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Vista Documentation—Photo Points/GPS

Prepared by:

Alex Barry

Sam Cronkite

Steve MacDonald

Kevin Markert

Dan Peracchio

Jen Simon

George Visscher

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Vista Documentation – Photo Points / GPS

Crew Two FTY 241 Summer Camp

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Summary

Rockefeller built the carriage roads, and gave them to The National Park Service with the deal that they would maintain the vistas. The park hired three landscape firms to use aerial photography, ground truing, and historical references to establish the vistas and recommend one hundred of them for opening. They also ranked the vistas using a point system. The point system consisted of the historic value, the distribution, the vista quality, and the ecology of the site. There is ongoing research on how to maintain the vistas. The three methods are prescribed fire, herbicidal, and mechanical. The accurate mapping of these vistas is the first step of maintaining the vistas.

Our crew's goal was to obtain digital and geo-referenced data for the top twenty-five carriage road vistas in Acadia National Park, on Mount Desert Island, using Global Positioning Systems (GPS) and digital camera imagery. The GPS unit was used to accurately map the location of the vista, the photo points, and perimeters of any cleared areas. The camera images were used to record the views of the vista. This project was accomplished with the help of Acadia National Park personnel and other resources.

Once the mapping and photographs have been completed there will be a detailed description and layout of the top twenty-five vistas. This will leave the National Park Service with detailed documentation of these vistas which can be used for projects such as allowing accurate vista restoration in the future and the making of a precise map of the vista locations.

Planning and Coordination

Our crew was given initial instructions based upon the work of the students from last year's summer camp's students' work. They completed seven out of the twenty-five top ranked vistas, and we were given the task to complete the remaining eighteen. We were instructed how to correctly use GPS systems during the first week of camp, and digital camera operation was demonstrated before each crew began vista documentation. Each crew found the exact location of the vistas with the help of Park Ranger Jeff Gray. Ranger Gray led us to many of the sites and his knowledge helped with their documentation. Our crew was led by Troy Taylor and Mary Ferraro. Troy is knowledgeable with the use of GPS systems and their relevant computer programs. Our crew met to organize and discuss the data brought to us by subsequent groups.

Execution

We used many different tools and methods to collect and process our data. We used the Trimble Navigation Pro XR and Pro XL GPS receivers and an Olympus D-600L Digital Camera to collect data in the field. Once we returned to camp we used the computer programs of MapInfo and PathFinder Office to process the data. A compass and clinometer were also used to collect data, while other tools including metal rebar, hammer, and a calibrated tripod for the camera were also used. These items and instructions for their use were supplied to each crew.

Our first objective was to take a "before" photograph and document GPS information at the Eagle Lake vista. This vista was to be the site of the cable logging operation. Our purpose here was to document the vista before and after changes to it were made so that the National Park Service could see the improvements and for archival information. Previous year's crews had driven yellow-capped rebars into the ground at three points that they had determined gave the best scenic view of the vista. A photograph was taken with the digital camera from one of these points. The azimuth of the camera direction and its slope percentage were also documented with the use of a compass and clinometer, so the photograph could be accurately identified and reproduced in the future. The Pro XR GPS receiver was also used to record the precise position of the photograph.

Our objective was to begin with the GPS and photograph data collection of the remainder of the top twenty-five vistas. Jeff Gray escorted us to the vistas (numbers 240, 97, 170, 212, 59, 61, 190, 144, and 96) we were to document. At each vista we recorded background information, such as the site ID number and the National Park Service's rank of that vista. We determined the left and right edges of the vista along the road, then drove wooden stakes into the ground at either end, and piled rocks around each one. Metal rebar will eventually replace these stakes. We then used the Pro XR GPS receiver to record the position of each stake. Once this was completed two group members took several points as they walked around the perimeter of the vista so that an idea of its size and shape could be determined.

While this information was being collected, other group members drove a third stake where it was determined that park visitors would receive the optimal view of the vista, based upon original vista descriptions. Pictures were obtained using the digital camera directly over the stake. The tripod was positioned so that the base of the camera was precisely one meter off the ground, measured from where the stake went

into the ground to the top of the camera platform on the tripod. The azimuth of the camera direction was recorded with a compass set for 0 degree declination as well as the slope angle of the camera using the Suunto clinometer. We stood behind the camera and aimed the clinometer precisely where the camera was aimed to achieve this measurement. This information will allow for easy and precise repetition in the future. This prescription was followed for all other vistas except for the vistas ranking 5a and 5b, where obstructing brush would not allow the use of a camera height of one meter, so a 1.5-meter height was substituted. The azimuth and the percent slope were entered directly into the GPS unit, making the use of notebooks to record data unnecessary by our crew. Jeff Gray, however, took notes for his own records.

When our group and subsequent groups returned to camp after the day we downloaded the GPS data files and digital camera images. We used PathFinder Office to download the GPS files from the unit to the computer. MapInfo was then used to produce detailed maps of each vista. We downloaded the digital camera images and used the programs to process them. We were able to adjust the tone and color as well as condense the picture size to fit our screen so that a clearer photograph resulted. The GPS files were then exported from PathFinder to MapInfo where the data were put on a map of the carriage roads. The points were then connected to form a polygon that represented the area that the vista covered. This information was then made into a final map including a legend, scale, compass rose, title, and note section.

Conclusion

The information collected on the carriage road vistas will be useful to the National Park Service and their management and understanding of these locations. The exercise was mutually beneficial: University students gained valuable field experience, and the Park Service obtained valuable information about the vistas. Working with the GPS

units, digital camera, and computer programs exposed students to helpful resources that can be used in future classes and work experiences. We found organization in methods of collection were vital due to the multiple crews that collected data and the amount of data that required downloading and post-processing. Jeff Gray was extremely helpful to us locating the vistas, and our teaching assistants and professors were also a positive asset. This summer program is one that provides positive learning experiences and constructive results to the students, the National Park Service and the University of Maine.

