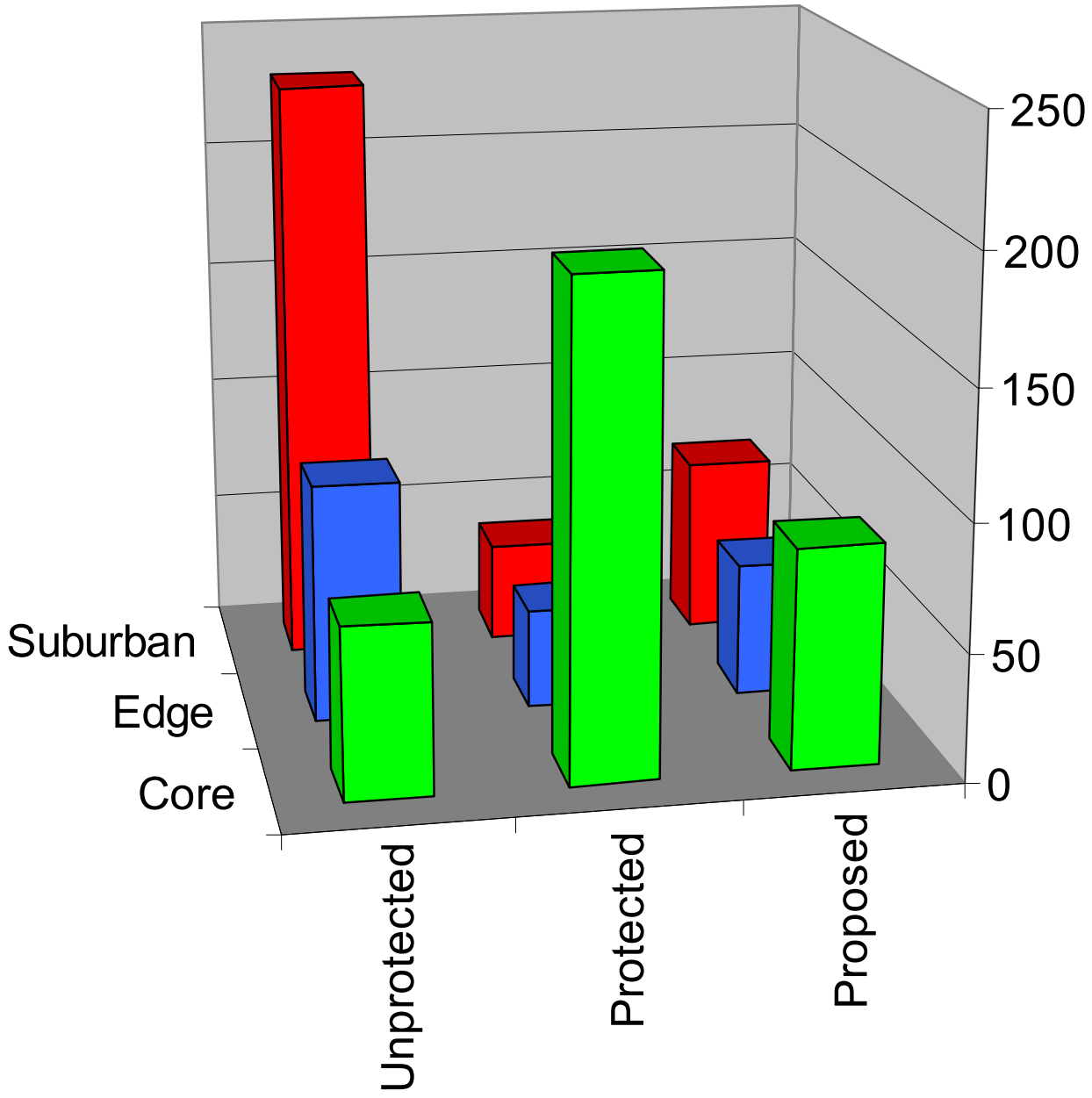


Figure 8. The number of potential territories (y-axis) in relation to edge and scrub height arrangement. Core territories were surrounded by other potential territories, pine flatwoods, marshes or other natural communities. Edge territories bordered human landscapes but not roads where traffic exceeded 35 mph. Suburban territories bordered busy roads.

