2. Seagrass Restoration Trade-offs Paper - Using PrioritizR for identifying potential areas for conservation and restoration to optimize multiple ecosystem service outcomes

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Contents

Paper Resources

Click **here** to see the latest meeting notes in the Google Doc.

Click **here** to see a tutorial on PrioritizR

Click **here** to see a tutorial about calibrating tradeoffs in PrioritizR

To Do List: - Run the set of PrioritizR configs we discussed at last meeting. i.e., run for 1 ES, 2 ES, 3 ES,... up to 5 to see how much area it takes to select for 5% of each of the ES considered.

Setup (i.e., loading data, setting targets etc).

Prioritizing Confirmed Beds for Single Services (Biodiversity Enhancement)

```
## # A tibble: 1 x 5
##   summary feature              total_amount absolute_held relative_held
##   <chr>   <chr>                       <dbl>         <dbl>         <dbl>
## 1 overall BioDiv_EV_Raw_Confirmed      2677.          134.        0.0502
```

Single ES Solution
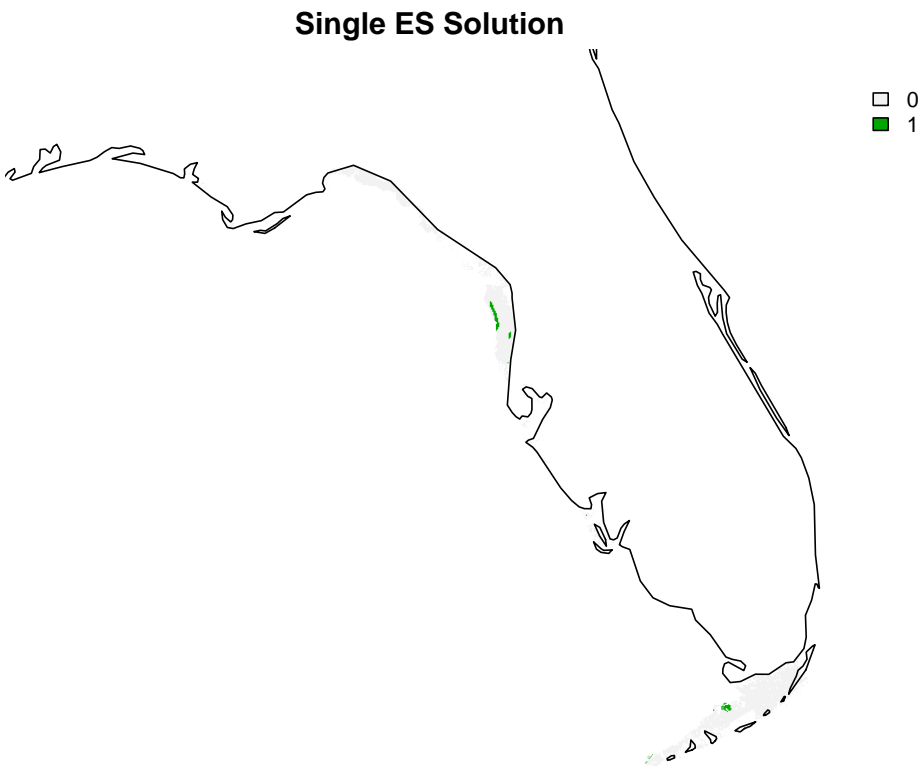
Prioritizing Confirmed Beds for Two Services (Biodiversity & Nursery Habitat Enhancement)

```
## # A tibble: 2 x 5
##   summary feature                total_amount absolute_held relative_held
##   <chr>   <chr>                        <dbl>         <dbl>         <dbl>
## 1 overall BioDiv_EV_Raw_Confirmed       2677.         135.         0.0504
## 2 overall NursHab_EV_Raw_Confirmed       215.          10.9        0.0506
```

Two Services Solution

Prioritizing Confirmed Beds for Three Services (Biodiversity & Nursery Habitat & Blue Carbon Stock Enhancement)

```
## # A tibble: 3 x 5
##   summary feature                  total_amount absolute_held relative_held
##   <chr>   <chr>                           <dbl>         <dbl>         <dbl>
## 1 overall BioDiv_EV_Raw_Confirmed         2677.          135.        0.0503
## 2 overall NursHab_EV_Raw_Confirmed         215.           11.3       0.0528
## 3 overall BlueCarbon_EV_Raw_Confirmed    13385.          673.        0.0503
```