Recommendations

Although the project was executed as planned there are a few points which could be addressed. During inclement weather there is no contingency plan if crews are unable to collect photographs or GPS data. Perhaps at least GPS points could have been collected if a way to properly protect the equipment could be found. Golf umbrellas may have been useful. This contributed to our inability to complete the remaining eighteen vistas, leaving nine unfinished. This would be a reasonable project for next year's camp to complete. Another unfavorable aspect of the course was its organization at times. Some days it seemed we stood around waiting for a piece of equipment or program longer than we spent doing work that day. This made the days seem longer and in turn the course. Overall, the pros outweighed the cons and with some refinement this already beneficial course could be made even better.

Digital Photograph Data

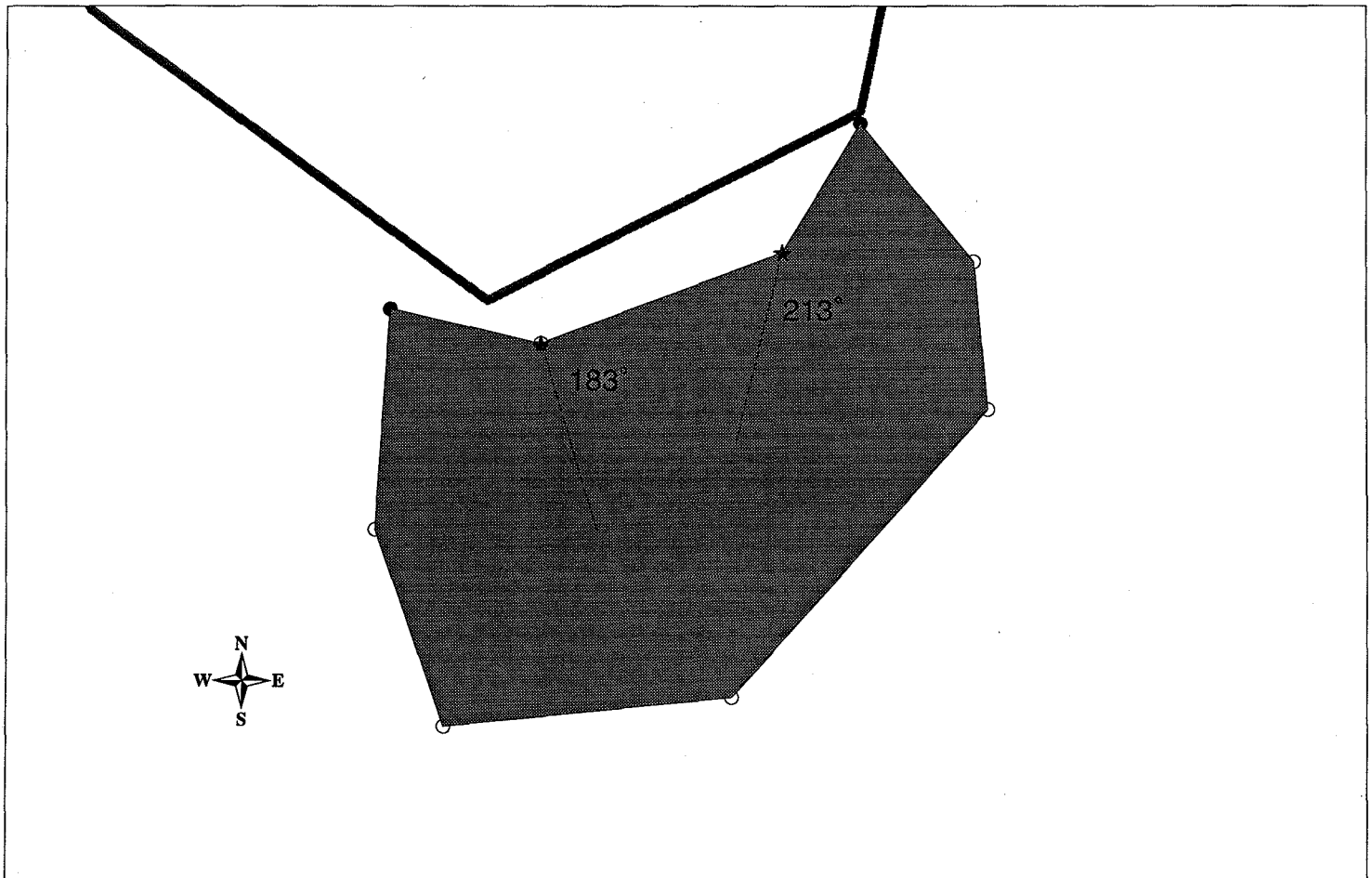
Rank-200V#	Carriage Road-Start to End Points	Distance From Start(ft)	Photo ID	True Az.	% Slope	Tripod Height (M)	View
2-212	9-11 Little Harbor Brook Road	2250-2500	A	213	1	1	Pierce Head, N.E. Harbor and Ocean
			B	183	1	1	Same
5a-59	6-7 East Eagle Lake Road	10275 - 10950 (W)	A	304	3	1.5	Conner Nubble
			B	302	1	1.5	Same
5b-61	6-7 East Eagle Lake Road - Beaver Pond	10400-10950 (E)	A	154	0	1	Farrand's Beaver Pool
5c-190a	6-7 East Eagle Lake Road - Beaver Pond	15940-16025 (NE)	A	32	5	1	Farrand's Beaver Pool
6-144	14-15 Jordan Pond Bridge	360-850	A	35	0	1	Jordan Pond and The Bubbles
11-240	36-39 Day Mountain Peak Road	740-1500	A	146	1	1	Ocean
			B	105	2	1	Same
			C	185	2	1	Same
13-97	10a-14 Jordan- Sargent Mtn Road	2200-2600	A	135	0	1	The Bubbles
			B	177	2	1	The Bubbles and Jordan Pond
18-170	16(+350)-17	3740-400	A	218	5	1	Cranberry Island
			B	218	0	1	Ocean
95-96	10a-14 Jordan- Sargent Mtn Road	865-100; 1300-2100	A	179	0	1	The Bubbles and Jordans Pond

* Magnetic Azimuths were recorded in the field and converted into true azimuths using a declination of 19° W.

