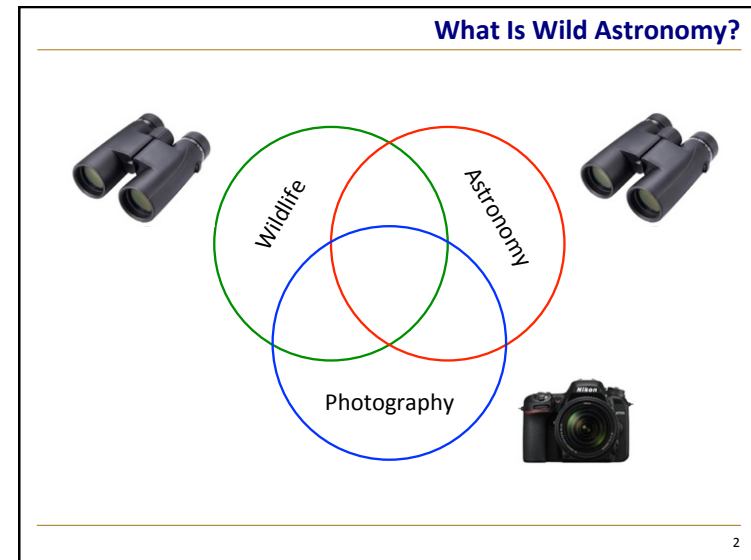


Wild Astronomy



What Are We Talking About

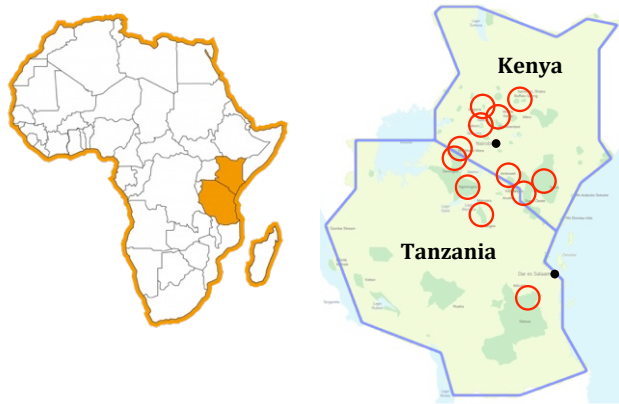
Going on Safari	Where to go, what to take
Lodges and Camps	Where to stay
Game Drives	How to see all the wildlife
Wildlife Photography	Capturing it all
Astrophotography	Under the darkest skies

3



Wild Astronomy

Kenya and Tanzania



5

Going on Safari



6

Arrival at Nairobi Airport



7

Hitting the Road



8

Wild Astronomy

Quintessential Africa



Lots of zebras, elephants and giraffes ...

... and a watering hole

9

Flying To Rufiji



Flying by bush aircraft – faster and more expensive than by road

10

Rufiji International Airport



Mtemere Airstrip, Rufiji River Camp

11

Alternative Mode of Transport



Maasai Mara

12

Wild Astronomy

Lodges and Camps

Sunbird Lodge



View from terrace of Sunbird Lodge, Lake Elementaita

14

Sunbird Lodge



Veranda of Sunbird Lodge room, Lake Elementaita

15

Sunbird Lodge



Inside Sunbird Lodge room, Lake Elementaita

16

Wild Astronomy

Mara Serena Lodge



View from terrace of Mara Serena Lodge, Maasai Mara

17

Kilaguni Serena Lodge



Terrace of Kilaguni Serena Lodge, Tsavo West National Park

18

Overlooking the Watering Hole



Terrace of Kilaguni Serena Lodge, Tsavo West National Park

19

Overlooking the Watering Hole



Terrace of Kilaguni Serena Lodge, Tsavo West National Park

20

Wild Astronomy

Eland at Sunrise



Watering hole of Kilaguni Serena Lodge, Tsavo West National Park

21

Floodlit Watering Hole



Watering hole of Kilaguni Serena Lodge, Tsavo West National Park

22

Star Trails Over Kilaguni



First attempts at astrophotography, Kilaguni Serena Lodge, Tsavo West National Park

23

Rooms On Stilts



Sunrise at Salt Lick Lodge, Taita Hills

24

Wild Astronomy

Crater View



View from Ngorongoro Lodge room, Ngorongoro Crater

25

Keekorok Lodge



Boardwalk in grounds of Keekorok Lodge, Maasai Mara

26

Oi Tukai Lodge



Oi Tukai Lodge, Amboseli National Park

27

Oi Tukai Lodge



Grounds of Oi Tukai Lodge, Amboseli National Park

28

Wild Astronomy

OI Tukai Lodge



Electric fence of OI Tukai Lodge, Amboseli National Park

29

Star Trails Over OI Tukai



First attempts at astrophotography, OI Tukai Lodge, Amboseli National Park

30

Tented Camps



Mara Sarova Game Camp, Maasai Mara

31

Tents by the River



Governors' Camp, Maasai Mara

32

Wild Astronomy

Tents by the River



Signs of a nocturnal visitor – maybe astrophotography is not such a good idea

33

Breakfast



Governors' Camp, Maasai Mara

34

Rufiji River Camp



Rufiji River Camp, Selous Game Reserve, Tanzania

35

Star Trails Over Rufiji River Camp



Nikon D70 + 18-70mm lens
Static tripod (no tracking)
120s exposures

Early attempts at astrophotography, Rufiji River Camp, Selous Game Reserve, Tanzania

