

ORBITAL VISTAS

SATELLITES

VIEW THE LAND



1
00:00:10,870 --> 00:00:08,950

well i think i'll be able to see

2
00:00:12,549 --> 00:00:10,880

something with these well yeah you can

3
00:00:13,589 --> 00:00:12,559

see something but not nearly as much as

4
00:00:15,350 --> 00:00:13,599

you could see if you were using the

5
00:00:19,429 --> 00:00:15,360

hubble space telescope

6
00:00:21,349 --> 00:00:19,439

changed the way i look at outer space i

7
00:00:23,269 --> 00:00:21,359

mean from the star nurseries to all

8
00:00:25,109 --> 00:00:23,279

those galaxies there might be a little

9
00:00:26,550 --> 00:00:25,119

earth-like planet out there somewhere

10
00:00:28,310 --> 00:00:26,560

well that's true but did you know that

11
00:00:29,830 --> 00:00:28,320

when apollo astronauts took photographs

12
00:00:31,509 --> 00:00:29,840

of earth it really changed the way we

13
00:00:33,670 --> 00:00:31,519

look at ourselves in fact there are

14

00:00:34,709 --> 00:00:33,680

satellites up there all the time imaging

15

00:00:36,950 --> 00:00:34,719

different parts of the earth and

16

00:00:38,709 --> 00:00:36,960

studying it well i could talk about

17

00:00:40,790 --> 00:00:38,719

looking at the earth for a long time but

18

00:00:43,590 --> 00:00:40,800

i only have about 30 minutes

19

00:01:14,390 --> 00:00:43,600

well why only 30 well because

20

00:01:18,149 --> 00:01:16,550

hi i'm beth wilson and i'm coming to you

21

00:01:20,149 --> 00:01:18,159

live from the national air and space

22

00:01:22,550 --> 00:01:20,159

museum today we are in the space race

23

00:01:24,710 --> 00:01:22,560

gallery and in the space race gallery we

24

00:01:27,030 --> 00:01:24,720

display artifacts that help us explore

25

00:01:30,390 --> 00:01:27,040

space one of our premier artifacts is

26
00:01:32,469 --> 00:01:30,400
the apollo soyuz test project which was

27
00:01:34,390 --> 00:01:32,479
the first time americans and soviets

28
00:01:37,109 --> 00:01:34,400
worked together in space it was also

29
00:01:40,710 --> 00:01:37,119
been called the space handshake

30
00:01:42,149 --> 00:01:40,720
we also have skylab which was our first

31
00:01:44,710 --> 00:01:42,159
space station

32
00:01:47,190 --> 00:01:44,720
and behind me we have the hubble

33
00:01:49,350 --> 00:01:47,200
hubble space telescope that showed us

34
00:01:52,310 --> 00:01:49,360
all new views of space

35
00:01:54,469 --> 00:01:52,320
and galaxies now i'd like to welcome our

36
00:01:55,510 --> 00:01:54,479
audience here today friendship charter

37
00:01:57,990 --> 00:01:55,520
school

38
00:02:00,950 --> 00:01:58,000

they are here today to help us sell it

39

00:02:03,190 --> 00:02:00,960

celebrate earth day and to begin we're

40

00:02:05,270 --> 00:02:03,200

going to talk a little bit

41

00:02:07,749 --> 00:02:05,280

for you can participate online we have

42

00:02:09,830 --> 00:02:07,759

dozens standing by and if you have a

43

00:02:11,990 --> 00:02:09,840

question we may be able to answer it

44

00:02:14,630 --> 00:02:12,000

while we're doing our program so to get

45

00:02:17,110 --> 00:02:14,640

us started today we have dr jennifer

46

00:02:19,510 --> 00:02:17,120

lavasser she is one of our space history

47

00:02:20,710 --> 00:02:19,520

curators and jennifer i know that you

48

00:02:22,790 --> 00:02:20,720

have this great collection of

49

00:02:24,229 --> 00:02:22,800

photographs of the earth taken by

50

00:02:26,229 --> 00:02:24,239

astronauts so do you want to tell us a

51

00:02:27,670 --> 00:02:26,239

little bit about it sure absolutely

52

00:02:29,350 --> 00:02:27,680

astronauts have been photographing the

53

00:02:32,550 --> 00:02:29,360

earth for a really long time goes all

54

00:02:34,470 --> 00:02:32,560

the way back to 1962 when john glenn

55

00:02:36,710 --> 00:02:34,480

took the very first handheld camera to

56

00:02:38,869 --> 00:02:36,720

space and so he went up into space in

57

00:02:40,949 --> 00:02:38,879

the first orbits around the earth and he

58

00:02:42,630 --> 00:02:40,959

took a bunch of really great photographs