Acadia National Park

Mount Desert Island, Maine

Carriage Road Vista #212-Rank #2



Legend

- Vista Area
- Corner Points
- Perimeter Points
- ★ Photo Point
- Photo Azimuth
- Carriage Road

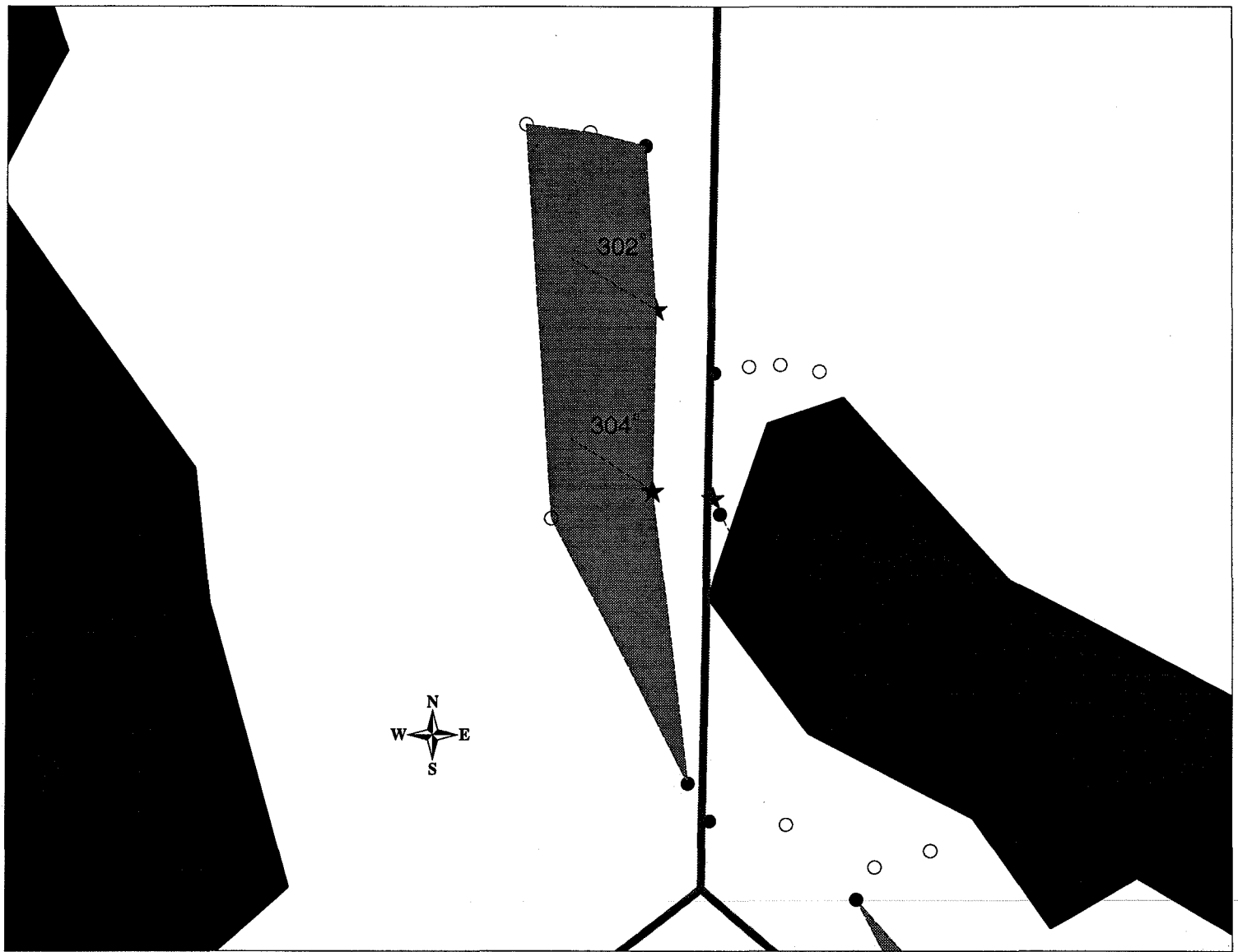
Notes

GPS data collected by Univ. of
Maine Forestry Students
GIS produced by Crew 2
Projection: UTM (NAD 27)
Date: May 29, 1998
Azimuth is to True North



Scale: 1:827

Acadia National Park Mount Desert Island, Maine Carriage Road #59- Rank #5a



Legend

-  Vista Area
-  Water
-  Carriage Road
-  Corner Point
-  Perimeter Point
-  Photo Point
-  Photo Azimuth