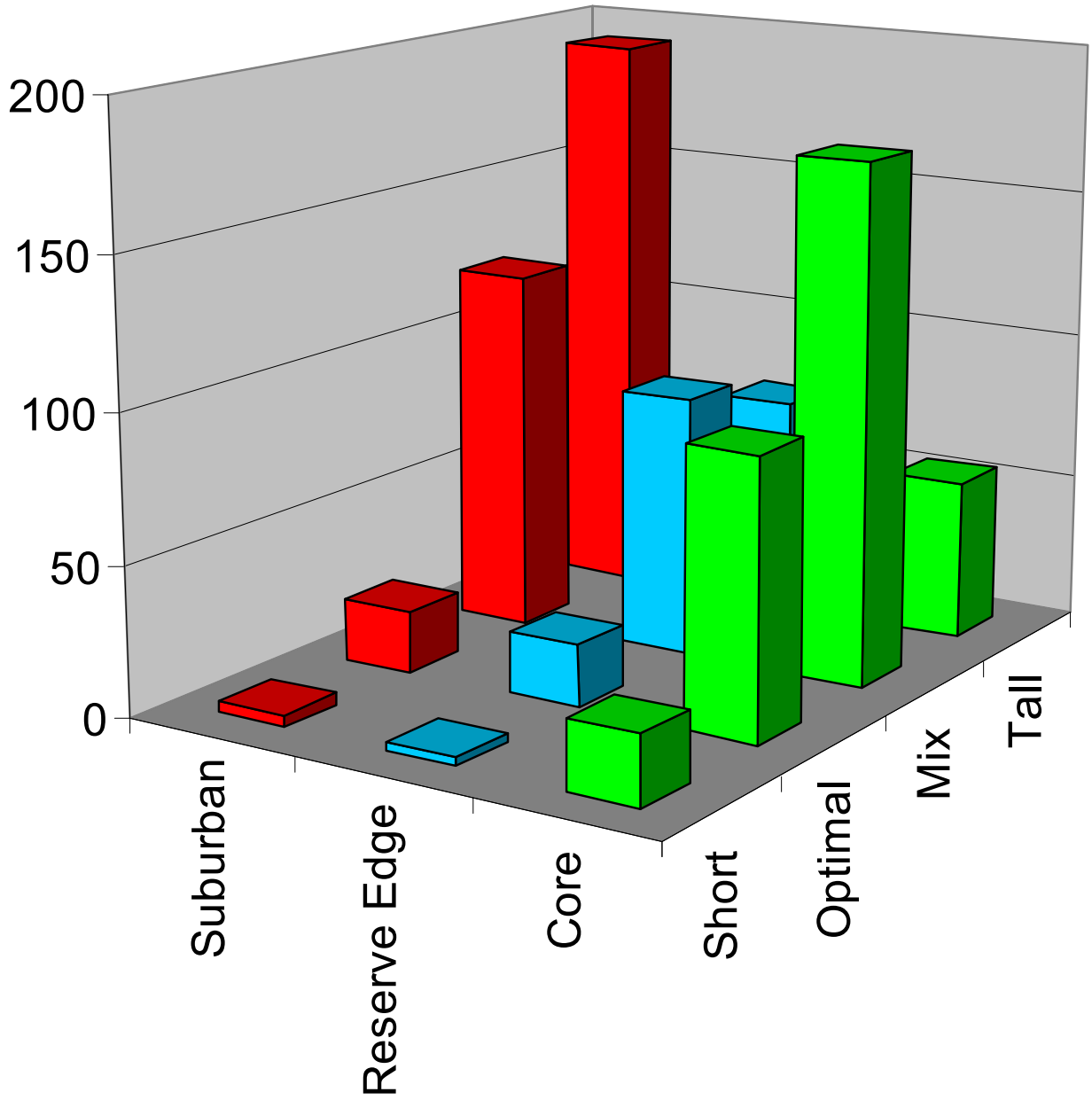


Figure 9. The number of potential territories (y-axis) in relation to metapopulation and scrub height arrangement.

