

DSC	Object	Con	Type	RA hm	Dec °	mv	Size '	Chart #	Min. Aperture mm	Remarks	Seen?	Quick Note
1	NGC 7822	Cep	E/RN	0 03.6	+68 37	—	60 × 30	8	300	large, faint emission nebula; rated "eeF"; also look for E/R nebula Ced 214 (associated w/ star cluster Berkeley 59) 1° ε	<input type="checkbox"/>	
2	IC 59	Cas	E/RN	0 56.7	+61 04	—	10 × 5	18	200–250	faint emission/reflection nebula paired with IC 63 very close to γ Cas.; requires clean optics; rated as "pF"	<input type="checkbox"/>	
3	NGC 609	Cas	OC	1 37.2	+64 33	11.0	3.0	17	250–300	faint patch at low power; high power needed to resolve this rich cluster (also look for Trumpler 1 cluster 3° S)	<input type="checkbox"/>	
4	IC 1795	Cas	EN	2 24.7	+61 54	—	27 × 13	29	200	brightest part of a complex of nebosity that includes IC 1805 and IC 1848; use a nebular filter	<input type="checkbox"/>	
5	Maffei I	Cas	G-E3	2 36.3	+59 39	≈14	5 × 3	29	300	heavily reddened galaxy; very faint; requires large aperture and black skies; nearby Maffei II for extremists	<input type="checkbox"/>	
6	NGC 1049	For	GC	2 39.7	−34 29	11.0	0.6	175	250–300	Class V globular in dwarf "Fornax System" Local Group galaxy 630 000 ly away; galaxy itself invisible?	<input type="checkbox"/>	
7	Abell 426	Per	G cl.	3 19.8	+41 31	12–16	≈30	43, A4	200–400	Perseus galaxy cluster 300 million ly away; mag. 11.6 NGC 1275 Perseus A at centre; see close-up chart A4	<input type="checkbox"/>	
8	NGC 1432/35	Tau	RN	3 46.1	+23 47	—	30 × 30	78, A1	100–150	Pleiades nebosity (also includes IC 349); brightest around Merope; requires transparent skies and clean optics	<input type="checkbox"/>	
9	IC 342	Cam	G-SBc	3 46.8	+68 06	≈12	17 × 17	16	200–300	large and diffuse face-on spiral; member of UMA–Cam cloud (Kemble's Cascade of stars also on this chart)	<input type="checkbox"/>	
10	NGC 1499	Per	EN	4 00.7	+36 37	—	145 × 40	60	80–125 RFT	California Nebula; very large and faint; use a wide-field telescope or big binoculars plus Hβ filter	<input type="checkbox"/>	
11	IC 405	Aur	E/RN	5 16.2	+34 16	—	30 × 19	59	200	Flaming Star Nebula associated with runaway star AE Aurigae; see Burnham's Handbook p. 285 (also look for IC 410)	<input type="checkbox"/>	
12	HH 1	Ori	E	5 36.3	−06 45	≈14.5	8"	136	250	Herbig–Haro 1; best with no filter at 250 × or more; bipolar jets from forming star; not plotted; 2.5' SW NGC 1999	<input type="checkbox"/>	
13	IC 434 / B 33	Ori	E/DN	5 40.9	−2 28	—	60 × 10	116	100–150 in dark sky!	B 33 is the Horsehead Nebula, a dark nebula superimposed on a very faint emission nebula IC 434; use Hβ filter	<input type="checkbox"/>	
14	Sh 2-276	Ori	EN	5 48.0	+1 —	—	600 × 30!	116	100–150 RFT	Barnard's Loop; SNR or interstellar bubble? difficult to detect due to size; use filter and sweep with wide field	<input type="checkbox"/>	