Notes

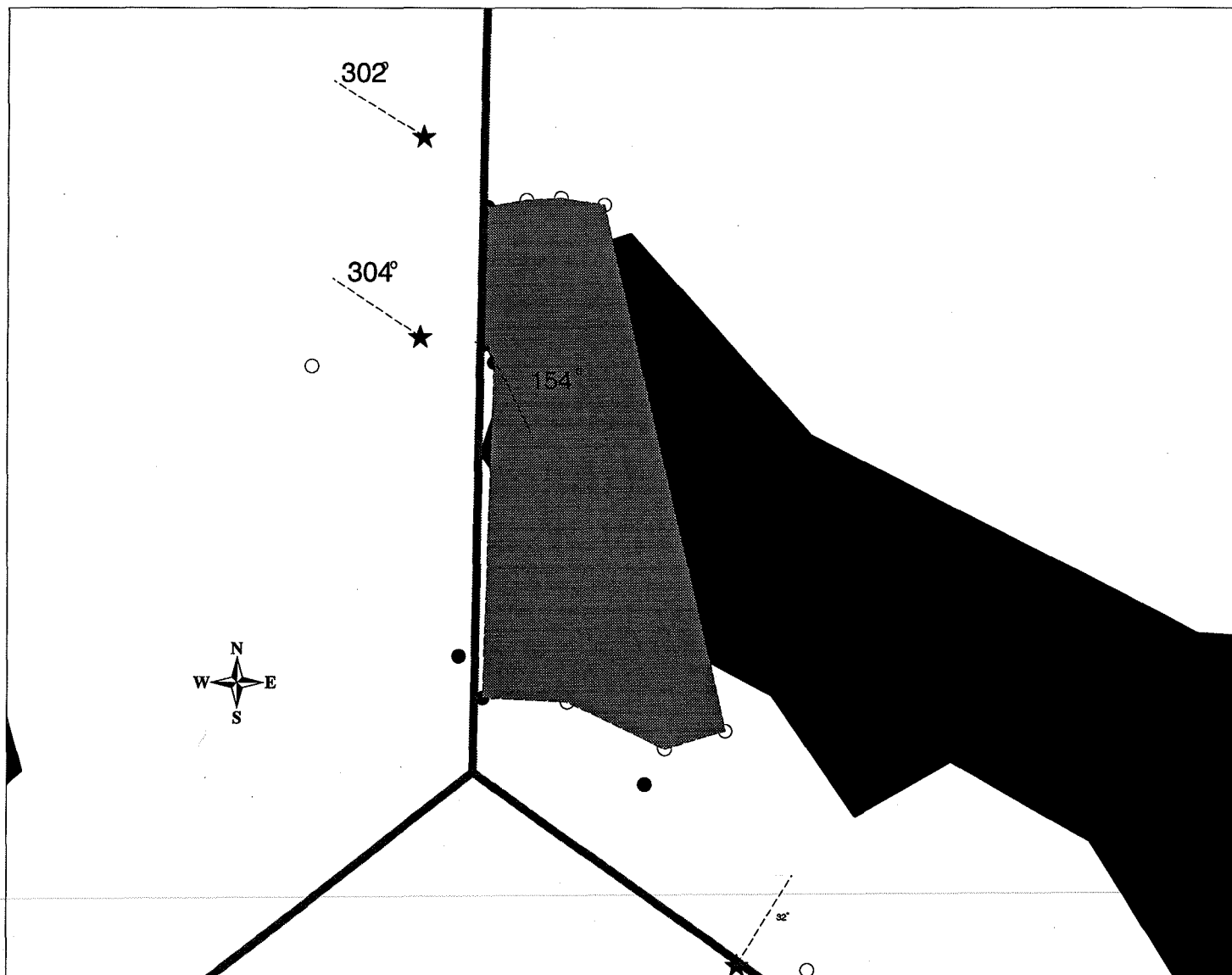
GPS Data collected by Univ. of
Maine Forestry Students
GIS produced by Crew 2
Projection: UTM (NAD 27)
Date: May 29, 1998
Azimuth is to True North

-10 0 10 20 30
Meters
Scale: 1:621

Acadia National Park

Mount Desert Island, Maine

Carriage Road Vista #61-Rank 5b

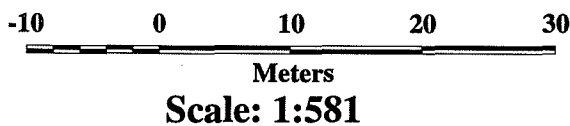


Legend

- Vista Area
- Water
- Carriage Road
- Corner Point
- Perimeter Point
- Photo Point
- Photo Azimuth

Notes

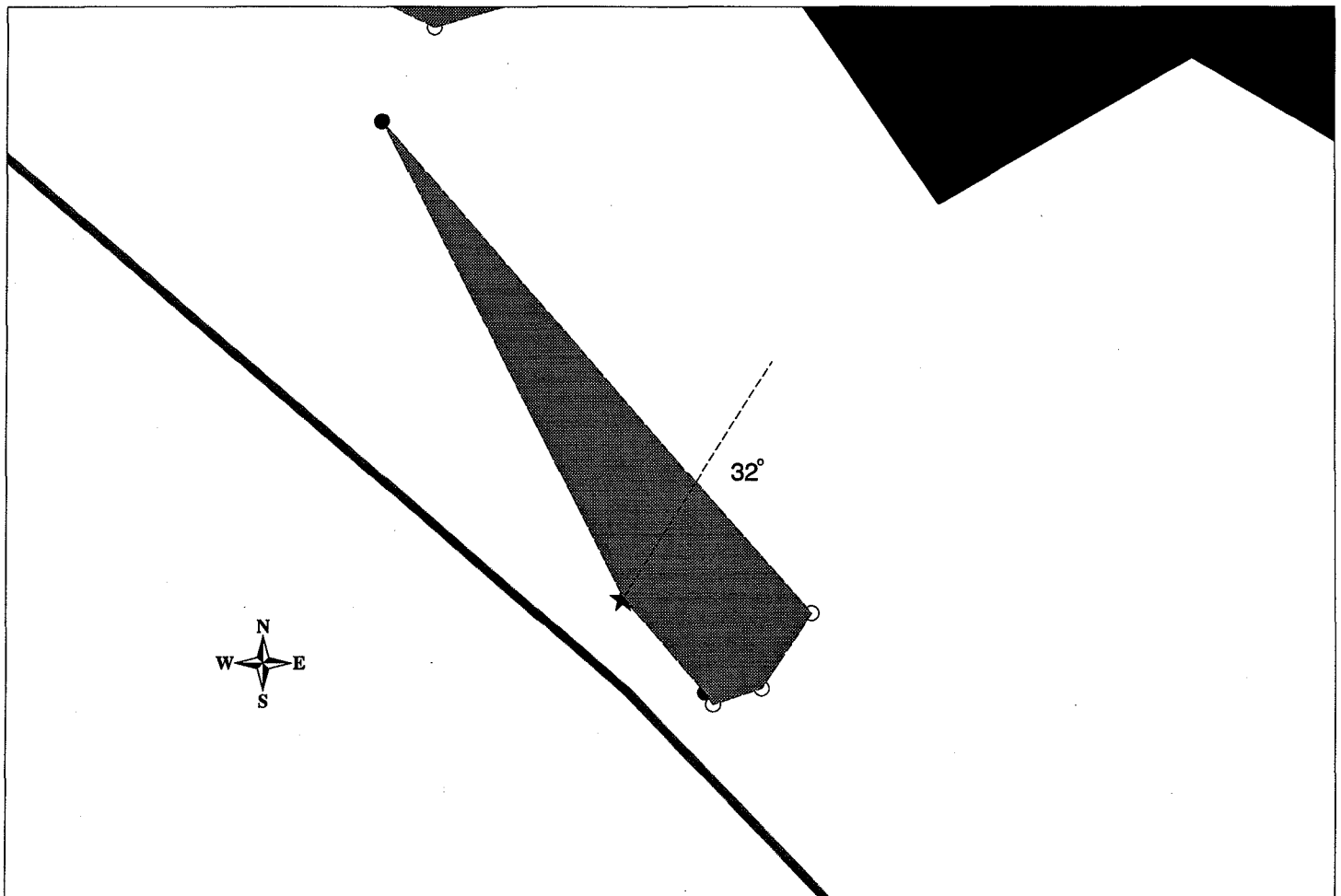
GPS Data collected by Univ. of
Maine Forestry Students
GIS produced by Crew 2
Projection: UTM (NAD 27)
Date: May 29, 1998
Azimuth is to True North



