ASTRONOMER INFORMATION PACKAGE

11th Annual
Acadia Night Sky Festival
September 25 to 29, 2019

The full schedule for the Acadia Night Sky Festival is listed at:
https://tinyurl.com/yaht2rbb or www.acadianightskyfestival.com

2019 ANSF OBSERVING EVENTS SUMMARY

Friday, Sept. 27, 2019, Almanac, Bar Harbor, ME Sunset: 6:23 pm, Civil Twilight: 6:52 pm Nautical Twilight: 7:26 pm **Astronomical Twilight: 8:00 pm** Moonset: 6:15 pm	Village Green LAT 44° 23' 16.5"N LON 68° 12' 17.6"W **MAG DEC 16° 4'W** Seal Cove LAT 44° 18' 18.3"N LON 68° 24' 15.7"W **MAG DEC 16° 59'W**

1:30 PM - 3:00 PM – "Celebration *of the Sun"* Solar Viewing at the Bar Harbor Village Green

- Suggested arrival time: 1:00 PM for setup
- AC Power available at Gazebo

  Note: Allow 30 minutes travel time from Village Green to Seal Cove

6:00 PM – 7:30 PM - Keynote Event: "*The Milky Way as you've never seen it before*"

- At the Criterion Theater, 35 Cottage St
- Dr. Jackie Faherty, Senior Scientist, American Natural History Museum

8:30 PM - 11:00 PM - Star Party at Seal Cove Auto Museum, 1414 Tremont Rd, Seal Cove

- No AC power available
- Suggested setup time, any time after 4:30 PM & before 7:30 PM
- Astronomers are welcome to stay, as long as they wish, for viewing

Saturday, Sept. 28, 2019, Almanac, Bar Harbor, ME Sunset: 6:21 pm, Civil Twilight: 6:50 pm Nautical Twilight: 7:24 pm **Astronomical Twilight: 7:58 pm** Moonset: 6:46 pm	Jax Lab LAT 44° 21' 55"N LON 68° 11' 50"W **MAG DEC 16° 4'W** Cadillac LAT 44° 21' 13"N LON 68° 13' 28.7"W **MAG DEC 16° 3'W** Parking lot Elevation ~1,500'

10:30 AM - 1:00 PM - Solar Viewing at Jackson Laboratory, 600 Main St, Bar Harbor

- No AC power available
- Suggested arrival time - 10:00 am for setup.

Note: Allow 25 minutes travel time from Jackson Lab to Cadillac Mtn.

There will be 4 lectures at Jackson Lab taking place simultaneously from 11:00 am – 3:00 pm.

8:00 PM - 11:00 PM - Star Party on Cadillac Mountain

- No AC power available
- Suggested setup time, between 4:30 PM & 6:30 PM

4:00 pm The Cadillac inner parking lot will be closed off to all vehicles by Park Rangers.
4:30 pm Astronomers will be allowed into the inner parking area for setup
6:30 pm Cadillac Mountain Road closed to public
7:00 pm First Shuttle departs from Mt. Desert Island H.S.
10:00 pm Last bus leaves Mt. Desert Island H.S.
11:00 pm Star Party Program ends. Please stop viewing interaction with visitors.
11:15 pm Last Shuttle bus leaves mountain, Cadillac Mountain Road opens
Note: Astronomers are welcome to stay, as long as they wish, for viewing.

ASTRONOMER GENERAL INFORMATION

VILLAGE GREEN PARKING – You may use the loading zone located at the SE corner of the Village Green for unloading and loading your telescopes. You will need to move your car once you are through unloading. A volunteer will be provided to watch over equipment while you are moving your car. Under no circumstances, should you park in the "Island Explorer Bus" parking area at the west end for unloading or loading. NOTE: this year, Bar Harbor has installed parking meters, they are in effect daily until 6:00 pm. The meters accept quarters and credit cards.

CADILLAC MOUNTAIN PASS - The Park Rangers will be looking for "*I HAVE A TELESCOPE*" placards (included in this package). Print the placard out and place it on your vehicle's dashboard. If you forget, when the Park Ranger or other assistants stop you, just tell them the secret pass phrase: "*I HAVE A TELESCOPE*".

SEAL COVE AUTO MUSEUM – The Seal Cove Auto Museum is located at 1414 Tremont Rd, Seal Cove. No AC power available. Display "I HAVE A TELESCOPE" on your dashboard.

LOCATING YOUR SCOPE – At the Cadillac Mountain viewing area, the crowd tends to bunch up at the entry point at the north end of the telescope fields (this is also the bus drop off point on Cadillac). We are expecting about 50 telescopes again this year for the Cadillac Mountain Star Party. Weather cooperating, there will be plenty of visitors. If you set up in the North 1/3 of the telescope field, you're going to see the heaviest traffic. Some of you may prefer to setup in the middle and some may prefer even a little lighter duty by setting up at the South end of the viewing area. If you have a question about the expected pedestrian flow, ask a Park Ranger or returning participants about where might be best for you to set up based on traffic flow.

HELPERS - If you're interested in coming without a telescope just to help, that's great, too! We need people to assist beginning amateurs with their questions and setup. This star party isn't just for experienced observers. An assistant can tell people what object is being viewed and perhaps even explain a little bit about the object while people are waiting in line. If your line is getting long, they can also advise people that they may wish to move a little further down the way where the telescopes aren't so congested and come back later. Remember, many of the park visitors will be amazed just to see the Milky Way the first time, so all experience levels are welcome.