Three Services Solution

Prioritizing Confirmed Beds for Four Services (Biodiversity & Nursery Habitat & Blue Carbon Stock & Recreation Visitation Enhancement)

```
## # A tibble: 4 x 5
##   summary feature                  total_amount absolute_held relative_held
##   <chr>   <chr>                           <dbl>         <dbl>         <dbl>
## 1 overall BioDiv_EV_Raw_Confirmed          2677.         135.         0.0503
## 2 overall NursHab_EV_Raw_Confirmed          215.          12.2        0.0567
## 3 overall BlueCarbon_EV_Raw_Confirmed     13385.         673.         0.0502
## 4 overall Rec_EV_Raw_Confirmed              101.           5.13        0.0508
```
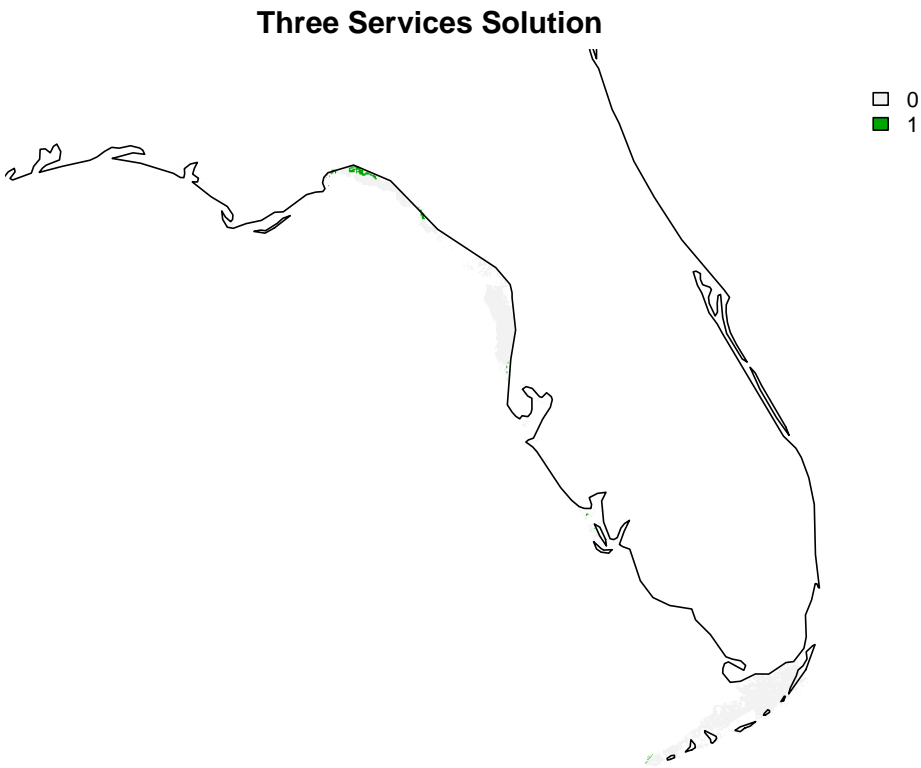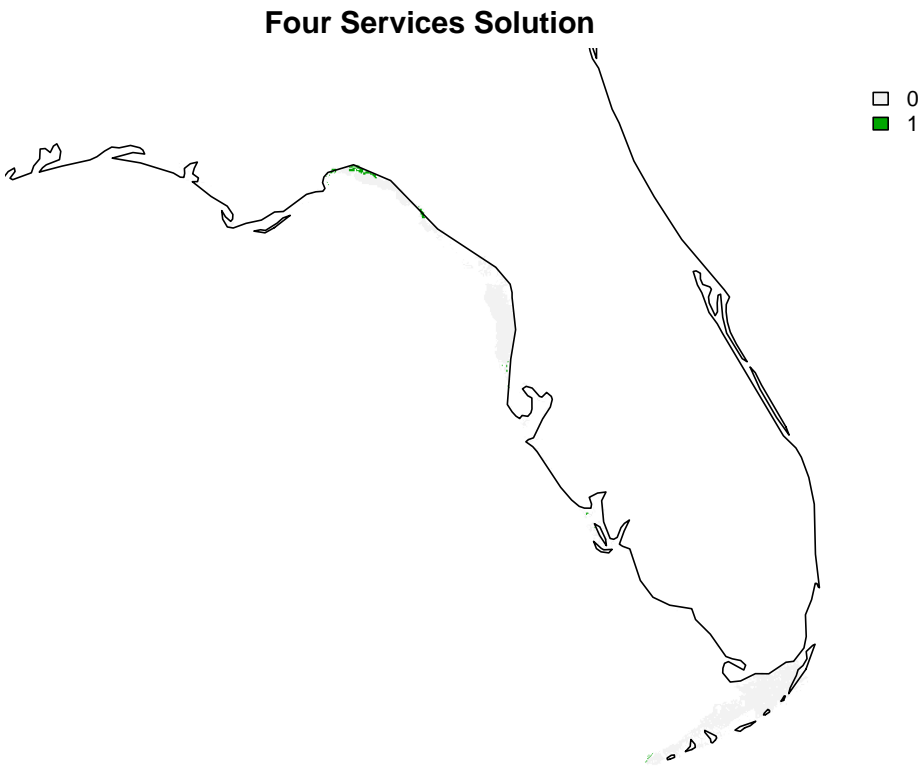
Four Services Solution