59

00:02:44,470 --> 00:02:42,640

so this is one of the very first ones he

60

00:02:46,630 --> 00:02:44,480

took it looks a little fuzzy but it's

61

00:02:48,390 --> 00:02:46,640

kind of hard to see out the windows

62

00:02:50,949 --> 00:02:48,400

and we started taking better and better

63

00:02:53,990 --> 00:02:50,959

cameras as the space program went on and

64

00:02:55,750 --> 00:02:54,000

so you could see how he saw clouds and

65

00:02:58,149 --> 00:02:55,760

eventually scientists would study those

66

00:02:59,670 --> 00:02:58,159

images ed white went outside his

67

00:03:04,070 --> 00:02:59,680

spacecraft for the very first time on a

68

00:03:06,630 --> 00:03:04,080

spacewalk in june of 1965 and he his

69

00:03:08,149 --> 00:03:06,640

image of him outside the spacecraft was

70

00:03:10,149 --> 00:03:08,159

really important for understanding what

71

00:03:12,470 --> 00:03:10,159

it was like to be in space you could see

72

00:03:13,830 --> 00:03:12,480

him floating which was really cool but

73

00:03:16,229 --> 00:03:13,840

also really important for how we

74

00:03:19,190 --> 00:03:16,239

understand what astronauts do

75

00:03:20,710 --> 00:03:19,200

on apollo 8 in 1968

76

00:03:22,470 --> 00:03:20,720

they actually took this photograph from

77

00:03:24,229 --> 00:03:22,480

the moon it was the first time people

78

00:03:26,470 --> 00:03:24,239

had gone around the moon and this is

79

00:03:28,630 --> 00:03:26,480

called earthrise and what it shows is

80

00:03:30,229 --> 00:03:28,640

how fragile the earth is it's just that

81

00:03:32,630 --> 00:03:30,239

little ball hanging out there in the

82

00:03:34,309 --> 00:03:32,640

blackness of space and so we really

83

00:03:35,270 --> 00:03:34,319

started to think a different way about

84

00:03:37,350 --> 00:03:35,280

earth

85

00:03:38,949 --> 00:03:37,360

during the apollo 17 mission which was

86

00:03:41,430 --> 00:03:38,959

the last time astronauts went to the

87

00:03:43,670 --> 00:03:41,440

moon they photographed the earth as they

88

00:03:45,589 --> 00:03:43,680

left earth and you can see the whole

89

00:03:47,110 --> 00:03:45,599

thing this is the first time ever that

90

00:03:49,589 --> 00:03:47,120

astronauts could photograph the earth

91

00:03:51,190 --> 00:03:49,599

without any shadows and so you could see

92

00:03:53,270 --> 00:03:51,200

how clear it is but also all those

93

00:03:54,789 --> 00:03:53,280

beautiful clouds in the atmosphere and

94

00:03:55,990 --> 00:03:54,799

so this is really the beginning of a

95

00:03:58,390 --> 00:03:56,000

movement to think about earth in a

96

00:04:00,390 --> 00:03:58,400

different way okay so they took these

97

00:04:02,470 --> 00:04:00,400

photos with cameras now i'm assuming

98

00:04:05,429 --> 00:04:02,480

that they're not like my iphone that i

99

00:04:06,949 --> 00:04:05,439

can click on unfortunately no astronauts

100

00:04:09,270 --> 00:04:06,959

needed a lot more equipment back

101
00:04:11,429 --> 00:04:09,280
especially in the 1960s cameras were not

102
00:04:13,350 --> 00:04:11,439
digital like your phones or a little

103
00:04:15,509 --> 00:04:13,360
pocket camera you might have today

104
00:04:18,629 --> 00:04:15,519
astronauts started using hasselblad

105
00:04:19,509 --> 00:04:18,639
cameras hasselblad is a swedish camera

106
00:04:20,629 --> 00:04:19,519
always

107
00:04:22,710 --> 00:04:20,639
very

108
00:04:24,710 --> 00:04:22,720
common in professional photography but

109
00:04:26,950 --> 00:04:24,720
it's a really great camera it's very

110
00:04:28,550 --> 00:04:26,960
durable and so astronauts used it and

111
00:04:30,790 --> 00:04:28,560
you can see that hasselblad made some

112
00:04:32,390 --> 00:04:30,800
changes for astronauts astronauts often

113
00:04:34,469 --> 00:04:32,400

wear gloves when they're in their

114

00:04:36,390 --> 00:04:34,479

spacesuits and so they made this really

115

00:04:39,030 --> 00:04:36,400

big tab on the side so that they could

116

00:04:41,270 --> 00:04:39,040