Steps, Stools & Ladders – We hope that you understand that we are concerned about fall hazards when people use unfamiliar steps, stools or ladders, especially during our dark sky event. To reduce the potential of an incident during the Night Sky Festival all steps, stools, or ladders shall be:

- used for their intended purpose.
- in good condition, not damaged or dented.
- as supplied by the manufacturer and not modified.
- and supplied with a graspable handrail on each side if three or more steps in height.

The goal is no incidents, accidents, or injuries.

BUSES - This year's delivery of visitors will be the same as last year for the general public. Buses will be staged at Mt. Desert Island (MDI) High School on Route 233, 1081 Eagle Lake Road, Bar Harbor, ME.

Parking at MDI High School will require a $5.00 parking pass per car, available at, http://bit.ly/ANSFCadillac. Astronomy volunteers do not need a parking pass. Reservations and fees are only required for the general public.

TARGETS - A Meade handbox was used to generate the attached "2019 Tonight's Best" observing list. The objects are arranged in order of magnitude and will be viewable during the night. If you're looking for a few objects to prepare for, this might be a place to start. Look up a few interesting facts to share for objects you think you would like to show.

WEATHER - Clear Sky Chart Weather Prediction for Cadillac Mountain is at: http://cleardarksky.com/c/CdllcSmtMEkey.html?1

CANCELLATIONS - Star Party weather cancellation determinations will be made by 2:00 PM on the day of the event and will be posted at the Acadia Night Sky Festival Facebook Page and by telephone answering machine (listen only) at the Acadia Night Sky Festival weather cancellation line (207) 387-0807

DESCRIPTION OF THE EVENTS:

Bar Harbor Village Green: If you arrive early on Friday, September 27, please join us for solar viewing at the Bar Harbor Village Green. If you plan on participating in the Friday night Star Party at Seal Cove Auto Museum allow about 30 minutes to travel the 14 miles to Seal Cove.

The **Seal Cove Auto Museum Star Party** is a good warm-up for Saturday night. If the weather cooperates, expect crowds of 500+ people. Last year you provided 27 telescopes for viewing on Friday night. If you would like assistance with finding objects or help with your telescope, there will be plenty of willing astronomers nearby. Beginners with telescopes or tripod mounted binoculars are all welcome. If you just want to come, without equipment, to help out as an experienced observer, you're welcome to do that!

Jackson Laboratory: On Saturday, we start the events with solar viewing on the front lawn of **the Jackson Laboratory (JAX)**, just 1.6 miles south on Route 3, from downtown Bar Harbor. This is our sixth year observing at this pleasant venue and the JAX auditorium is conveniently nearby providing easy access to the many lectures. One note of caution, the Laboratory does not allow pets on their grounds due to the small risk of transmitting pathogens to their large research mouse colony. Also, Security will not allow leaving animals in vehicles because of heat. Please make other arrangements for pets. Depending on your interests, you can either continue Solar Viewing with the public during the afternoon or attend any of the lectures at the site.

The **Cadillac Mountain** parking lot and viewing field will not open for astronomers until 4:30 PM on Saturday. The lot will be closed by Park Rangers at 4:00 pm to allow it to empty out so that astronomy groups can more easily park together. Allow at least 25 minutes to travel the 7.2 miles from The Jackson Laboratory to the top of Cadillac Mountain. Visitors may start arriving before 8:00 pm so be prepared. There could be

several people observing the same object. You might query the crowd to see if they have seen your object in other telescopes. So, prepare for a few different targets in case you want to select a more unique object. You might want to be ready for visitor questions and prepare some interesting facts on index cards for your objects. In the past, the suggestion was to leave your telescope on one object for the first hour or so and then move to other objects of your choosing for the rest of the evening. Doing this will help keep your line to a manageable size. Last year the final count was 1,000 visitors observing on Cadillac. We had 53 telescopes and 3 binocular stations with 72 operators. You will have an opportunity to meet people from all across the country and likely a few from other countries around the world that are anxious to see what you have to show. And remember, many of them are excited just to see the Milky Way for the first time.

Restrooms are nearby at the gift shop, as will be hot chocolate if it's a cold evening. Bring a range of clothes. Layering, gloves, hat and a rain jacket are always a good idea for Maine's cool, evenings. You are welcome to stay as late as you wish on Cadillac for personal viewing. The moon sets at 6:46 pm on Saturday so you'll have dark skies until the end of astronomical twilight at 4:50 am. However, at 11:00 pm please stop viewings with visitors, as they will need to catch the last bus.

SIGNUP – This year sign up is being done via Doddle Poll. A Doddle Poll has been sent to either your Club's list service Gmail, your President's designated email address, or your personnel email address. If you did not receive a Doddle Poll to sign up for viewing venues, contact your Club President, or use this Doddle Poll URL:
https://doodle.com/poll/krb2txq56ebf6kyw or https://tinyurl.com/y5o7g539

When you open Doodle Poll, click on the Plus Sign (+) above the names. Fill in your name and the initials of your Club and check the events of which you would like to participate.

We are getting a late start on sign-ups for the 2019 ANSF. If you haven't signed up yet, please do so immediately. This information helps with our planning. If you think you may come, please sign up. You can edit your entry at any time.

GENERAL NUMBER – For general information about Acadia National Park –
(207) 288-5103 Bar Harbor Chamber of Commerce

EMERGENCY NUMBERS – For all emergencies dial 911

Locations of the observing sites & Astronomer events can be found on the following link: https://tinyurl.com/y66c6eur

Thanks to all of you for your tremendous support!

