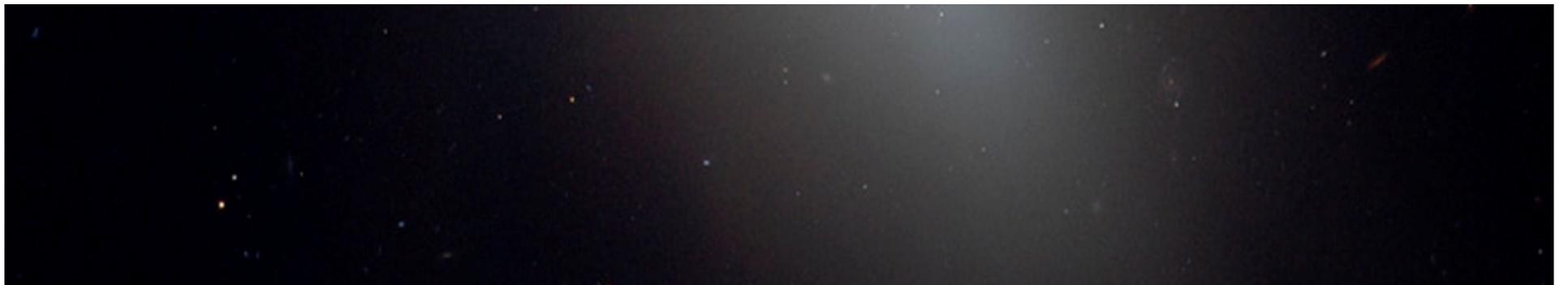


Searching Less and Flying More!

Rocket Tracking & Locating



Agenda

- Location Methods
 - Physical
 - Auditory
 - Visual
 - RF Direction Finders
 - GPS Locators
- Summary

Physical Methods

ELONGATED STREAMERS ...

PROS

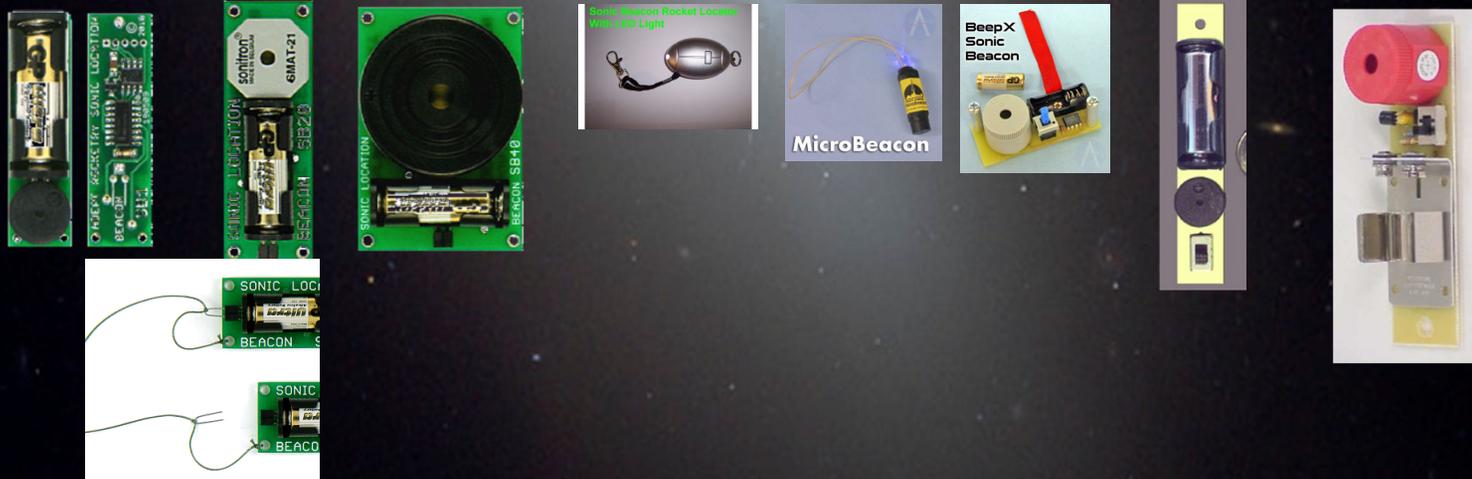
- Easy Aerial Tracking
- Light Weight
- Moderate Volume
- Inexpensive
- No Technology