change the focus of the lens

117

00:04:43,350 --> 00:04:41,280

it also uses what's called a magazine

118

00:04:45,110 --> 00:04:43,360

and this is where they keep the film now

119

00:04:47,110 --> 00:04:45,120

cameras are not digital but we're not

120

00:04:48,710 --> 00:04:47,120

digital back then so there's actually a

121

00:04:50,710 --> 00:04:48,720

roll of film inside it was a roll of

122

00:04:52,870 --> 00:04:50,720

film inside here and this particular

123

00:04:53,909 --> 00:04:52,880

magazine was used during most of the

124

00:04:56,150 --> 00:04:53,919

imaging

125

00:04:58,070 --> 00:04:56,160

on the way to the moon during the apollo

126
00:05:00,070 --> 00:04:58,080
11 mission and the apollo 11 mission is

127
00:05:01,510 --> 00:05:00,080
the first time people landed on the moon

128
00:05:02,950 --> 00:05:01,520
so it makes this camera really really

129
00:05:05,189 --> 00:05:02,960
special so this one went up with the

130
00:05:06,870 --> 00:05:05,199
apollo 11 mission and we have a couple

131
00:05:08,469 --> 00:05:06,880
of photos actually from that mission

132
00:05:10,230 --> 00:05:08,479
from this camera shall we take a look at

133
00:05:11,830 --> 00:05:10,240
them we do and what's really cool about

134
00:05:13,510 --> 00:05:11,840
some of these photos is just how clear

135
00:05:15,350 --> 00:05:13,520
they are hasselblad's were known for

136
00:05:17,029 --> 00:05:15,360
their quality and so you can see these

137
00:05:19,189 --> 00:05:17,039
are really clear images they're

138
00:05:20,950 --> 00:05:19,199

beautiful the astronauts photographed

139

00:05:22,469 --> 00:05:20,960

their way as they were leaving earth

140

00:05:24,550 --> 00:05:22,479

they also photographed each other this

141

00:05:26,550 --> 00:05:24,560

is michael collins he was the command

142

00:05:28,390 --> 00:05:26,560

module pilot during the mission he was

143

00:05:30,710 --> 00:05:28,400

also the director of the museum when it

144

00:05:32,550 --> 00:05:30,720

first opened uh and then you can also

145

00:05:34,070 --> 00:05:32,560

see things as they approach the moon

146

00:05:35,670 --> 00:05:34,080

because that was their final destination

147

00:05:37,110 --> 00:05:35,680

was landing on the moon and so they

148

00:05:40,230 --> 00:05:37,120

started photographing it as they got

149

00:05:41,590 --> 00:05:40,240

closer okay so we i think we've got some

150

00:05:45,830 --> 00:05:41,600

questions we're going to start with an

151
00:05:51,189 --> 00:05:48,469
what kinds of cameras do astronauts use

152
00:05:53,909 --> 00:05:51,199
to take photos in space today well

153
00:05:55,830 --> 00:05:53,919
what's great is about 15 years ago nasa

154
00:05:57,590 --> 00:05:55,840
finally transitioned to using digital

155
00:05:59,990 --> 00:05:57,600
cameras and it makes it much easier to

156
00:06:02,469 --> 00:06:00,000
take photos you can only get about 200

157
00:06:03,990 --> 00:06:02,479
photos on this camera but on a camera

158
00:06:06,150 --> 00:06:04,000
that they would use today a digital

159
00:06:07,670 --> 00:06:06,160
camera they can take thousands of

160
00:06:09,110 --> 00:06:07,680
photographs and they just send them back

161
00:06:10,950 --> 00:06:09,120
to earth sometimes you see them right

162
00:06:12,790 --> 00:06:10,960
away even on a place like twitter or

163
00:06:14,230 --> 00:06:12,800

facebook okay

164

00:06:17,590 --> 00:06:14,240

and we have an audience question do you

165

00:06:19,590 --> 00:06:17,600

have a camera question for us yes

166

00:06:23,029 --> 00:06:19,600

hello my name is jimmy and i'm from

167

00:06:25,510 --> 00:06:23,039

princetonville pearce and my question is

168

00:06:28,629 --> 00:06:25,520

that when you know that when you have a

169

00:06:30,790 --> 00:06:28,639

satellite when you take pictures

170

00:06:33,189 --> 00:06:30,800

what kind of pictures like what kind of

171

00:06:35,029 --> 00:06:33,199

camera do you use when you take pictures

172

00:06:36,230 --> 00:06:35,039

what kind of now there's a difference

173

00:06:38,230 --> 00:06:36,240