Acadia National Park

Mount Desert Island, Maine

Carriage Road # 190a-Rank #5c

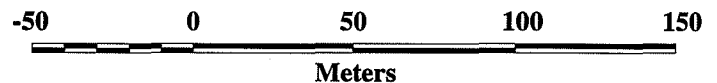


Notes

GPS Data collected by Univ. of
Maine Forestry Students
GIS collected by Crew 2
Projection: UTM (NAD 27)
Date: May 29, 1998
Azimuth is to True North

Legend

-  Vista Area
-  Water
-  Carriage Road
-  Corner Point
-  Perimeter Point
-  Photo Point
-  Photo Azimuth

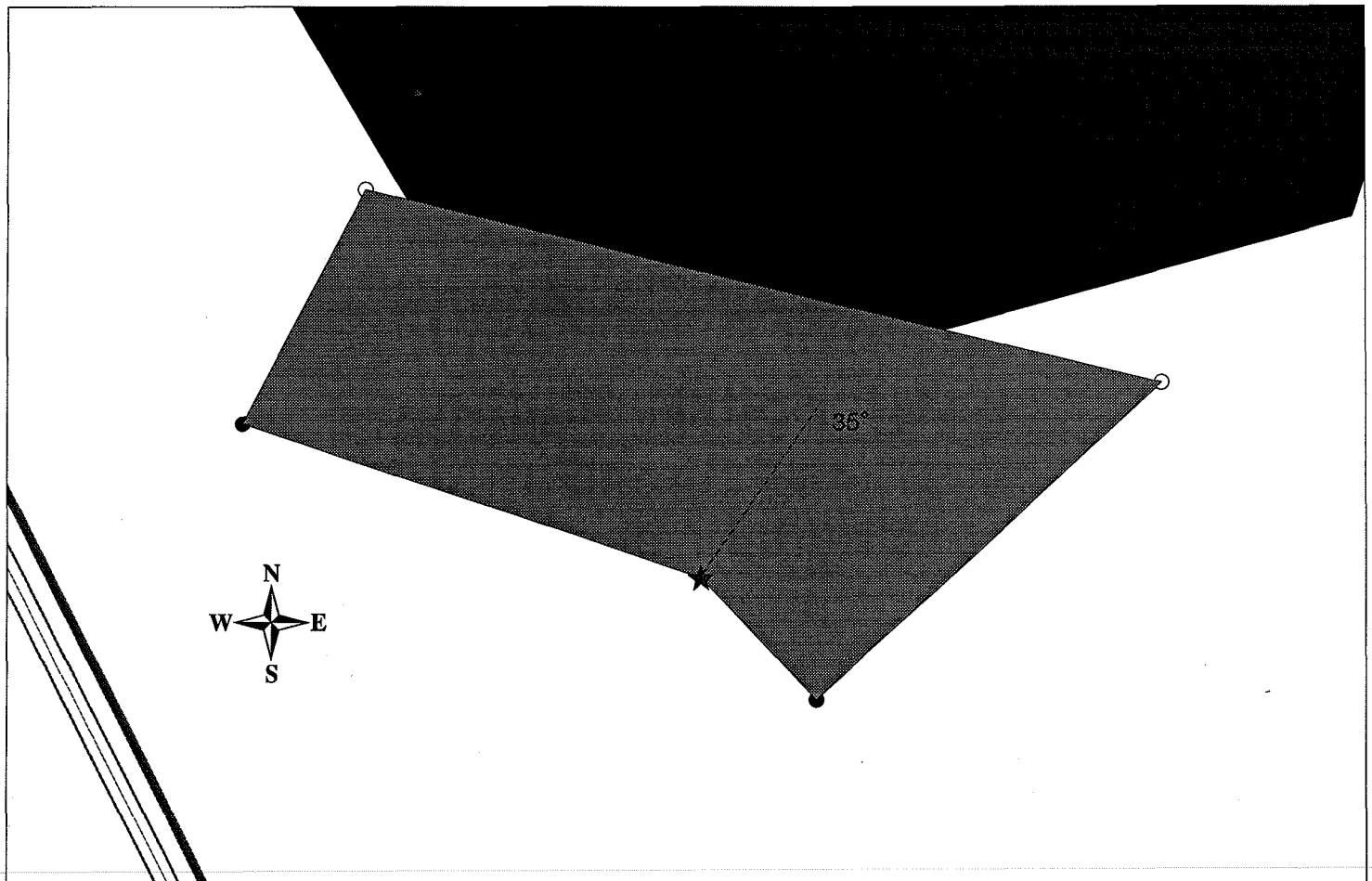


Scale: 1:2,383

Acadia National Park

Mount Desert Island, Maine

Carriage Road Vista #144-Rank #6



Legend

-  Vista Area
-  Water
-  Carriage Road
-  Corner Point
-  Perimeter Point
-  Photo Point
-  Photo Azimuth