36

Wild Astronomy



Pre-Dawn Cocoa



38

Our Safari 'Team'



39

Room in the Van



40

Wild Astronomy

Room in the Van



Lake Nakuru National Park

41

Do You Need a Big Telephoto Lens?



Sigma 200–500 mm

Nikon 300mm

Canon 600mm

Telephoto lenses up to 300mm are great for wildlife photography

42

Can You Get Close?



Governors' Camp, Maasai Mara

43

Can You Get Close?



Leopard walks past us, Maasai Mara

44

Wild Astronomy

Ready For a Game Drive



Waiting for a game drive at Ashnil Mara Camp, Maasai Mara

45

Chimping



Chimping after a game drive, Sweetwaters Serena Camp, Ol Pejeta Conservancy

46

Wildlife Photography



A Million Wildebeest



About 1.5 million wildebeest migrated from Tanzania to Kenya

48

Wild Astronomy

A Thousand Pelicans



Flock of pelicans, Lake Nakuru

49

Animals Are Curious About Us



Zebra (Maasai Mara) / Giraffe (Amboseli) / Lion (Serengeti)

50

Animals in the Grass



Lioness watching over her cubs in the grass, Serengeti National Park, Tanzania

51

Animals in the Grass



Elephant in the swamp, Amboseli National Park

52

Wild Astronomy

Animals in the Grass



Giraffe in the long grass, Maasai Mara

53

Zebras Grazing



Zebras grazing at sunrise, Maasai Mara

54

Starlings



Red-winged starling / Golden-breasted starling

55

Starlings



Greater blue-eared / Superb / Lesser blue-eared

56

Wild Astronomy

Little Birds



Dusky flycatcher / Rosey-patched bush-shrike / White-eyed slaty flycatcher / Common waxbill / Paradise flycatcher 57

Colourful Birds



Purple grenadier / Malachite kingfisher / Collared sunbird / Crested barbet / Red-cheeked cordon-bleu 58

White-fronted Bee-eaters



White-fronted bee-eaters, Rufiji River Camp

59

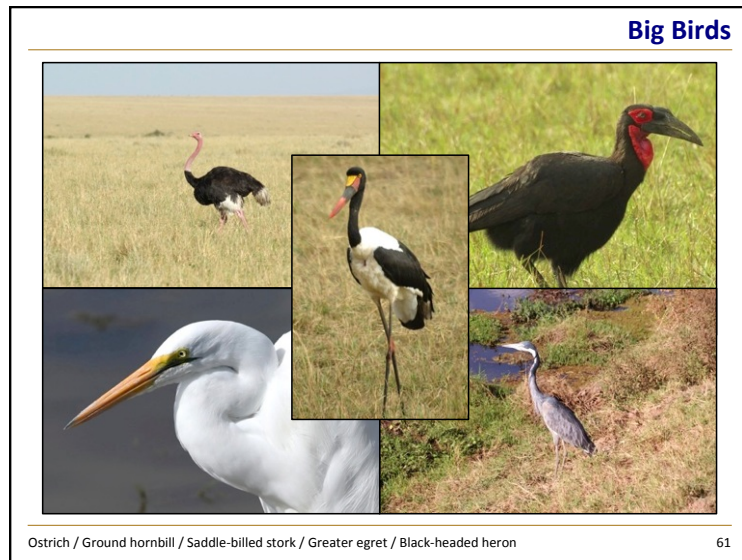
Lilac-breasted Roller



Lilac-breasted roller, Taita Hills

60

Wild Astronomy



Wild Astronomy

Patience



Tawny eagle, Tsavo West National Park

65

Bad Hair Day?