between

174

00:06:39,590 --> 00:06:38,240

these cameras and the cameras we find on

175

00:06:41,670 --> 00:06:39,600

satellites correct absolutely the

176

00:06:43,830 --> 00:06:41,680

cameras on satellites and even on later

177

00:06:45,430 --> 00:06:43,840

apollo spacecraft we're much bigger they

178

00:06:47,909 --> 00:06:45,440

have a really big lens and they're able

179

00:06:50,390 --> 00:06:47,919

to zoom in on things that are much much

180

00:06:52,710 --> 00:06:50,400

smaller and so they can see very wide

181

00:06:55,430 --> 00:06:52,720

areas but the resolution which is how

182

00:06:56,629 --> 00:06:55,440

clear that image is is much higher

183

00:07:01,430 --> 00:06:56,639

okay

184

00:07:06,070 --> 00:07:04,230

do we have an online question why is a

185

00:07:08,150 --> 00:07:06,080

telescope in space better than a

186

00:07:09,990 --> 00:07:08,160

telescope on the ground fantastic

187

00:07:11,749 --> 00:07:10,000

question there's one major difference

188

00:07:13,990 --> 00:07:11,759

between using a telescope on the ground

189

00:07:16,150 --> 00:07:14,000

and in space and there's the atmosphere

190

00:07:17,990 --> 00:07:16,160

the atmosphere makes images from earth

191

00:07:19,510 --> 00:07:18,000

not quite as good and clear as they

192

00:07:21,510 --> 00:07:19,520

would be from space so when you put

193

00:07:23,430 --> 00:07:21,520

something like hubble out in orbit it

194

00:07:25,510 --> 00:07:23,440

can take much clearer pictures of things

195

00:07:27,670 --> 00:07:25,520

that are very very far away thank you so

196

00:07:29,749 --> 00:07:27,680

much jennifer no problem now jennifer

197

00:07:31,589 --> 00:07:29,759

showed us what happened when astronauts

198

00:07:33,749 --> 00:07:31,599

took photos of the earth now we're going

199

00:07:39,110 --> 00:07:33,759

to take a look at what happens when

200

00:07:43,029 --> 00:07:41,270

hey andrew what are you doing oh i'm

201
00:07:45,510 --> 00:07:43,039
looking at these satellite images of the

202
00:07:47,510 --> 00:07:45,520
earth the earth

203
00:07:49,589 --> 00:07:47,520
that's right the earth

204
00:07:51,029 --> 00:07:49,599
that doesn't look like the kind of globe

205
00:07:52,309 --> 00:07:51,039
we have in the classroom i can see

206
00:07:54,390 --> 00:07:52,319
clouds but

207
00:07:55,990 --> 00:07:54,400
not borders yeah that's right a lot of

208
00:07:58,070 --> 00:07:56,000
times the globes we have in classrooms

209
00:08:00,309 --> 00:07:58,080
are political maps they show different

210
00:08:03,350 --> 00:08:00,319
countries this one is a physical map it

211
00:08:05,430 --> 00:08:03,360
shows things like continents oceans

212
00:08:07,589 --> 00:08:05,440
and forests and deserts and swirling

213
00:08:09,830 --> 00:08:07,599

clouds it's the kind of view that we can

214

00:08:11,189 --> 00:08:09,840

only get from outer space

215

00:08:13,029 --> 00:08:11,199

what we're seeing here we're zooming

216

00:08:14,869 --> 00:08:13,039

into southern africa at this point on

217

00:08:16,309 --> 00:08:14,879

the globe

218

00:08:18,469 --> 00:08:16,319

and we're actually looking at something

219

00:08:20,390 --> 00:08:18,479

called the okavango delta it's a part of

220

00:08:22,469 --> 00:08:20,400

southern africa where the river the

221

00:08:24,550 --> 00:08:22,479

okavango river flows from the upper left

222

00:08:27,430 --> 00:08:24,560

to the lower right then it slowly dries

223

00:08:29,830 --> 00:08:27,440

out as it enters a into a desert area

224

00:08:30,869 --> 00:08:29,840

so this is the same picture of the same

225

00:08:32,709 --> 00:08:30,879

place

226

00:08:34,870 --> 00:08:32,719

these two images were collected at the

227

00:08:37,430 --> 00:08:34,880

exact same time by the exact same

228

00:08:38,949 --> 00:08:37,440

satellite called landsat 7. why are they

229

00:08:40,070 --> 00:08:38,959

different colors though well they're

230

00:08:42,469 --> 00:08:40,080

different colors because they're

231

00:08:45,110 --> 00:08:42,479