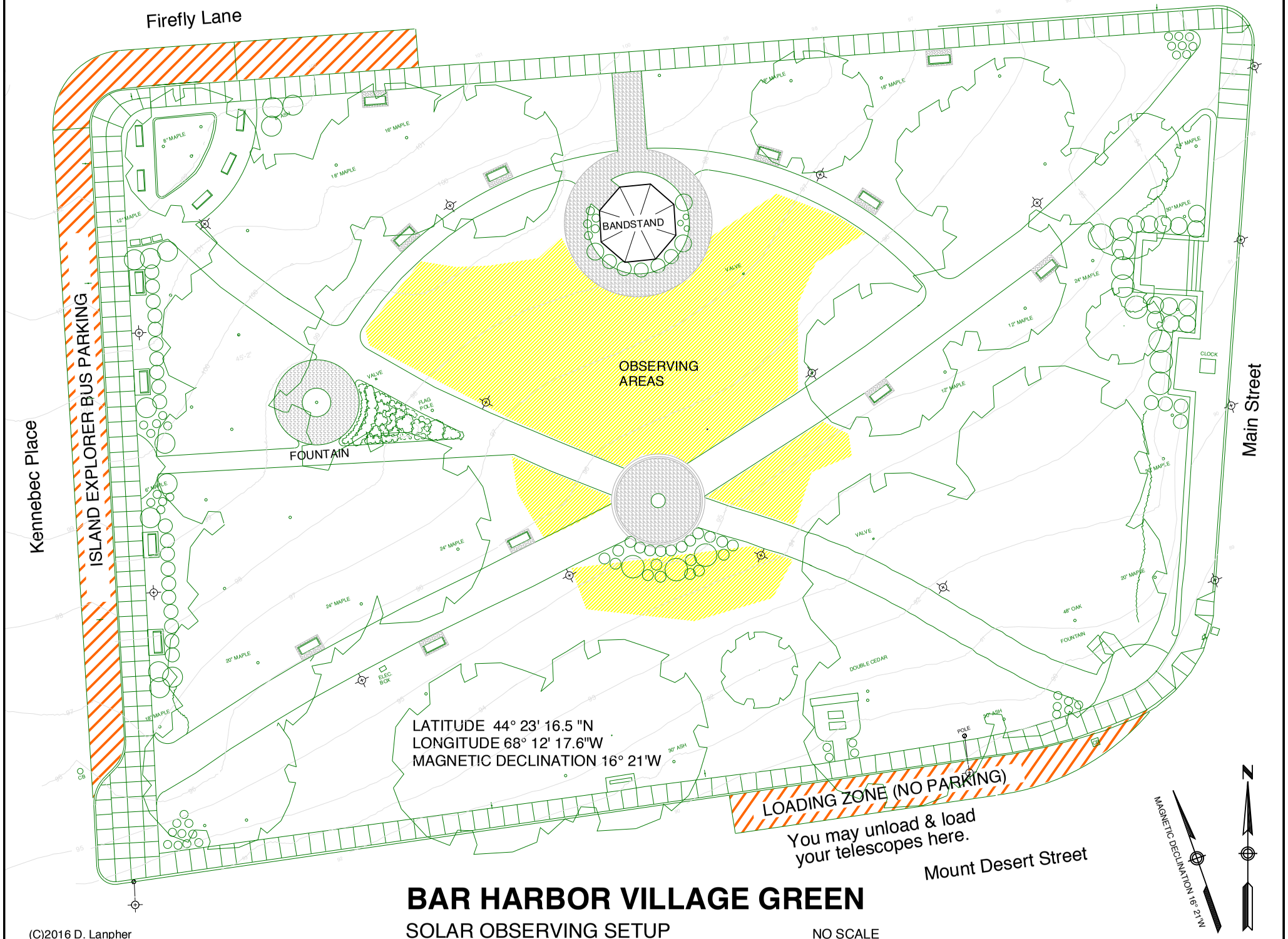
Acadia Night Sky Festival
Star Party Etiquette

The main purpose of this event is public outreach. And due to the size of this event, the rules of etiquette may be a little different than some other star parties.

- **Don't use white lights**. Visitors will be given red cellophane to put over their flashlights. If for some reason you MUST use a white light, warn others in the area before you turn it on. Please advise visitors with red headlamps that shining their lights directly into the eyes of others also disrupts night vision. The intensity of the light outweighs the fact that it's red!
- **Parking** - Astronomers are encouraged to park their cars nearby their scopes in the designated parking areas. But please be careful of your lights. Set automatic door light switches to "OFF", when you arrive, so that we won't be blinded by interior and door lights, should you need to access your car later. (Red LED bulb replacements for automobile dome & courtesy lights are available from http://www.astrogizmos.com/Bulbs.htm)
- **Setup** - There will be a lot of scopes in a large telescope area. Try to set up allowing adequate space for the crowds of people, you, and your neighbor.
- **Pack-up** - At the end of the evening, teardown and transporting equipment should be done under red light unless you have the permission of all the people in range of your lantern. Several astronomers are planning on spending all night observing and we don't want to compromise their adapted vision.
- **Wires** - Be especially careful if you use extended wiring for power or remote computer/camera connections. If you do run wires on the ground, try to locate the wires as safely as possible. Placing glow sticks next to the wires can help avert an accident to people and your equipment.
- **Laser Pointers** - Unless you are planning to do demonstrations, this is not the best venue for astrophotography. Green laser pointers will be allowed and there will be regular star tours for the public painting the sky.
- **Alignment** - Check that your scope is still pointing at your object, often! Even if you have a tracking drive, visitors sometimes knock it out of alignment using your scope to steady themselves.