Tawny eagle, Tsavo West National Park

66

Water Birds



Black-winged stilt / Greater painted-snipe / African jacana

67

Lesser Flamingo



Lesser flamingo, Ol Tukai Lodge, Amboseli National Park

68

Wild Astronomy

Reflections



Great white pelican / Lesser flamingo / Black-headed heron / Great cormorant / Lesser flamingo

69

Reflections



Elephant (Amboseli NP) / Impala (Tsavo West NP) / Zebra (Tsavo West NP)

70

Lake Nakuru



Waterbuck / Black rhinoceros / Zebra

71

Play Fighting



Young lions play fighting, Maasai Mara

72

Wild Astronomy

Real Fighting



Lappet-faced vultures / Hippopotamus / Cape buffalo / Lion and hyenas

73

Serendipity



Crowned crane / Lion / Cheetah

74

Zebra Crossing



Zebras crossing flooded plain, Ol Tukai Lodge, Amboseli National Park

75

Yawns



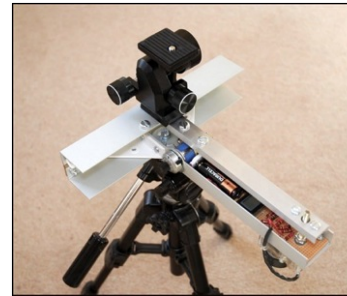
Olive baboon / Leopard / Cheetah / Hippopotamus

76

Wild Astronomy



Star Trackers



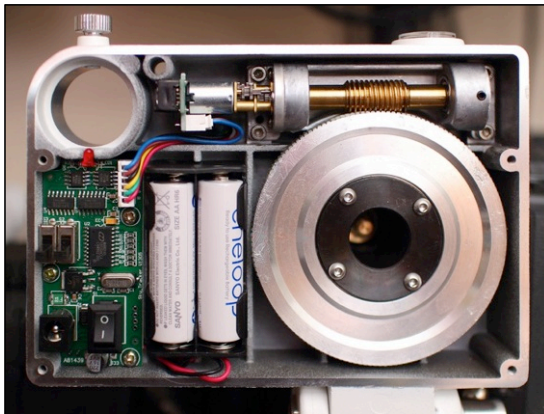
DIY star tracker 'K2' designed and built by Steve
Used 2007–2013



K2 and iOptron star trackers

78

Inside a Star Tracker



Inside the iOptron SkyTracker™

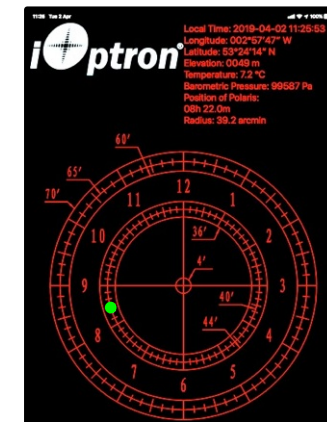
79

Aligning Using Polaris

With Polaris visible, aligning a star tracker is easy in the UK.



But ...



iOptron SkyTracker™ alignment using Polaris

80

Wild Astronomy

Aligning a Star Tracker

... when in Kenya, on the equator, things are more tricky.

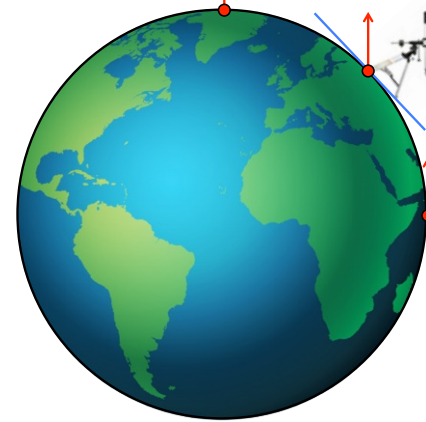


Kenya straddles the equator

81

Aligning a Star Tracker

North Celestial Pole



In East Africa the NCP and Polaris are very close to the horizon, and hence are hidden behind distant hills or elephants.

Aligning a star tracker near the equator

82

Alternative Ways To Align

To align a tracker with the North Celestial Pole, even if you can't see it, you can use a compass to find North and a spirit level to set the tracker's axis to the correct altitude (= your latitude on the Earth's surface).



But beware ...

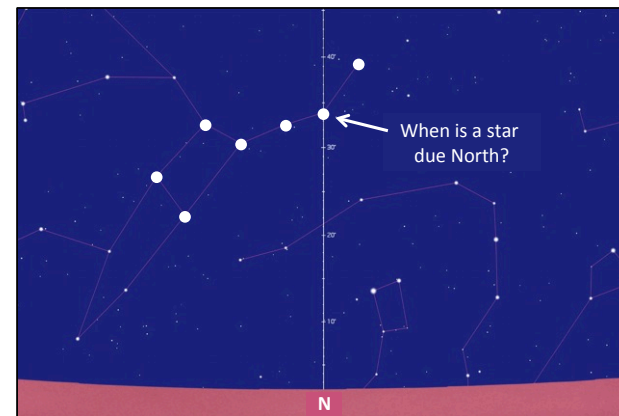


Magnetic North is not the same as True North, and a compass needle can be affected by nearby metal and motors found in, for instance, a motorised star tracker!