actually using different wavelengths of

232

00:08:46,630 --> 00:08:45,120

light wavelengths of light yeah there

233

00:08:48,710 --> 00:08:46,640

are many different wavelengths of light

234

00:08:50,550 --> 00:08:48,720

some of them we can see with our eyes

235

00:08:52,790 --> 00:08:50,560

our eyes have retinas and they're

236

00:08:54,230 --> 00:08:52,800

sensitive to red green and blue light

237

00:08:55,910 --> 00:08:54,240

but there are other wavelengths of light

238

00:08:57,590 --> 00:08:55,920

that we can't see with our eyes but

239

00:08:59,269 --> 00:08:57,600

they're really useful for understanding

240

00:09:02,070 --> 00:08:59,279

the earth for instance there are a lot

241

00:09:03,670 --> 00:09:02,080

of wavelengths of infrared light and

242

00:09:06,150 --> 00:09:03,680

that's what we see here on the image on

243

00:09:08,389 --> 00:09:06,160

the right all of this red stuff shows

244

00:09:11,030 --> 00:09:08,399

reflectance from sunlight in near

245

00:09:13,350 --> 00:09:11,040

infrared light and do we have a machine

246

00:09:15,750 --> 00:09:13,360

that'll do this or is it done once the

247

00:09:17,430 --> 00:09:15,760

photos taken no we actually launch into

248

00:09:19,829 --> 00:09:17,440

space different kinds of imaging

249

00:09:22,150 --> 00:09:19,839

detectors that can see visible

250

00:09:24,150 --> 00:09:22,160

wavelengths of light and also infrared

251
00:09:26,389 --> 00:09:24,160
wavelengths and and others one of those

252
00:09:28,310 --> 00:09:26,399
machines is actually sitting right here

253
00:09:30,230 --> 00:09:28,320
in the exhibit it was actually a sensor

254
00:09:31,350 --> 00:09:30,240
called the multi-spectral scanner it was

255
00:09:33,030 --> 00:09:31,360
actually launched in a series of

256
00:09:35,829 --> 00:09:33,040
satellites called landsat starting in

257
00:09:37,430 --> 00:09:35,839
the 1970s up through the 1980s five of

258
00:09:39,670 --> 00:09:37,440
them were launched and they collected

259
00:09:41,430 --> 00:09:39,680
images that look like these this is just

260
00:09:44,230 --> 00:09:41,440
a small part what if i want something

261
00:09:46,949 --> 00:09:44,240
big like the state of hawaii if you want

262
00:09:48,630 --> 00:09:46,959
to sow a big part of the earth one of

263
00:09:50,470 --> 00:09:48,640

the things you can do is actually take

264

00:09:52,389 --> 00:09:50,480

images like these that cover maybe a

265

00:09:54,389 --> 00:09:52,399

couple hundred miles on the side and put

266

00:09:56,230 --> 00:09:54,399

them together in a computer program

267

00:09:58,630 --> 00:09:56,240

making what we call a mosaic and that

268

00:10:01,030 --> 00:09:58,640

way you can cover large areas that show

269

00:10:04,069 --> 00:10:01,040

things like vegetation cover or desert

270

00:10:06,069 --> 00:10:04,079

areas volcanoes oceans anything you want

271

00:10:07,910 --> 00:10:06,079

to see on the earth and why is it

272

00:10:09,110 --> 00:10:07,920

important that we collect these images

273

00:10:11,110 --> 00:10:09,120

well one of the things that we're trying

274

00:10:12,710 --> 00:10:11,120

to do with all of these images is we

275

00:10:14,389 --> 00:10:12,720

look and see how the earth changes

276

00:10:16,069 --> 00:10:14,399

through time we want to understand

277

00:10:17,829 --> 00:10:16,079

what's on the surface of the earth and

278

00:10:20,150 --> 00:10:17,839

we do that by collecting these different

279

00:10:22,230 --> 00:10:20,160

wavelengths and that's important because

280

00:10:24,150 --> 00:10:22,240

different kinds of things on the earth

281

00:10:25,910 --> 00:10:24,160

absorb and reflect different wavelengths

282

00:10:27,269 --> 00:10:25,920

of light so using these kinds of

283

00:10:29,990 --> 00:10:27,279

machines we can tell the difference

284

00:10:32,630 --> 00:10:30,000

between forests and grasslands and

285

00:10:34,470 --> 00:10:32,640

deserts any kind of vegetation and ocean

286

00:10:35,990 --> 00:10:34,480

cover and then by collecting images at

287