- **Visitors** - Advise visitors what they can and cannot touch on your scope. Perhaps suggest holding the tripod instead of the eyepiece if they must steady themselves. Show them the location of the focuser if they ask. A dim red light for pointing out the eyepiece and focuser can be helpful.
- **Children** - Children are welcome and will be accompanied by adults. Small children should be advised to never touch any glass surface. A step stool with a handle can be extremely helpful (including for adults) as you can tell them to grip the handle instead of shaking the scope.
- **Pets** – With the large crowds and congestion, this will be an uncomfortable situation for pets. Pets will not be allowed on the buses to Cadillac or on the grounds of the Jackson Laboratory. Pets on leash in dark venues is a recipe for an accident. Please use good judgement. You may not leave them unattended in cars in the parking lot. Park regulations always require that pets be leashed and firmly under control on National Park property.
- **Music** - Music has never been an issue in the past. But there will be plenty of activity and we encourage conversations with the guests. With the congestion of telescopes and people, music would only add to the din of the crowd noise, especially for those with hearing impairments.
- **Smoking** - you should refrain from smoking in the telescope field. If you must take a break to smoke, please move several hundred feet downwind of the people and telescopes. There is no smoking allowed on the Jackson Laboratory Grounds.
- **Alcohol** - This is a public Star Party in a National Park. Public consumption of alcohol is not permitted at Solar or Star Party events.
- **Avoid loud and boisterous behavior;** but a little bit of carnival barking is probably appropriate to alert the crowds of what you are looking at.
- **Don't litter** - Find a garbage can or take it out with you.

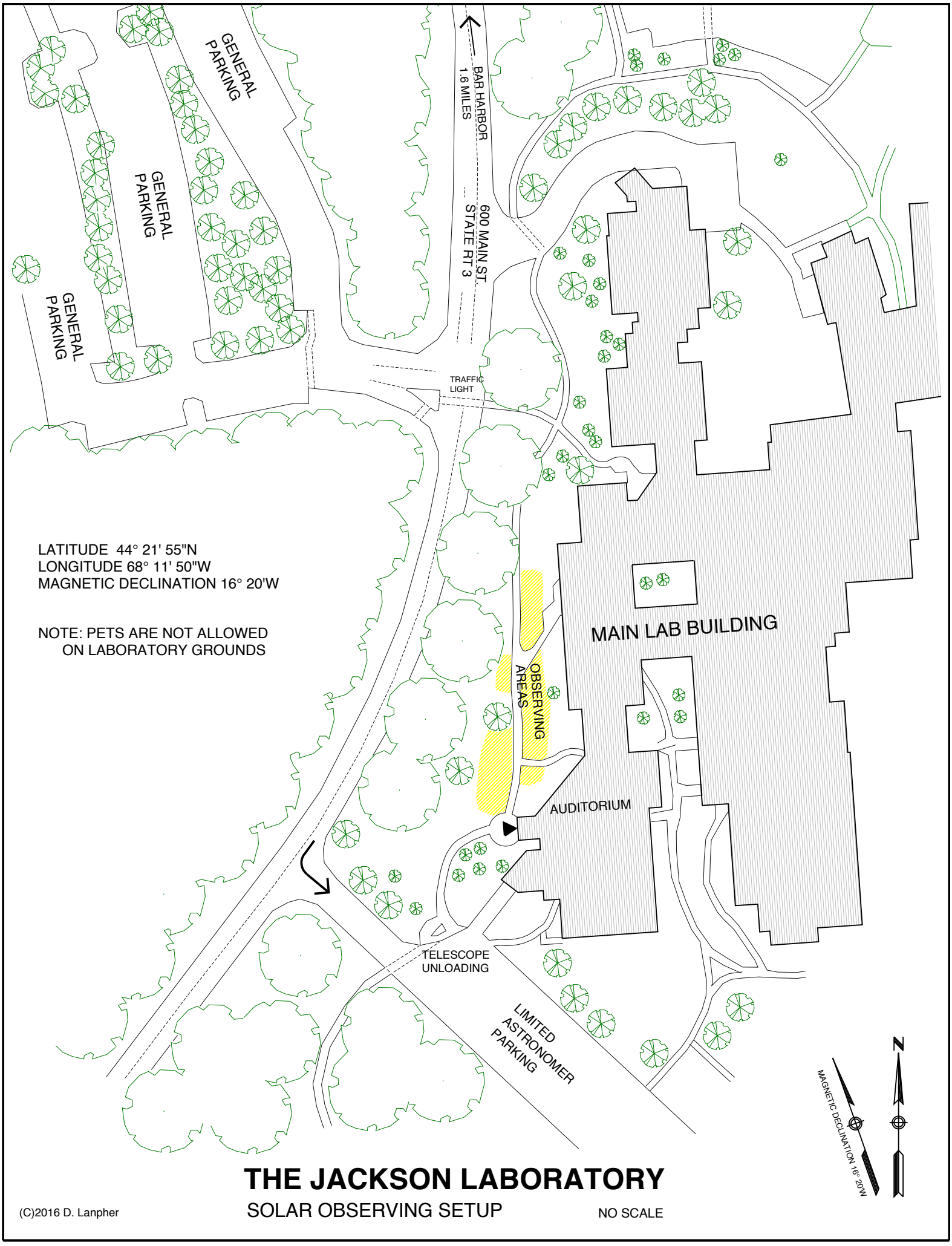
This Star Party is for beginning, as well as experienced astronomers. If you would like some assistance, try to arrive early and let the Park Rangers know your situation. We're trying to have people available to assist. There are many good targets that can be easily located. Learn how your finder works and try to make sure that your finder is properly aligned before you arrive. Hint – this is best done in the daylight, sighting your main scope on a distant target first and then aligning the finder.