Prioritizing Confirmed Beds for Four Services (Biodiversity & Nursery Habitat & Blue Carbon Stock & Recreation Visitation & Coastal Protection Enhancement)

```
## # A tibble: 5 x 5
##   summary feature                    total_amount absolute_held relative_held
##   <chr>   <chr>                            <dbl>         <dbl>         <dbl>
## 1 overall BioDiv_EV_Raw_Confirmed          2677.          135.        0.0505
## 2 overall NursHab_EV_Raw_Confirmed          215.           15.5       0.0724
## 3 overall BlueCarbon_EV_Raw_Confirmed     13385.          675.        0.0504
## 4 overall Rec_EV_Raw_Confirmed             101.            5.23       0.0519
## 5 overall Exposure_EV_Raw_Confirmed       15658.          792.        0.0506
```

Five Services Solution

Prioritizing Potential Recovery Areas for Single Services (Biodiversity Enhancement)
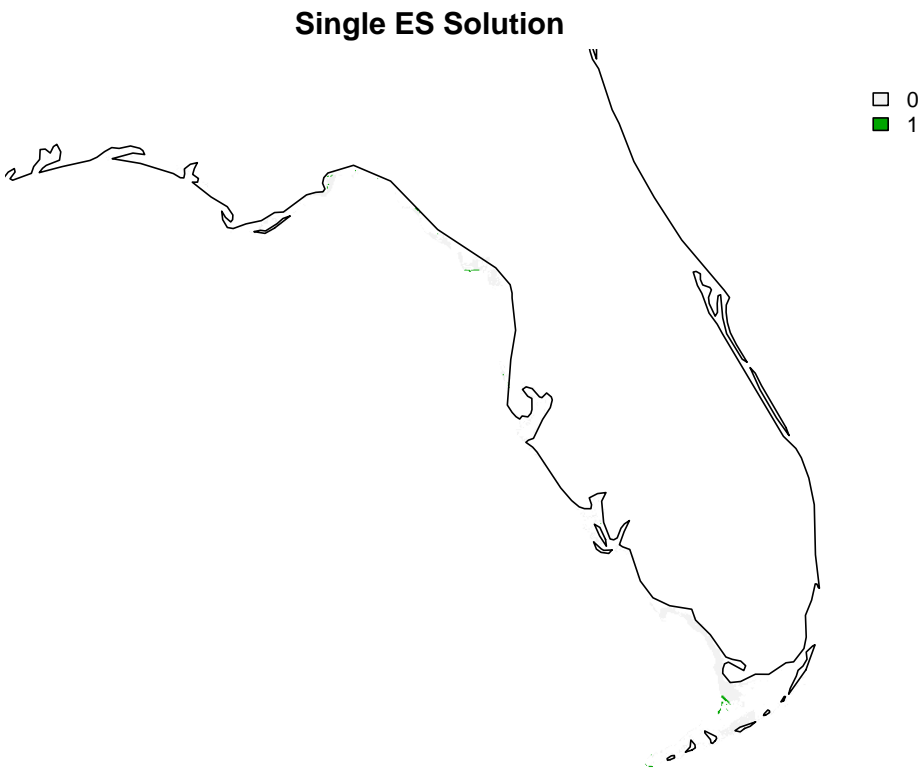
```
## # A tibble: 1 x 5
##   summary feature             total_amount absolute_held relative_held
##   <chr>   <chr>                      <dbl>         <dbl>         <dbl>
## 1 overall BioDiv_EV_Raw_PRAs         1617.          81.1        0.0501
```

Single ES Solution

Prioritizing Potential Recovery Areas for Two Services (Biodiversity & Nursery Habitat Enhancement)

```
## # A tibble: 2 x 5
##   summary feature          total_amount absolute_held relative_held
##   <chr>   <chr>                   <dbl>         <dbl>         <dbl>
## 1 overall BioDiv_EV_Raw_PRAs      1617.          81.4        0.0504
## 2 overall NursHab_EV_Raw_PRAs      155.           7.88       0.0507
```