00:10:37,590 --> 00:10:36,000

different times we can see how it

288

00:10:41,829 --> 00:10:37,600

changes through time well thanks for

289

00:10:46,790 --> 00:10:44,790

well so now that andy has showed us some

290

00:10:48,470 --> 00:10:46,800

of these images from space we're going

291

00:10:54,550 --> 00:10:48,480

to have a quiz to see how well you can

292

00:10:59,590 --> 00:10:57,750

hello and welcome to stem it to win it

293

00:11:01,750 --> 00:10:59,600

in today's edition we have a tough

294

00:11:03,750 --> 00:11:01,760

challenge for our friends here i'm going

295

00:11:06,150 --> 00:11:03,760

to give them pictures taken from space

296

00:11:08,790 --> 00:11:06,160

by satellites these pictures fall into

297

00:11:11,670 --> 00:11:08,800

one of two categories

298

00:11:13,590 --> 00:11:11,680

biom1 biome 2. basically there are two

299

00:11:15,110 --> 00:11:13,600

different biomes i'm not going to tell

300

00:11:17,110 --> 00:11:15,120

you what the biomes are so you have to

301
00:11:19,190 --> 00:11:17,120
look and see which pictures are similar

302
00:11:21,829 --> 00:11:19,200
and match them up i'm going to start you

303
00:11:22,790 --> 00:11:21,839
off by giving you a freebie

304
00:11:25,509 --> 00:11:22,800
okay

305
00:11:27,670 --> 00:11:25,519
your job is to take this picture and say

306
00:11:29,350 --> 00:11:27,680
does it match something here or do you

307
00:11:37,670 --> 00:11:29,360
think it's a completely different biome

308
00:11:37,680 --> 00:11:42,069
make a choice

309
00:11:45,910 --> 00:11:44,550
you think right there

310
00:11:49,030 --> 00:11:45,920
all right

311
00:11:50,150 --> 00:11:49,040
at this picture

312
00:11:51,990 --> 00:11:50,160
where do you think it goes do you think

313
00:11:59,110 --> 00:11:52,000

it matches these or do you think it

314

00:11:59,120 --> 00:12:02,550

all right good job

315

00:12:06,150 --> 00:12:03,990

yup

316

00:12:07,910 --> 00:12:06,160

all right

317

00:12:09,269 --> 00:12:07,920

there's yours

318

00:12:12,629 --> 00:12:09,279

do you think it matches these or do you

319

00:12:16,949 --> 00:12:15,430

okay good let's do this one

320

00:12:20,310 --> 00:12:16,959

i think it well

321

00:12:20,320 --> 00:12:25,990

and last but not least

322

00:12:28,389 --> 00:12:27,110

good job

323

00:12:31,829 --> 00:12:28,399

guess what guys

324

00:12:34,470 --> 00:12:31,839

you got all six of them correct way to

325

00:12:37,190 --> 00:12:34,480

go now let's see what these biomes are

326

00:12:40,150 --> 00:12:37,200

here we have biome one these are all

327

00:12:41,590 --> 00:12:40,160

pictures of deserts biome too these are

328

00:12:43,990 --> 00:12:41,600

all pictures of

329

00:12:46,629 --> 00:12:44,000

forests so all of these pictures taken

330

00:12:48,550 --> 00:12:46,639

from space either a forest or of deserts

331

00:12:50,550 --> 00:12:48,560

and one of the really cool things is

332

00:12:52,870 --> 00:12:50,560

when we look at pictures from space of

333

00:12:55,670 --> 00:12:52,880

earth we can actually learn about other

334

00:12:59,750 --> 00:12:55,680

planets this is what we call an alluvial

335

00:13:01,590 --> 00:12:59,760

fan on earth it is caused by water okay

336

00:13:03,110 --> 00:13:01,600

when we go to pictures of space you'll

337

00:13:05,670 --> 00:13:03,120

see the black and white picture is a

338

00:13:07,829 --> 00:13:05,680

crater on mars we see the same type of

339

00:13:09,509 --> 00:13:07,839

feature on mars that we have here on

340

00:13:11,509 --> 00:13:09,519

earth and we know that on earth it's

341

00:13:13,110 --> 00:13:11,519

caused by water we can make some

342

00:13:15,990 --> 00:13:13,120

assumptions that that same type of

343

00:13:17,910 --> 00:13:16,000

feature was caused by water on mars beth

344

00:13:20,949 --> 00:13:17,920

these guys did a great job on stem it to

345

00:13:24,389 --> 00:13:20,959

win it back over to you thank you marty

346

00:13:26,470 --> 00:13:24,399

now we're really lucky in washington dc

347

00:13:28,949 --> 00:13:26,480