BAR HARBOR VILLAGE GREEN

SOLAR OBSERVING SETUP

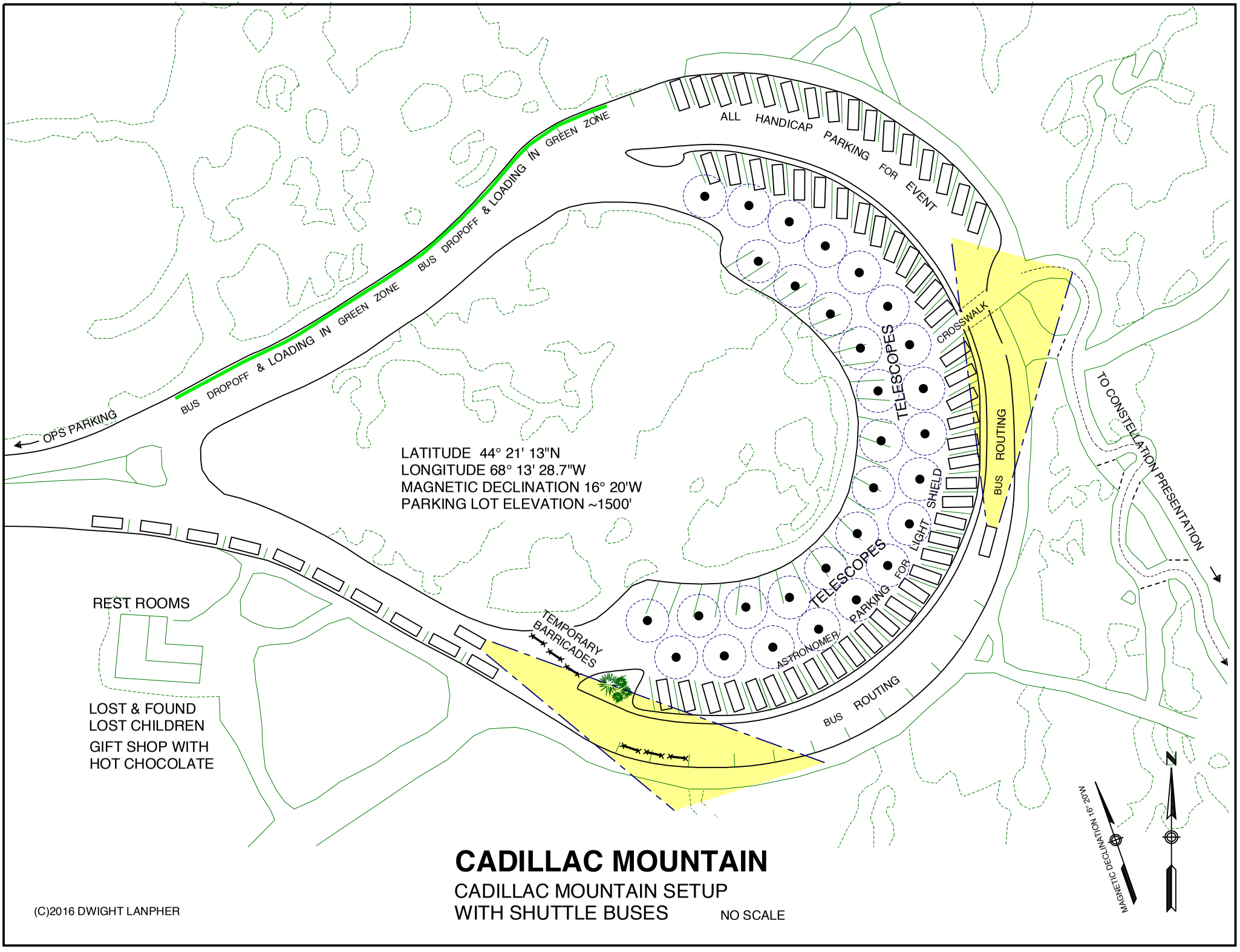
NO SCALE



THE JACKSON LABORATORY

SOLAR OBSERVING SETUP

NO SCALE



CADILLAC MOUNTAIN

CADILLAC MOUNTAIN SETUP
WITH SHUTTLE BUSES NO SCALE

I HAVE A TELESCOPE

September 2019

Bar Harbor, Maine, USA

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1 Twi A: 4:10am Twi N: 4:49am Twi: 5:25am Sunrise: 5:55am Moonrise: 8:26am Sunset: 7:11pm Twi: 7:41pm Twi N: 8:17pm Moonset: 8:50pm Twi A: 8:56pm	2 Twi A: 4:12am Twi N: 4:50am Twi: 5:26am Sunrise: 5:56am Moonrise: 9:43am Sunset: 7:10pm Twi: 7:39pm Twi N: 8:15pm Twi A: 8:53pm Moonset: 9:19pm	3 Twi A: 4:14am Twi N: 4:51am Twi: 5:27am Sunrise: 5:57am Moonrise: 10:58am Sunset: 7:08pm Twi: 7:38pm Twi N: 8:13pm Twi A: 8:51pm Moonset: 9:50pm	4 Twi A: 4:15am Twi N: 4:53am Twi: 5:28am Sunrise: 5:58am Moonrise: 12:10pm Sunset: 7:06pm Twi: 7:36pm Twi N: 8:11pm Twi A: 8:49pm Moonset: 10:23pm	5 ◐ Twi A: 4:17am Twi N: 4:54am Twi: 5:30am Sunrise: 5:59am Moonrise: 1:19pm Sunset: 7:04pm Twi: 7:34pm Twi N: 8:09pm Twi A: 8:47pm Moonset: 11:00pm First Qtr: 11:12pm	6 Twi A: 4:18am Twi N: 4:55am Twi: 5:31am Sunrise: 6:01am Moonrise: 2:24pm Sunset: 7:02pm Twi: 7:32pm Twi N: 8:07pm Twi A: 8:45pm Moonset: 11:42pm	7 Twi A: 4:20am Twi N: 4:57am Twi: 5:32am Sunrise: 6:02am Moonrise: 3:23pm Sunset: 7:00pm Twi: 7:30pm Twi N: 8:05pm Twi A: 8:42pm Moonset: none
8 Moonset: 12:29am Twi A: 4:21am Twi N: 4:58am Twi: 5:33am Sunrise: 6:03am Moonrise: 4:14pm Sunset: 6:59pm Twi: 7:28pm Twi N: 8:03pm Twi A: 8:40pm	9 Moonset: 1:22am Twi A: 4:23am Twi N: 4:59am Twi: 5:35am Sunrise: 6:04am Moonrise: 4:59pm Sunset: 6:57pm Twi: 7:26pm Twi N: 8:01pm Twi A: 8:38pm	10 Moonset: 2:19am Twi A: 4:24am Twi N: 5:01am Twi: 5:36am Sunrise: 6:05am Moonrise: 5:37pm Sunset: 6:55pm Twi: 7:24pm Twi N: 7:59pm Twi A: 8:36pm	11 Moonset: 3:18am Twi A: 4:26am Twi N: 5:02am Twi: 5:37am Sunrise: 6:06am Moonrise: 6:09pm