CONS

- Larger Rockets
 - Insufficient Drag
- Small Rockets
 - Packing volume too large
- High Crops
 - Can't see over top of crops

Auditory Alternatives

Product	Adept SB1	Adept SB20	Adept SB40	BayouRat Rocketry Sonic Beacon	Pratt Hobbies MicroBeacon	Transolve BeepX	Transolve MicroTransBeep	Transolve MiniTransBeep
Decibels	90	95	105	120	?	105	105	103
Dimensions (in)	2Lx0.55Wx0.6D	2.7Lx0.9Wx0.63D	2.5Lx1.7Wx0.7D	<2.125W	2.54Lx0.748W	2.7Lx1.1Wx1D	3.05Lx0.6Wx0.6D	4.1Lx1.2Wx1D
Mass w/ Battery (g)	12	17	28	?	15.2	36.8	19.8	80
Battery	GP-23A	GP-23A	GP-23A	?	MBB-12	GP-23A	GP-23A	9V
Life (days)	1	1	1	?	2	0.458333333	0.5	1.25
Beep Frequency (Hz)	4,000	3,600	2,800	?	?	?	?	?
Beep Rate (sec)	2.5	2.5	2.7	?	?	?	?	?
Other Features	Pull Pin Activation	Pull Pin Activation	Pull Pin Activation	?	Flashing Light	?	?	Light Activated
Price	\$19.95	\$24.95	\$29.95	\$9.95	\$12.00	\$35.95	\$12.95	\$27.00
Web Site	www.adeptrocketry.com/locators.htm			www.bayouratrocketry.com	www.prathobbies.com	www.transolve.com/Transolve/index.html		



Auditory Alternatives

PROS

- Fairly light weight
- Small volume
- Range 100 yds to 200 yds
- Inexpensive
- Simple technology

CONS

- No aerial observation
- Need to know approximate landing area
- Hearing Capabilities
 - Degrades with Age
 - Damaged by loud sounds
- Water & noisy environments

Visual Alternatives

Product	Leading Edge Rocketry ParaLite	Pratt Hobbies MicroBeacon	Wildman Hobbies NiteBow
Lumens	35-110 (Color Dependant)	?	?
Dimensions (in)	1.675"Lx2.25"W	2.54Lx0.748W	<2.126"W
Mass w/ Battery (g)	128g	15.2	?
Battery	CR123 (2)	MBB-12	9V
Life (days)	?	2	?
Flash Rate (sec)	?	?	Slow, Medium, Fast
Other Features	Red, Green, Amber, Blue, White, Black Light UV	Sonic Beeps	19 Color Patterns - Red, Green, Blue, White
Price	\$54.95	\$12.00	\$99.00
Web Site	www.leadingedgerocketry.com	www.prathobbies.com	www.wildmanhobbies.com