Aligning a star tracker using magnetic North and the latitude

83

Alternative Ways To Align



Aligning a star tracker using star transit times

84

Wild Astronomy

Milky Way



Taken by Rob / Nikon D7500 / 50mm lens @ f/2 / single 20s

85

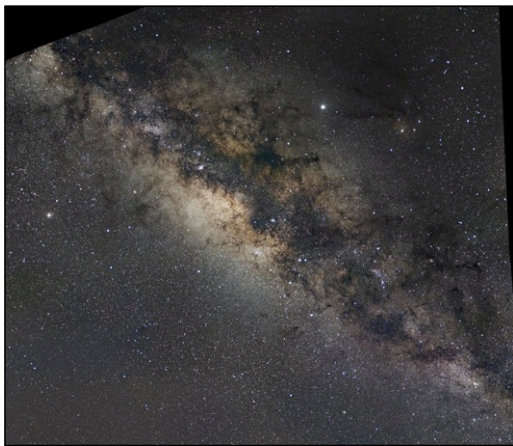
Milky Way



Taken by Rob / Nikon D7500 / 50mm lens @ f/22 / 18 x 180s

86

Milky Way



Taken by Rob / Nikon D7500 / 50mm lens @ f/2 / 10 x 20s

87

Large Magellanic Cloud

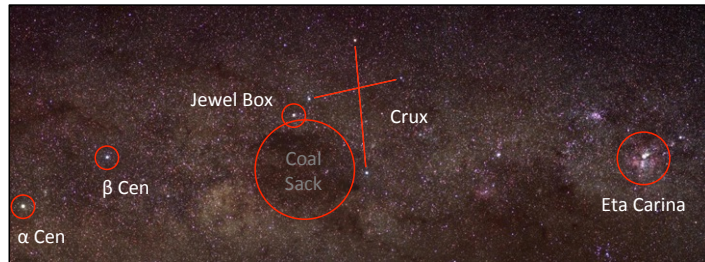


Taken by Steve / Nikon D7100 / 85mm lens / 30 x 60s

88

Wild Astronomy

Centaurus–Crux–Carina



Taken by Steve / Nikon D7100 / 35mm lens / 30 x 60s

89

Milky Way



Taken by Steve / Nikon D7500 / 35mm lens / 10 x 120s

90

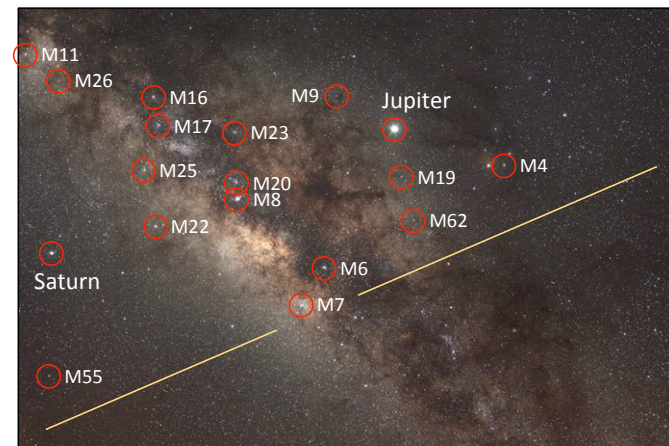
Milky Way



Taken by Steve / Nikon D7500 / 35mm lens / 10 x 120s

91

Milky Way

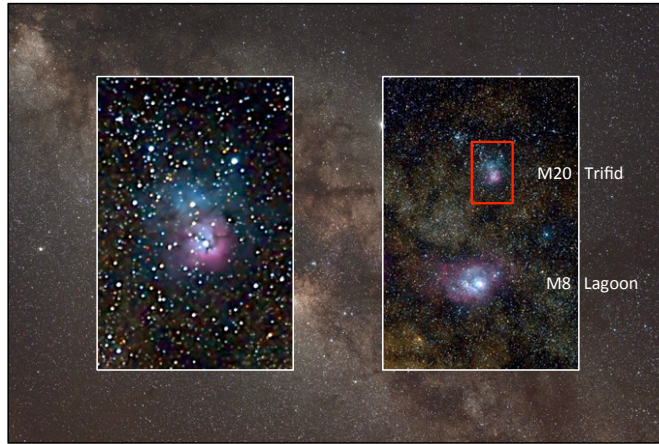


Taken by Steve / Nikon D7500 / 35mm lens / 10 x 120s

92

Wild Astronomy

Lagoon and Trifid Nebulae



Taken by Steve / Nikon D7500 / 300mm lens / 1 x 30s

93

Milky Way



Taken by Steve / Nikon D7500 / 35mm lens / 10 x 120s

94

The End(s)



95

Wildlife by day ...
... stars by night

Wild Astronomy

Sue Dipple Steve Barrett
Rob Dipple Jeff Sutton

BASoc 20 Sep 2021