Sunset: 6:53pm Twi: 7:22pm Twi N: 7:57pm Twi A: 8:34pm	12 Moonset: 4:18am Twi A: 4:27am Twi N: 5:03am Twi: 5:38am Sunrise: 6:07am Moonrise: 6:37pm Sunset: 6:51pm Twi: 7:21pm Twi N: 7:55pm Twi A: 8:32pm	13 Twi A: 4:29am Twi N: 5:05am Moonset: 5:19am Twi: 5:39am Sunrise: 6:09am Sunset: 6:49pm Moonrise: 7:03pm Twi: 7:19pm Twi N: 7:53pm Twi A: 8:29pm	14 ○ Full Moon: 12:34am Twi A: 4:30am Twi N: 5:06am Twi: 5:41am Sunrise: 6:10am Moonset: 6:19am Sunset: 6:47pm Twi: 7:17pm Moonrise: 7:26pm Twi N: 7:51pm Twi A: 8:27pm
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22 Twi A: 4:41am Twi N: 5:16am Twi: 5:50am Sunrise: 6:19am Moonset: 2:38pm Sunset: 6:32pm Twi: 7:01pm Twi N: 7:36pm Twi A: 8:11pm Moonrise: 11:46pm	23 Twi A: 4:42am Twi N: 5:17am Twi: 5:51am Sunrise: 6:20am Moonset: 3:34pm Sunset: 6:31pm Twi: 7:00pm Twi N: 7:34pm Twi A: 8:08pm Moonrise: none	24 Moonrise: 12:50am Twi A: 4:44am Twi N: 5:19am Twi: 5:52am Sunrise: 6:21am Moonset: 4:23pm Sunset: 6:29pm Twi: 6:58pm Twi N: 7:32pm Twi A: 8:06pm	25 Moonrise: 2:01am Twi A: 4:45am Twi N: 5:20am Twi: 5:54am Sunrise: 6:23am Moonset: 5:06pm Sunset: 6:27pm Twi: 6:56pm Twi N: 7:30pm Twi A: 8:04pm	26 Moonrise: 3:17am Twi A: 4:46am Twi N: 5:21am Twi: 5:55am Sunrise: 6:24am Moonset: 5:43pm Sunset: 6:25pm Twi: 6:54pm Twi N: 7:28pm Twi A: 8:02pm	27 Moonrise: 4:36am Twi A: 4:48am Twi N: 5:22am Twi: 5:56am Sunrise: 6:25am Moonset: 6:15pm Sunset: 6:23pm Twi: 6:52pm Twi N: 7:26pm Twi A: 8:00pm	28 ● Twi A: 4:49am Twi N: 5:23am Moonrise: 5:56am Twi: 5:57am Sunrise: 6:26am New Moon: 2:27pm Sunset: 6:21pm Moonset: 6:46pm Twi: 6:50pm Twi N: 7:24pm Twi A: 7:58pm
29 Twi A: 4:50am Twi N: 5:25am Twi: 5:58am Sunrise: 6:27am Moonrise: 7:15am Sunset: 6:19pm Twi: 6:48pm Moonset: 7:15pm Twi N: 7:22pm Twi A: 7:56pm	30 Twi A: 4:52am Twi N: 5:26am Twi: 6:00am Sunrise: 6:29am Moonrise: 8:33am Sunset: 6:18pm Twi: 6:46pm Twi N: 7:20pm Moonset: 7:45pm Twi A: 7:54pm					