we can see these sort of different

348

00:13:30,629 --> 00:13:28,959

environments live and in person with our

349

00:13:38,069 --> 00:13:30,639

friends at the botanic gardens and we

350

00:13:43,509 --> 00:13:40,790

i am here at the u.s botanic garden

351

00:14:07,750 --> 00:13:43,519

insider plants from all over the world

352

00:14:13,269 --> 00:14:10,629

i am standing in the middle of a jungle

353

00:14:14,949 --> 00:14:13,279

in the middle of washington dc as a

354

00:14:17,829 --> 00:14:14,959

matter of fact the united states capital

355

00:14:19,910 --> 00:14:17,839

is only about a thousand feet that way

356

00:14:22,550 --> 00:14:19,920

this jungle and all jungles are

357

00:14:24,629 --> 00:14:22,560

important to me and to you

358

00:14:46,310 --> 00:14:24,639

come along with me as we find out why

359

00:14:49,509 --> 00:14:47,829

i'm joined by lee quickendahl the

360

00:14:52,389 --> 00:14:49,519

children's education specialist here at

361

00:14:54,470 --> 00:14:52,399

the u.s botanic gardens lee tell me why

362

00:14:56,069 --> 00:14:54,480

should i care about the rainforest well

363

00:14:57,430 --> 00:14:56,079

have you ever heard the expression lungs

364

00:15:00,150 --> 00:14:57,440

of the planet

365

00:15:02,870 --> 00:15:00,160

so we get our oxygen from plants and

366

00:15:04,629 --> 00:15:02,880

rainforests are huge

367

00:15:06,230 --> 00:15:04,639

areas that have many many different

368

00:15:07,829 --> 00:15:06,240

kinds of plants in them and so we're

369

00:15:09,189 --> 00:15:07,839

getting a lot of oxygen from there but

370

00:15:11,189 --> 00:15:09,199

the other thing is you think of the

371

00:15:13,990 --> 00:15:11,199

plant diversity and animal life in a

372

00:15:16,629 --> 00:15:14,000

rainforest everybody should care

373

00:15:18,310 --> 00:15:16,639

think about this we every second

374

00:15:20,550 --> 00:15:18,320

collectively around the world we are

375

00:15:21,750 --> 00:15:20,560

losing a football size field of

376

00:15:23,350 --> 00:15:21,760

rainforest

377

00:15:24,949 --> 00:15:23,360

plants and animals we might not have

378

00:15:27,189 --> 00:15:24,959

even discovered yet

379

00:15:30,389 --> 00:15:27,199

that's an area the size of this

380

00:15:32,710 --> 00:15:30,399

forest every second absolutely

381

00:15:34,870 --> 00:15:32,720

unbelievable so i really should care

382

00:15:36,550 --> 00:15:34,880

about the rainforest not only should you

383

00:15:38,150 --> 00:15:36,560

care but everybody should care whether

384

00:15:40,230 --> 00:15:38,160

you live near the rainforest whether

385

00:15:41,910 --> 00:15:40,240

you've never been to a rainforest they

386

00:15:44,150 --> 00:15:41,920

are essential to the health of our

387

00:15:45,350 --> 00:15:44,160

ecosystem the health of our planet

388

00:15:49,189 --> 00:15:45,360

awesome well thank you so much for

389

00:15:50,870 --> 00:15:49,199

joining us now back over to beth

390

00:15:52,949 --> 00:15:50,880

okay so we looked at a lot of different

391

00:15:54,949 --> 00:15:52,959

environments so far in the whole earth

392

00:15:57,110 --> 00:15:54,959

but my question right now is why earth

393

00:15:58,790 --> 00:15:57,120

day and to help me answer that i have dr

394

00:16:01,110 --> 00:15:58,800

martin collins who's a curator in our

395

00:16:02,629 --> 00:16:01,120

space history division and martin why is

396

00:16:03,590 --> 00:16:02,639

earth day important and how did it come

397

00:16:05,590 --> 00:16:03,600

about

398

00:16:08,069 --> 00:16:05,600

what prompted earth day

399

00:16:09,990 --> 00:16:08,079

take a look at this image it helps us

400

00:16:13,350 --> 00:16:10,000

understand the mindset of people in the

401
00:16:15,990 --> 00:16:13,360
1960s it's a poster from that very first

402
00:16:18,230 --> 00:16:16,000
earth day event and people were

403
00:16:20,470 --> 00:16:18,240
very much concerned about pollution

404
00:16:23,110 --> 00:16:20,480
pollution from cars pollution from

405
00:16:25,590 --> 00:16:23,120