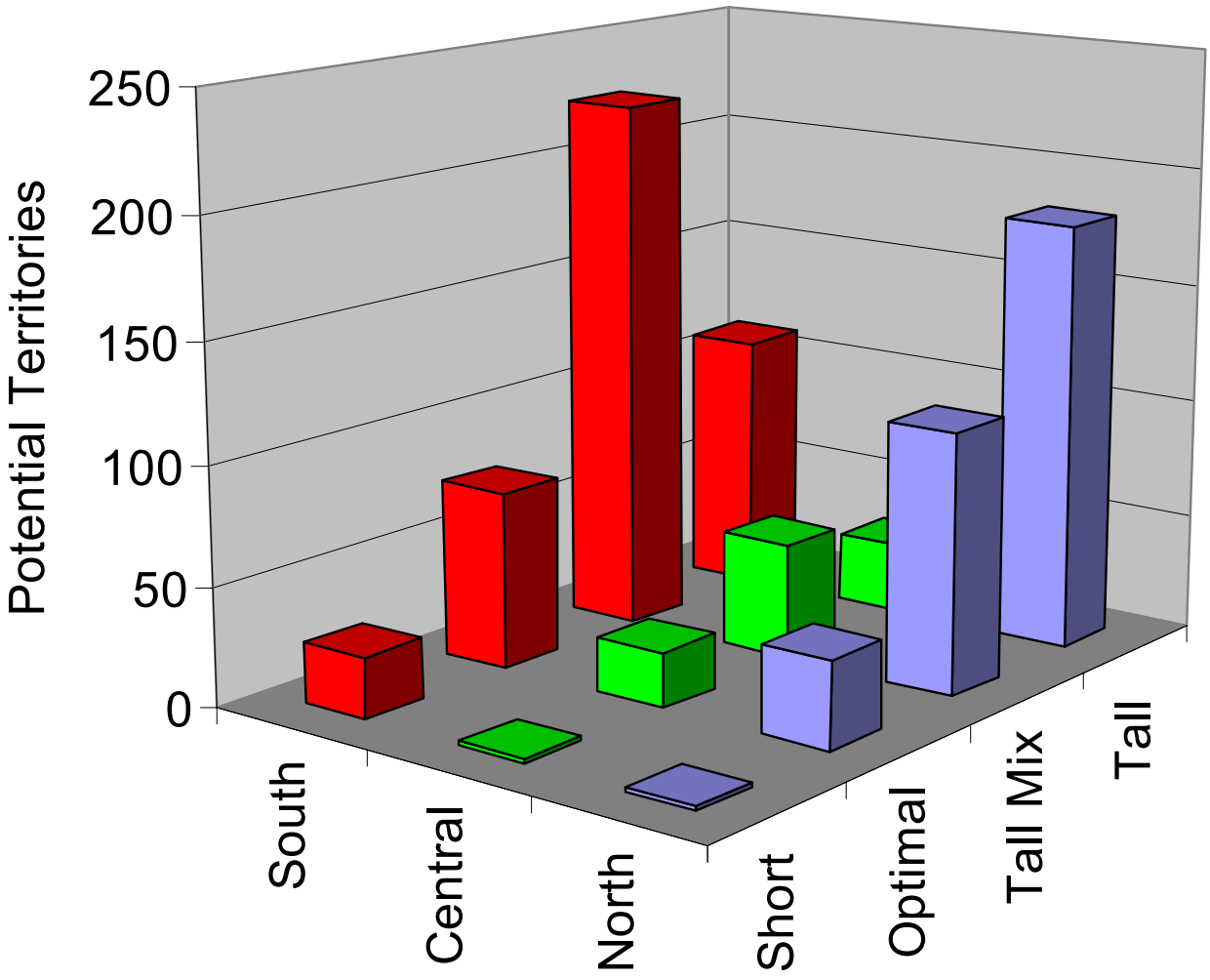


Figure 10. The number of potential territories (y-axis) in relation to protected status and scrub height arrangement. Protected territories occurred in areas purchased for conservation. Proposed territories were only proposed for acquisition. No acquisition has yet been proposed by conservation acquisition organizations for unprotected territories.