Two Services Solution

Prioritizing Potential Recovery Areas for Three Services (Biodiversity & Nursery Habitat & Blue Carbon Stock Enhancement)

```
## # A tibble: 3 x 5
##   summary feature            total_amount absolute_held relative_held
##   <chr>   <chr>                     <dbl>         <dbl>         <dbl>
## 1 overall BioDiv_EV_Raw_PRAs        1617.          81.8        0.0506
## 2 overall NursHab_EV_Raw_PRAs        155.           8.03       0.0516
## 3 overall BlueCarbon_EV_Raw_PRAs    5499.         278.         0.0506
```

Three Services Solution

Prioritizing Potential Recovery Areas for Four Services (Biodiversity & Nursery Habitat & Blue Carbon Stock & Recreation Visitation Enhancement)

```
## # A tibble: 4 x 5
##   summary feature                 total_amount absolute_held relative_held
##   <chr>   <chr>                          <dbl>         <dbl>         <dbl>
## 1 overall BioDiv_EV_Raw_PRAs             1617.          82.4        0.0509
## 2 overall NursHab_EV_Raw_PRAs             155.           7.93       0.0510
## 3 overall BlueCarbon_EV_Raw_PRAs        5499.         280.         0.0509
## 4 overall Rec_EV_Raw_PRAs                115.           5.83       0.0506
```
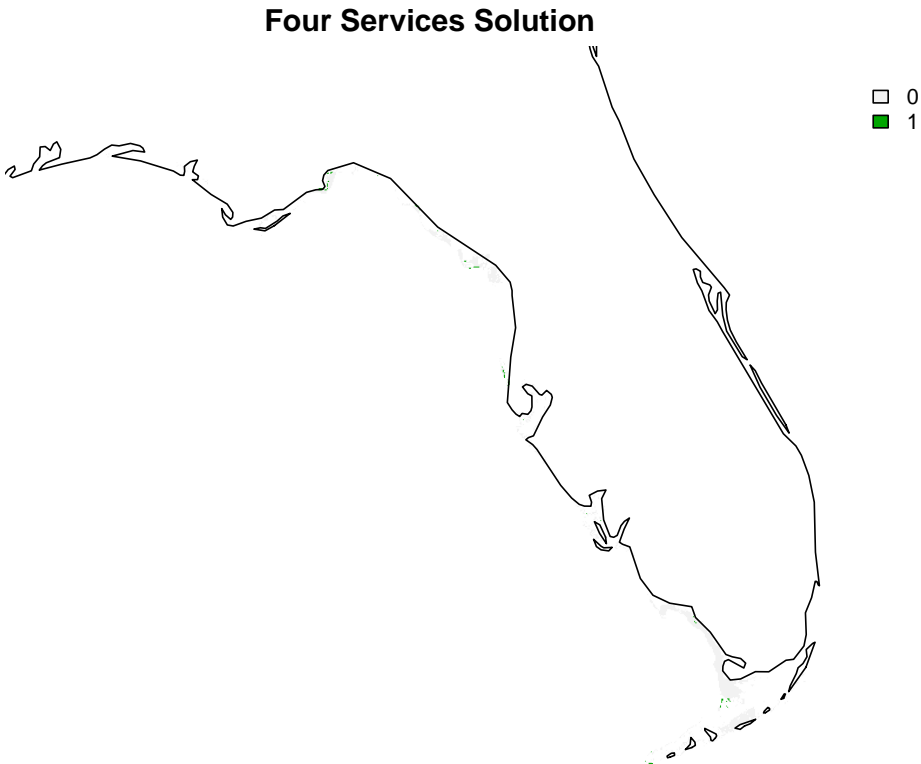
Four Services Solution

Prioritizing Potential Recovery Areas for Four Services (Biodiversity & Nursery Habitat & Blue Carbon Stock & Recreation Visitation & Coastal Protection Enhancement)

```
## # A tibble: 5 x 5
##   summary feature              total_amount absolute_held relative_held
##   <chr>   <chr>                       <dbl>         <dbl>         <dbl>
## 1 overall BioDiv_EV_Raw_PRAs          1617.          81.6        0.0505
## 2 overall NursHab_EV_Raw_PRAs          155.          13.4        0.0865
## 3 overall BlueCarbon_EV_Raw_PRAs      5499.         277.         0.0504
## 4 overall Rec_EV_Raw_PRAs             115.           5.80        0.0504
## 5 overall Exposure_EV_Raw_PRAs       10229.         515.         0.0504
```

Five Services Solution

Plotting out the number of services vs solution area