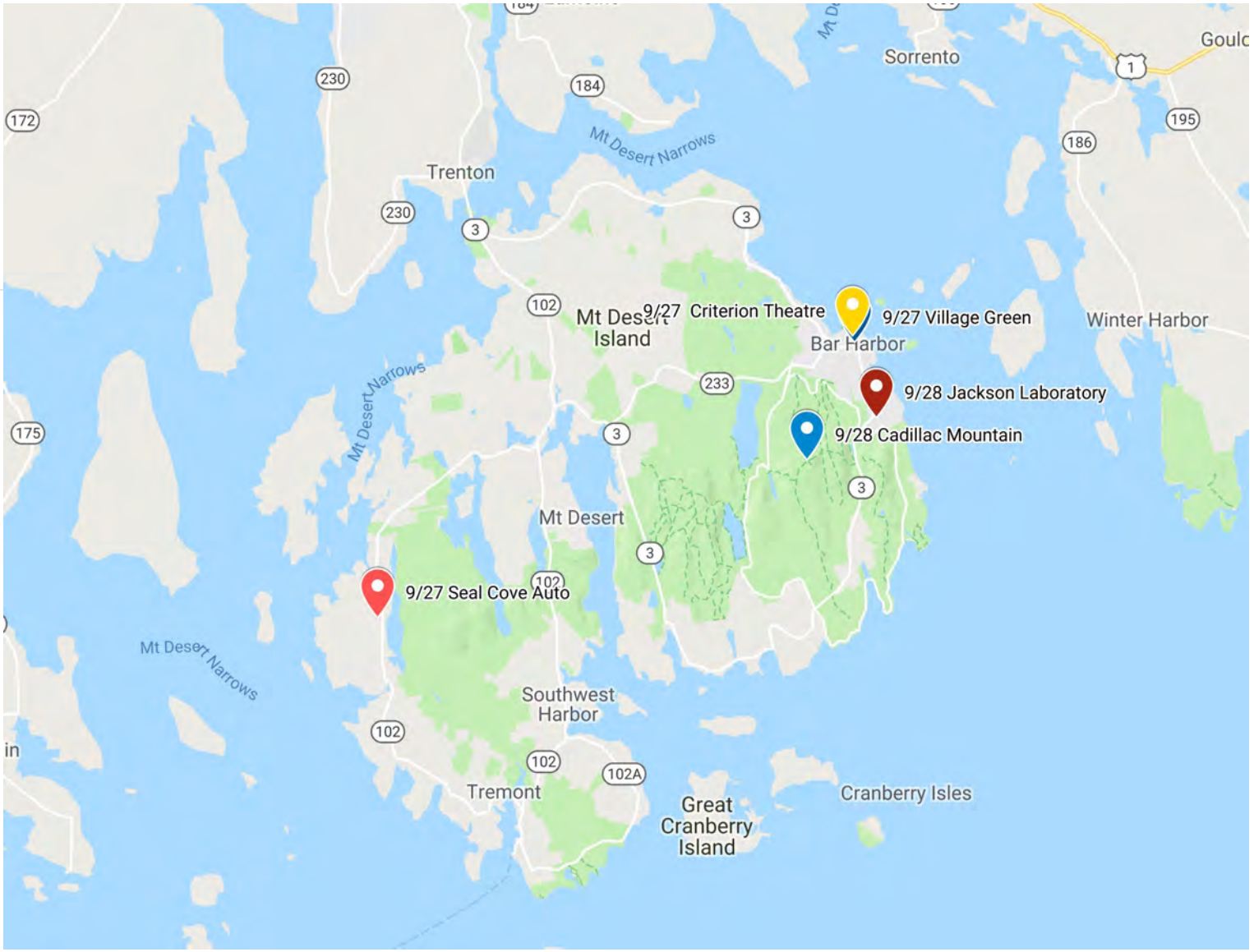
DST/Summer Time for the entire month.

2019 Acadia Night Sky Festival

Acadia Night Sky

- 9/27 Village Green
- 9/27 Seal Cove Auto
- 9/28 Jackson Laboratory
- 9/27 Criterion Theatre
- 9/28 Cadillac Mountain

Observing Events Locations Map



Meade Autostar "Tonight's Best" for September 28, 2019

Edited by d. lanpher

Seal Cove Auto Museum		Elevation ~100'		
Lat: 44° 18' 18.3" N	Lon: 68° 24' 15.7" W			
Friday, Sept 27, 2019	Declination: 16° 59' W			
Moon Sets: 18:15 hrs	Sunset: 18:23	Twi N: 19:26	A: 20:00	

Cadillac Mountain	Parking Lot Elevation ~1500'		
Lat: 44° 21' 13" N	Lon: 68° 13' 28.7" W		
Saturday Sept 28, 2019	Declination: 16° 3' W		
Moon Sets: 18:46 hrs	Sunset: 18:21	Twi N: 19:24	Twi A: 19:58