15	Abell 12	Ori	PN	6 02.4	+9 39	≈13	37"	96	250–300	plotted in Uranometria as PK 198.6–6.3; on NW edge of μ Orionis; OIII filter required	<input type="checkbox"/>	
16	IC 443	Gem	SNR	6 16.9	+22 47	—	50 × 40	76	250–300	faint supernova remnant very close to η Gem.; use filter (also look for NGC 2174 and Sh 2–247 on this chart)	<input type="checkbox"/>	
17	J 900	Gem	PN	6 25.9	+17 47	12.2	8"	76	200	Jonckheere 900; bright starlike planetary; plotted as PK 194.2+2.5 in Uranometria; use OIII filter & high power	<input type="checkbox"/>	
18	IC 2177	Mon	E/RN	7 05.1	−10 42	—	120 × 40	135	200–300	Seagull Nebula; large, faint; contains bright patches Gum 1 (−10°28'), NGC 2327 (−11°18') & Ced 90 (−12°20')	<input type="checkbox"/>	
19	PK 205 +14.2	Gem	PN	7 29.0	+13 15	≈13	≈700"	95	200–250	Medusa Nebula or Abell 21; impressive in large aperture w/ OIII filter	<input type="checkbox"/>	
20	PK 164 +31.1	Lyn	PN	7 57.8	+53 25	≈14	400"	26	250	Jones–Emberson 1; faint with two small components; use OIII filter; sometimes confused with nearby NGC 2474–75	<input type="checkbox"/>	
21	Leo I	Leo	G-E3	10 08.4	+12 18	9.8	10.7 × 8.3	93	300	dwarf elliptical; satellite of Milky Way; very low surface brightness; 0.3° N of Regulus! requires clean optics	<input type="checkbox"/>	
22	Abell 1367	Leo	G cl.	11 44.0	+19 57	13–16	≈60	72, A1	300–400	cluster of some 30 or more galaxies within a 1° field near 93 Leonis; Copeland's Septet nearby	<input type="checkbox"/>	
23	NGC 3172	UMi	G-Sb	11 50.2	+89 07	13.6	0.7 × 0.7	1	250	"Polarissima Borealis"—closest galaxy to the north celestial pole; small, faint, and otherwise unremarkable	<input type="checkbox"/>	
24	NGC 4236	Dra	G-SBb	12 16.7	+69 28	9.6	18.6 × 6.9	13	200–250	very large, dim barred spiral; a diffuse glow (NGC 4395 on Chart #54 a similar large diffuse face-on)	<input type="checkbox"/>	
25	Mrk 205	Dra	Q	12 21.6	+75 18	14.5	stellar	5	300	Markarian 205; a faint star on SW edge of NGC 4319; centre of redshift controversy	<input type="checkbox"/>	
26	3C 273	Vir	Q	12 29.1	+2 03	12–13	stellar	111	250–300	at 2–3 billion ly away, one of the most distant objects visible in amateur telescopes; magnitude variable	<input type="checkbox"/>	
27	NGC 4676	Com	G cl.	12 46.2	+30 44	14.lp	2 × 1	53	250	"The Mice" or VV 224—two classic interacting galaxies; very faint double nature detectable at high power	<input type="checkbox"/>	
28	Abell 1656	Com	G cl.	13 00.1	+27 58	12–16	≈60	71, A8	250–300	Coma Berenices galaxy cluster; very rich; 400 million ly away; brightest member NGC 4889; see close-up chart A8	<input type="checkbox"/>	
29	NGC 5053	Com	GC	13 16.4	+17 42	9.8	10.5	71	100–200	faint and very loose globular 1° SE of M53; requires large aperture to resolve; difficult in hazy skies; class XI	<input type="checkbox"/>	