Notes

GPS data collected by Univ. of
Maine Forestry Students
GIS produced by Crew 2
Projection: UTM (NAD 27)
Date: May 29, 1998
Azimuth is to True North

-50 0 50 100 150

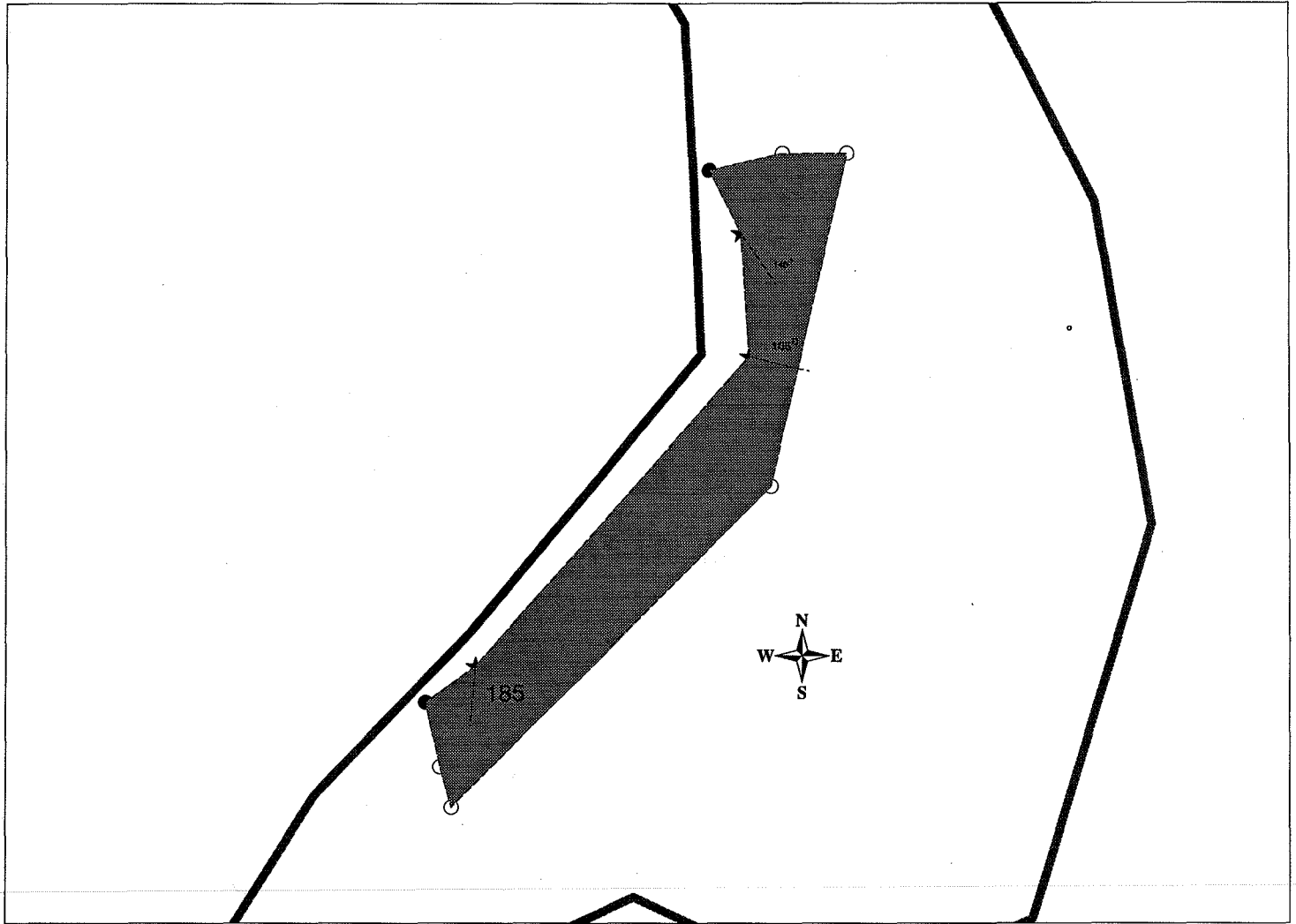
Meters

Scale: 1:2,626

Acadia National Park

Mount Desert Island, Maine

Carriage Road Vista #240-Rank #11



Legend

- Vista Area
- Corner Points
- Perimeter Points
- ★ Photo Point
- Photo Azimuth
- Carriage Road

Notes

GPS data collected by Univ. of
Maine Forestry Students
GIS produced by Crew 2
Projection: UTM (NAD 27)
Date: May 29, 1998
Azimuth is to True North