Mag	Size	L.Y.	Catalog	Name	Comment	Rise/set	Constellation	RA	Dec
Planets:									
-2.1	35"	5.2 AU	Jupiter	5th planet	9.9 hr day, 11.9 yr orb	Sets 21:28	Libra	17h 05.08'	-22°35'
1.1	16"	9.5 AU	Saturn	6th planet	rings 185,000 mi dia.	Sets 23:20	Sagitarius	18h 58.6'	-22°33'
5.6	3"	19 AU	Uranus	7th planet	Grey turq disc, 84 yr orl	Rises 19:13	Aries	02h 16.6'	13°08'
7.8	2"	30 AU	Neptune	8th planet	Blue disc, 165 yr orbit	Rises 17:16	Aquarius	23h 09.2'	-06° 34'
Double Stars:									
2/4	12'	78/81	Mizar/Alcor	Double Star	Roman Eye Test		Ursa Major	13h 24'	54° 55.3'
2.3/4.8	10"	350	Almaak	Double Star	Blue/Gold closely spaced		Andromeda	02h 04'	42° 19.8'
3.2/5.8	35"	380	Albireo	Double Star	Blue/Gold		Cygnus	19h 30.6'	27° 57'
4.7	2.3"	162	Epsilon Lyrae	The Double Double	Perpendicular to each other		Lyra	18h 44.3'	39° 38'
Globular Clusters									
5.1	16'	9600	M22	100K stars 50 LY Dia.	Globular Cluster	Sets 22:52	Sagitarius	18h 36.4'	-23° 54'
5.8	16'	25000	M05	100 LY in Dia.	Globular Cluste	Sets 23:44	Serpens	15h 18.6'	2° 4.9'
5.9	26'	7200	M04	Early resolved stars	Globular Cluster	Sets 22:52	Scorpius	16h 23.6'	-26° 32'
5.9	10'	23400	M13	Great Hercules Cluster	Brightest 160 LY dia.		Hercules	16h 41.6'	36° 27.4'
6.4	6'	39000	M15	130 LY in Dia.	Globular Cluster		Pegasus	21h 30.0'	12° 10'
6.5	12'	50000	M02	100K stars 150 LY Dia.	Globular Cluster		Aquarius	21h 33.4'	- 0° 49'
6.5	8'	25400	M92	North Hercules Cluster	Globular Cluster		Hercules	17h 17.0'	43° 8.2'
Open Clusters									
1.2	110'	444	M45	Pleiades	Open Cluster	Rises 22:20	Taurus	03hr 47.0"	24°07'
3.3	80'	980	M07	Ptolemy Cluster	Open Cluster	Sets 23:32	Scorpius	17h 53.8'	-34° 49'
4.2	14'	1585	M06	Butterfly Cluster	Open Cluster	Sets 23:36	Scorpius	17h 40.0'	-32° 13'
4.3	30'	7.6/6.8K	C14	The Double Cluster	Open Cluster NGC869/884		Perseus	02h 20.0"	57° 08'
5.5	34'	1500	M34	Open Cluster	Open Cluster		Perseus	02hr 42.0'	42° 47'
5.8	14'	5460	M11	Wild Duck Cluster	Open Cluster	Sets 00:19	Scutum	18h 51.1'	- 6° 16'
6.9	12'	5000	M52	Open Cluster	Open Cluster		Cassiopia	23h 24.2'	61° 35'
Nebulae									
6.4	24'	9000	M16	Eagle Nebula	w/ "Pillars of creation"	Sets 23:18	Serpens	18h 18.8'	-13° 47'
6.8	80'	14'	M8	Lagoon Nebula	2nd Brightest	Sets 22:17	Sagitarius	18h 03.8'	-24° 23.2'
7.5	46'	`	M17	Omega/Swan Nebula	(Upside down)	Sets 23:10	Sagitarius	18h 20.5'	-16° 10.6'
7.6	25'	714	C63	Helix Nebula	"Eye of God"	Sets 02:59	Aquarius	22h 29.6'	-20° 48'
7.6	8'	815	M27	Dumbbell Nebula	Near Casiopia		Vulpecula	19h 59.6'	22° 43.3'
8.8	76"	1140	M57	Ring Nebula	smoke ring, "The big Cheerio"		Lyra	18h 53.6'	33° 1.8'
9.0	28'	5000	M20	Trifid Nebula	Dust band in center	Sets 22:22	Sagitarius	18h 02.6'	-23° 1.8'
Galaxies									
4.8	160'	2.2M	M31	Andromeda Galaxy	Spiral Galaxy		Andromeda	00h 42.6'	41°16'
8.4	10'	15 M	M51	Whirlpool Galaxy	2 galaxies interacting		Canes Venatici	13h 29.8'	47° 11.8'
6.9	18'	4.5 M	M81	Bode's Galaxy	Spiral Galaxy		Ursa Major	09h 55.6'	69° 3.9'
8.4	8'	17 M	M82	Irregular (Cigar) Galaxy	0.6° separation from M81		Ursa Major	09h 55.8'	69° 40.8'
8.7	2'	2.2 M	M32	Elliptical Galaxy	Near Andromeda M31		Andromeda	00h 42.6'	40°52'
Stars:									
0.0	--	26.5	SAO67174	Vega, sep 62.7"	Alpha Lyrae		Lyrae	18hr 36.9'	38° 47'
-0.1	--	36.2	SAO100944	Arcturus	Alpha Bootes	Sets 23:49	Bootes	14hr 15.6'	19° 10'
0.7	--	16.7	SAO125122	Altair, sep 165.1"	Alpha Aquila		Aquila	19h 50.7'	8° 52'
0.9	--	135.8	SAO 184415	Antares, sep 3.0"	883X dia of Sun	Sets 22:58	Scorpius	16h 29.4'	-26° 25'
1.1	--	24.8	SAO 191524	Fomalhaut	Alpha Piscis Austrini	Sets 02:42	Piscis Austrini	22h 57.6'	-29° 37.3'
1.2	--	543	SAO 49941	Deneb, 75.4" Sep.	Tail of Cygnus the Swan		Cygnus	20h 41.4'	45° 16.7'
2.3	--	690	SAO127029	Enif, Mult Sep 142.5"	Epsilon Pegasi		Pegasus	21h 44.1'	09° 52.5'
4.0	--	1086	SAO33693	Hershel's Garnet Star	Mu Cephei		Cepheus	21h 43.4"	58° 46.8'