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30	NGC 5897	Lib	GC	15 17.4	-21 01	8.6	12.6	148	150-200	large and loose; easily hidden in hazy skies at higher latitude; brightest stars mag. 13.3, main branch mag. 16.3	<input type="checkbox"/>	
31	Abell 2065	CrB	G cl.	15 22.7	+27 43	≈16	≈30	69	500 in superb sky!	Corona Borealis galaxy cluster; perhaps the most difficult object for amateur telescopes; 1.5 billion ly away	<input type="checkbox"/>	
32	NGC 6027	Ser	G cl.	15 59.2	+20 45	≈15	2 × 1	69	400	Seyfert's Sextet (6027 A-F); compact group of 6 small and very faint galaxies; see Burnham's Handbook p. 1793	<input type="checkbox"/>	
33	B 72	Oph	DN	17 23.5	-23 38	—	30	146	80-125 RFT	Barnard's dark S-Nebula or "The Snake"; opacity of 6/6; 1.5° NNE of θ Ophiuchi; area rich in dark nebulae	<input type="checkbox"/>	
34	NGC 6791	Lyr	OC	19 20.7	+37 51	9.5	16	48	200-250	large, faint but very rich open cluster with 300 stars; a faint smear in smaller instruments; Type II 3 r	<input type="checkbox"/>	
35	PK 64 +5.1	Cyg	PN	19 34.8	+30 31	9.6	8"	48	200	Campbell's Hydrogen Star; very bright but very starlike; also catalogued as star BD +30°3639	<input type="checkbox"/>	
36	M 1-92	Cyg	RN	19 36.3	+29 33	11.0	12" × 6"	48	250-300	Minkowski 1-92 or Footprint Nebula; bright, starlike reflection nebula; double at high mag; associated star invisible	<input type="checkbox"/>	
37	NGC 6822	Sgr	G-I	19 44.9	-14 48	≈11	10.2 × 9.5	125	100-150	Barnard's Galaxy; member of the Local Group; large but very low surface brightness; requires transparent skies	<input type="checkbox"/>	
38	Palomar 11	Aql	GC	19 45.2	-8 00	9.8	3.2	125	200-300	brightest of 15 heavily reddened GCs found on Sky Survey; magnitude is misleading; 11 Terzan GCs more challenging	<input type="checkbox"/>	
39	IC 4997	Sge	PN	20 20.2	+16 45	10.9	2"	84	200	bright but starlike planetary; the challenge is to see the disk! blink the field with and without a nebular filter	<input type="checkbox"/>	
40	IC 1318	Cyg	EN	20 26.2	+40 30	—	large	32, A2	80-150 RFT	complex of nebulosity around γ Cygni; multitude of patches in rich starfield; use a very wide field plus filter	<input type="checkbox"/>	
41	PK 80 -6.1	Cyg	PN?	21 02.3	+36 42	13.5	16"	47	250	the "Egg Nebula"; a very small proto-planetary nebula; can owners of large telescopes detect polarization?	<input type="checkbox"/>	
42	IC 1396	Cep	EN	21 39.1	+57 30	—	170 × 140	19	100-125 RFT	extremely large and diffuse area of emission nebulosity; use nebular filter and very wide-field optics in dark sky	<input type="checkbox"/>	
43	IC 5146	Cyg	E/RN	21 53.5	+47 16	—	12 × 12	31	200-250	Cocoon Nebula; faint and diffuse; use Hβ filter; at the end of the long filamentary dark nebula Barnard 168	<input type="checkbox"/>	
44	NGC 7317-20	Peg	G cl.	22 36.1	+33 57	13-14	≈1 ea.	46	250-300	Stephan's Quintet; 0.5° SSW of NGC 7331; easy to pick out 3 or 4 (also look for "companions" to 7331)	<input type="checkbox"/>	
45	Jones 1	Peg	PN	23 35.9	+30 28	12.1	332"	45	250-300	plotted as PK 104.2 -29.6 in Uranometria; large dim glow; OIII filter required	<input type="checkbox"/>	

DEEP-SKY CHALLENGE OBJECTS by Alan Dyer and Alister Ling

Based on the list from the 2022 RASC *Observer's Handbook*.

RA and Dec coordinates J2000.

An eclectic collection of objects designed to introduce some "fringe" catalogs while providing challenging targets for a wide range of apertures.

The Chart # column refers to Uranometria 2000.0 Deep Sky Atlas (the 2nd edition of UI).

Data for Excel file provided by James Edgar.

Excel data wrangled by Blake Nancarrow.

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