-20 0 20 40 60

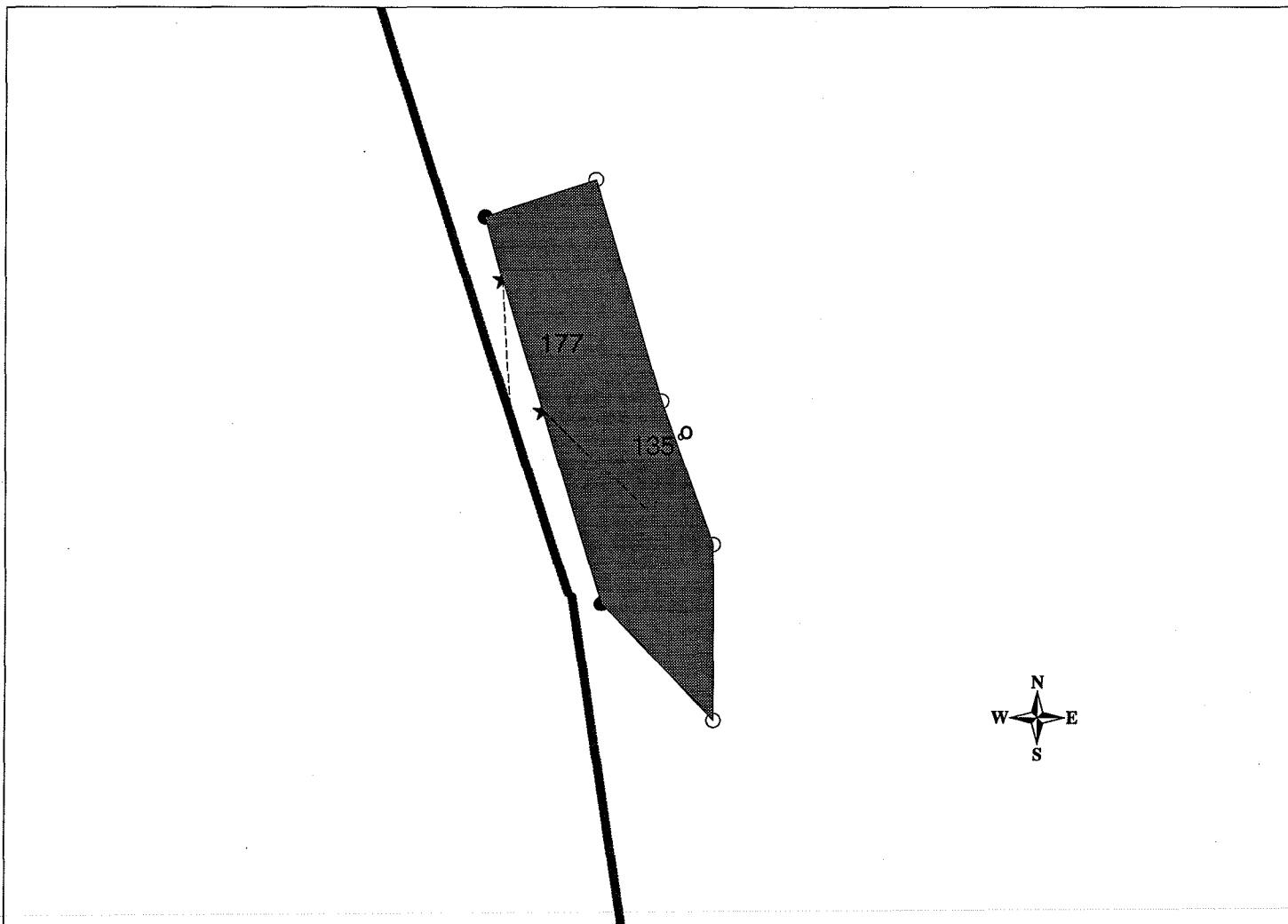
Meters

Scale: 1:1,137

Acadia National Park

Mount Desert Island, Maine

Carriage Road Vista #97-Rank #13



Legend

- Vista Area
- Corner Points
- Perimeter Points
- ★ Photo Point
- Photo Azimuth
- Carriage Road

Notes

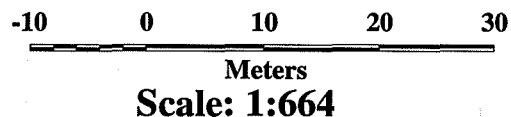
GPS Data collected by Univ. of
Maine Forestry Students

GIS produced by Crew 2

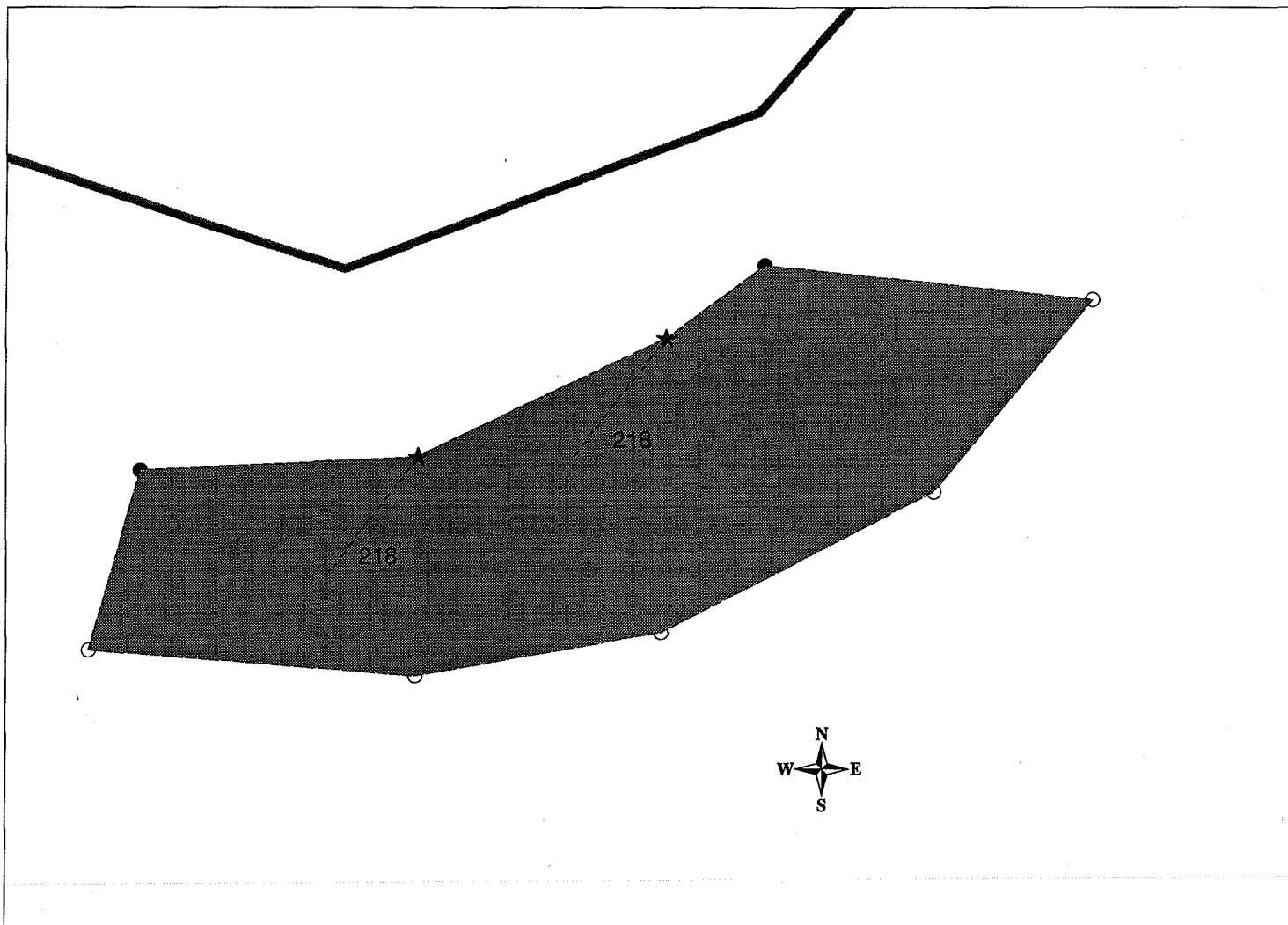
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Date: May 29, 1998