Visual Alternatives

PROS

- Night flights
- Easy aerial tracking
- Moderate cost

CONS

- Daytime flights
- Need to know approximate landing area
- Thick ground cover

Radio Frequency (RF) Alternatives

Product	Communication Specialists, Inc. PT-1B	Communication Specialists, Inc. A T-2B	Walston Retrieval CA MODA 2338	Walston Retrieval CA MODA 2438	Walston Retrieval CA MODA 3750-HF	L.L. Electronics XLF (3V, 4.5V, & 6V)	L.L. Electronics LF1, 2, & 3
Frequencies (MHz)	222.070-224.970	222.070-224.970	?	?	?	User Selectable	User Selectable
Dimensions (in)	0.51"Lx1.1"W	2.63"Lx1.12"Wx0.82"D	?	?	2.5"x0.875"x0.75"	?	?
Mass w/ Battery (g)	12.8	25.5	7	8	28	6-7	4.5-6.5
Battery	CR2032	CR2032	392	392	LTC-7PN	392 (2/4), 396 (3)	392 (1,2)
Life (days)	30	7	6	6	30	7	20, 14
Power (miliWatt)	1	50	?	?	?	?	?
Range (miles)	2 ground	50 air 5 ground	30 air 3 ground	50 air 5 ground	90 air 9 ground	16-30	3, 7
Signal Rate (sec)	0.83333	0.83333	?	?	?	1	1
Other Features	18" Antenna & 2 batteries	10" Antenna & 2 batteries	19" Antenna	19" Antenna	19" Antenna		
Price	\$49.95	\$99.95	\$159.00	\$169.00	\$189.00	\$155.00	\$105.00-\$120.00
Web Site	www.com-spec.com		www.walstonretrieval.com			www.radiotracking.com	



RF Alternatives

PROS

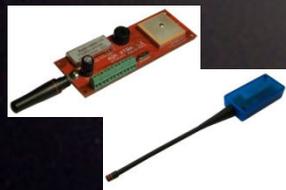
- No need to see rocket
- Moderate cost
- Day or night flights
- All field conditions

CONS

- Canals, depressions, water, RF interference, etc
- Receiver required
- Some training required

GPS Locators

Product	Big Red Bee BLGPS 2M HP	Big Red Bee BeeLine GPS	Entacore Electronics AIM XTRA/BA SE	GPS Flight ST900	GPS Flight ST900e	GPS Flight XT900	Loki ARTS2
Frequencies (MHz)	144-148, 300-1000	420-450, 902-928	433.92	902-928	902-928	902-928	900
Dimensions (in)	3.55"Lx1.2"W	3"Lx1.25"W	5.5"Lx1.25"W	3.1"Lx2.05"Wx0.75"D	2.95"Lx2.05"Wx0.8"D	2.95"Lx2.05"Wx0.8"D	3.75"Lx1.4"W
Mass w/ Battery (g)	?	56.7		65	150	150	?
Battery	7.2V Li-Po, 6AA	Onboard Li-Po	7.2V Li-Po	7.2V Li Po	Onboard Li Po	Onboard Li Po	9V
Life (days)	?	0.4	0.4	?	0.04	0.25	0.018
Power (Watt)	4-8	?	0.1	0.1/1	0.1/1	0.1	?
Range (miles)	?	20	6	20/40	15/40	20	?
Ports	Serial	Serial	USB	Serial	Serial	USB	Serial
Other Features	Patch Antenna, Duty Cycling, Ham License, Separate Base Station	Patch Antenna, Duty Cycling, Ham License, Separate Base Station	3 Axis Accel: ±16g 1 Axis Accel: 100g Baro: 45,000 ft Temp: -40°F to 250°F Duty Cycling, Ham License, includes Base Station, Helical Antenna, and Free Software	Temp: -4°F to 158°F, Separate Base Station and Software	3 Axis Accel: ±6g Baro: 30,000 ft Temp: -40°F to 248°F Separate Base Station and Software	Temp: -4°F to 158°F, Separate Base Station and Software	Includes Base Station, Antenna, & Cable
Price	\$275.00	\$259.00	\$400.00	\$399.00	\$599.00	\$899.00	\$750.00
Web Site	www.com-spec.com		www.offwegorocketry.com	www.gpsflight.com		www.lokiresearch.com	



GPS Locators

PROS

- No need to see rocket
- Minimal searching required
- Day or night flights
- Any field conditions
- Minimal training

CONS

- High Cost
- Receiver required
- No training

Note: Potential solutions such as GPS dog collars were not included since they operate on the MURS frequency band and it is illegal to place a MURS transmission antenna more than 60 feet above ground.

Summary

- GPS provides the best but highest cost solution
- RF provides the second best and second highest cost solution
- Visual locators work best for night flights
- Auditory locators work well for daylight flights where general landing area is known
- Physical locators provide good aerial visibility and ground recovery except in high crops