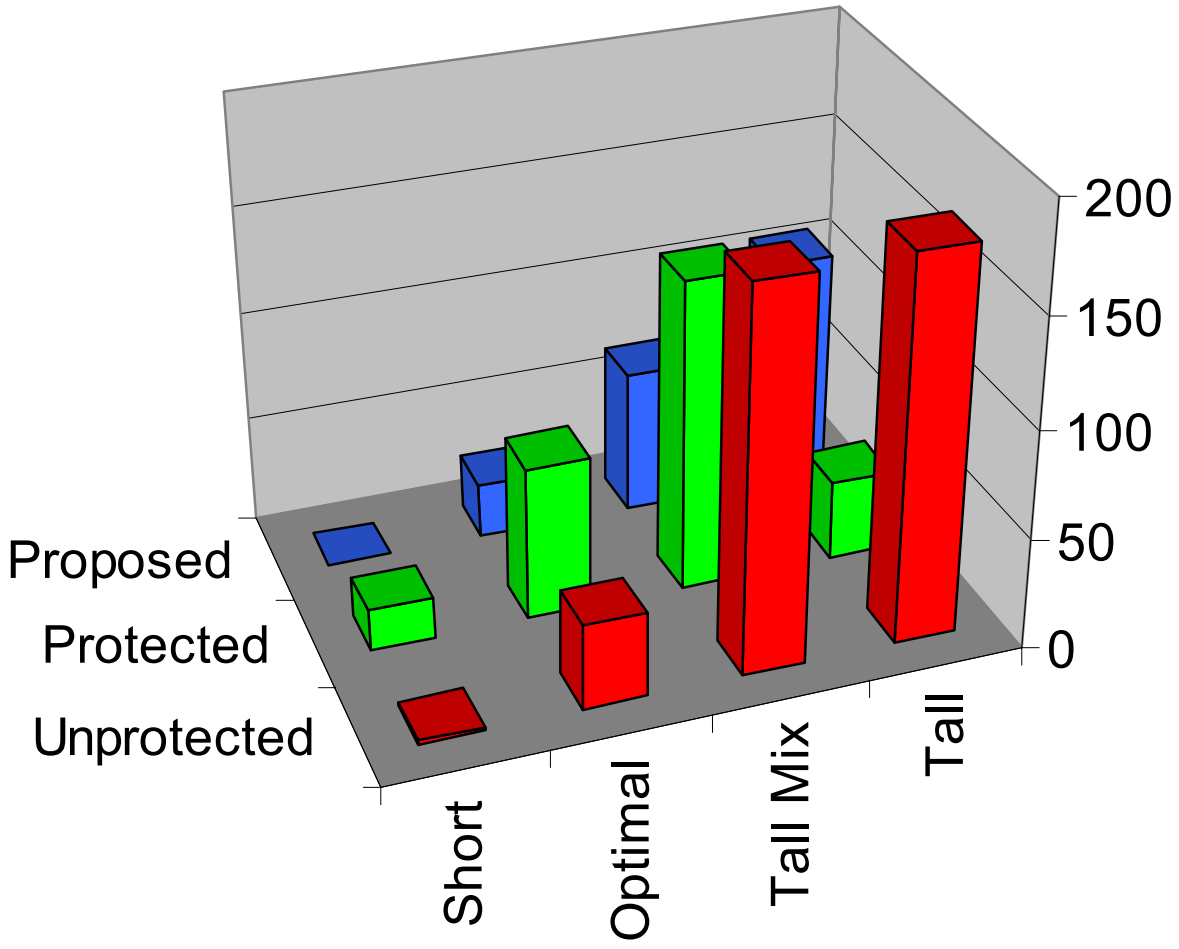
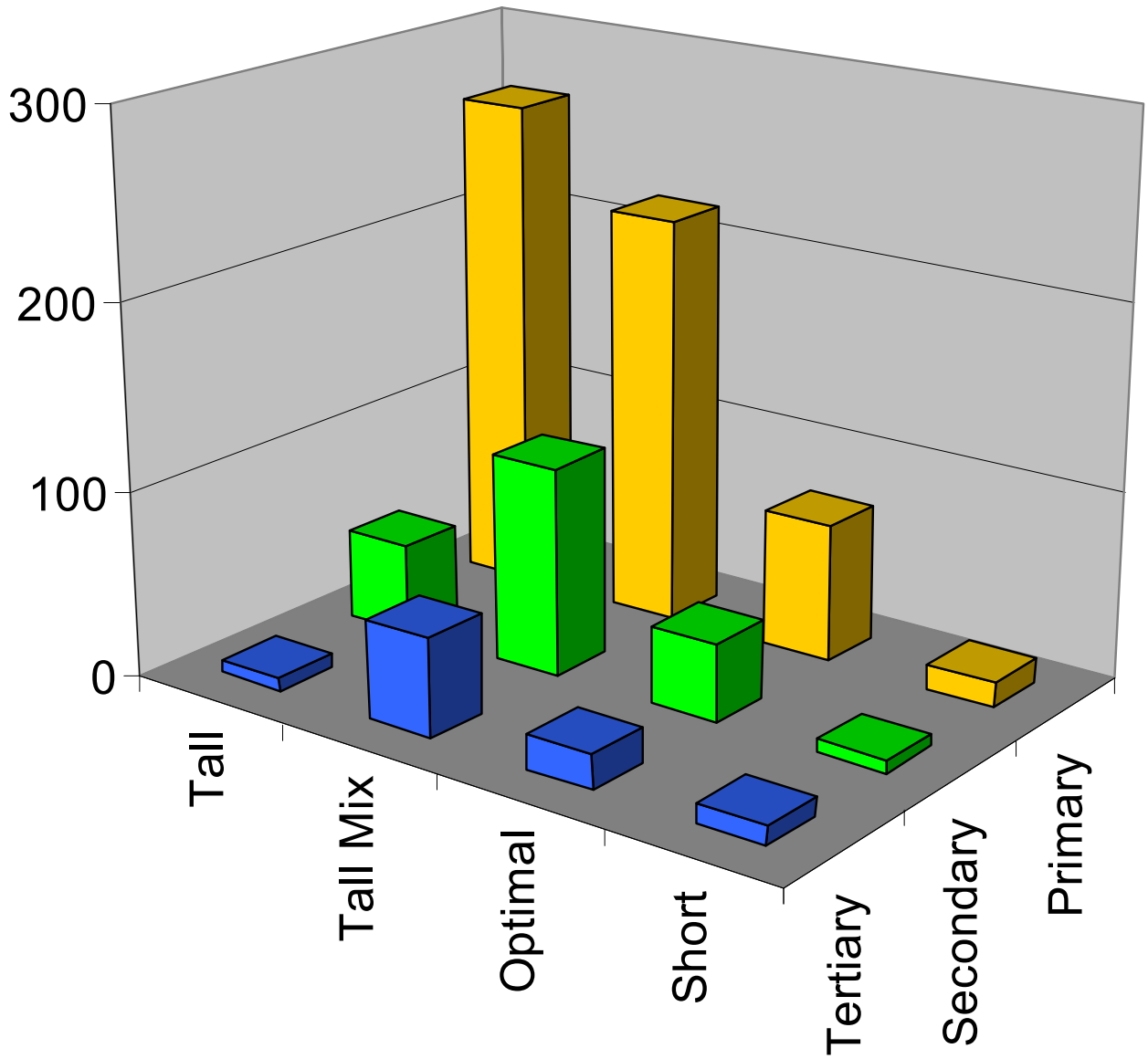



Figure 11. The number of potential territories (y-axis) in relation to scrub height arrangement and oak cover. Primary territories had oak scrub on well-drained soils. Secondary and tertiary territories occurred entirely on poorly-drained soils. Secondary territories had patches of >50% scrub oak cover that were >0.4 ha.