Azimuth is to True North



Acadia National Park
Mount Desert Island, Maine
Carriage Road Vista #170-Rank #18

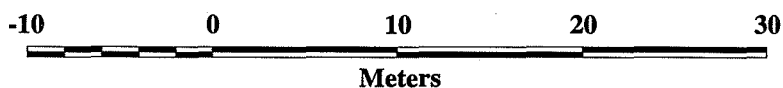


Legend

- Vista Area
- Corner Points
- Perimeter Points
- ★ Photo Point
- Photo Azimuth
- Carriage Road

Notes

GPS data collected by Univ. of
Maine Forestry Students
GIS produced by Crew 2
Projection: UTM (NAD 27)
Date: May 29, 1998
Azimuth is to True North

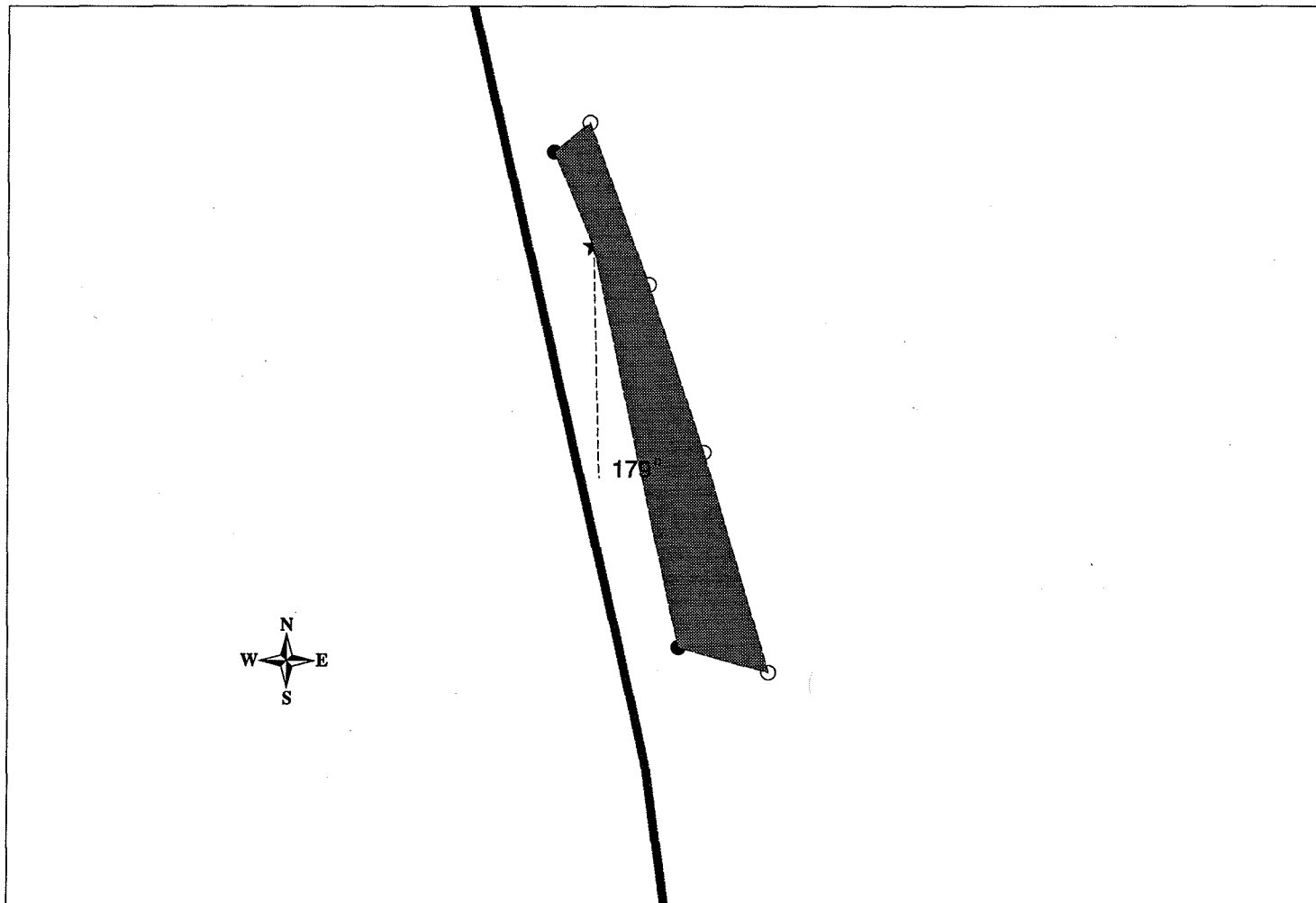


Scale: 1:415

Acadia National Park

Mount Desert Island, Maine

Carriage Road Vista #96-Rank #95



Legend

- Vista Area
- Corner Points
- Perimeter Points
- ★ Photo Point
- Photo Azimuth
- Carriage Road

Notes

GPS Data collected by Univ. of
Maine Forestry Students
GIS produced by Crew 2
Projection: UTM (NAD 27)
Date: May 29, 1998
Azimuth is True North



Scale: 1:278