factories pollution from airplanes it

406
00:16:27,990 --> 00:16:25,600
seemed that human activity was

407
00:16:29,990 --> 00:16:28,000
overwhelming the environment if you look

408
00:16:32,310 --> 00:16:30,000
closer at the image you see in the

409
00:16:34,550 --> 00:16:32,320
background a tilting image of the u.s

410
00:16:36,150 --> 00:16:34,560
capital and that was an indicator that

411
00:16:38,389 --> 00:16:36,160
the federal government had not yet

412
00:16:40,949 --> 00:16:38,399
stepped up to the challenge of dealing

413
00:16:43,110 --> 00:16:40,959

with pollution the result was the

414

00:16:45,910 --> 00:16:43,120
creation of a social movement a

415

00:16:48,150 --> 00:16:45,920
grassroots movement the central idea of

416

00:16:50,629 --> 00:16:48,160
which was that individuals and

417

00:16:53,269 --> 00:16:50,639
communities could take responsibility

418

00:16:55,590 --> 00:16:53,279
for the environment to protect it and to

419

00:16:57,910 --> 00:16:55,600
conserve it but it also required

420

00:16:59,910 --> 00:16:57,920
specific events and ideas to help

421

00:17:01,990 --> 00:16:59,920
energize this idea

422

00:17:04,630 --> 00:17:02,000
take a look at this image this is an

423

00:17:07,510 --> 00:17:04,640
image of the cuyahoga river a river near

424

00:17:10,470 --> 00:17:07,520
cleveland ohio and what we see is the

425

00:17:13,669 --> 00:17:10,480
this is the river on fire think about

426

00:17:15,669 --> 00:17:13,679

the idea of a river on fire it's so

427

00:17:17,990 --> 00:17:15,679

contrary to our understanding of how

428

00:17:20,150 --> 00:17:18,000

rivers are that it created this vast

429

00:17:22,309 --> 00:17:20,160

sort of public interest and the problem

430

00:17:24,549 --> 00:17:22,319

of pollution and how it was affecting in

431

00:17:27,590 --> 00:17:24,559

the most fundamental way are basic

432

00:17:29,909 --> 00:17:27,600

resources like rivers the other idea

433

00:17:32,070 --> 00:17:29,919

that was fundamentally important was one

434

00:17:34,630 --> 00:17:32,080

that jennifer talked about with you the

435

00:17:35,909 --> 00:17:34,640

idea that we saw the earth not just

436

00:17:38,230 --> 00:17:35,919

through what was happening in our

437

00:17:40,150 --> 00:17:38,240

communities but we saw the earth as a

438

00:17:42,150 --> 00:17:40,160

whole and one of the ways that this

439

00:17:44,870 --> 00:17:42,160

happened was a campaign

440

00:17:46,950 --> 00:17:44,880

as evidenced by this button that you see

441

00:17:49,190 --> 00:17:46,960

to create an image of the whole earth so

442

00:17:51,669 --> 00:17:49,200

people could understand that it was a

443

00:17:53,669 --> 00:17:51,679

small precious place that we needed to

444

00:17:57,590 --> 00:17:53,679

take care of well what was earth day

445

00:18:00,470 --> 00:17:57,600

like itself in april of 1970 uh it was

446

00:18:02,789 --> 00:18:00,480

consisted of major events in

447

00:18:05,190 --> 00:18:02,799

the primary cities of the united states

448

00:18:07,270 --> 00:18:05,200

what you're seeing here on the screen is

449

00:18:09,830 --> 00:18:07,280

a march in new york city down fifth

450

00:18:12,390 --> 00:18:09,840

avenue one of the major thoroughfares of

451

00:18:14,630 --> 00:18:12,400

the city an indication of how deeply

452

00:18:16,630 --> 00:18:14,640

people felt about this question of how

453

00:18:19,029 --> 00:18:16,640

to protect the environment and wanting

454

00:18:21,510 --> 00:18:19,039

to get involved the other part of earth

455

00:18:25,029 --> 00:18:21,520

day in 1970 was what was called a

456

00:18:27,029 --> 00:18:25,039

teach-in these events in colleges high

457

00:18:29,350 --> 00:18:27,039

schools and communities around the

458

00:18:31,909 --> 00:18:29,360

country by the thousands that told

459

00:18:34,230 --> 00:18:31,919

people in very specific ways what they

460

00:18:36,470 --> 00:18:34,240

might be able to do to contribute to

461

00:18:38,870 --> 00:18:36,480

creating a better environment so they

462

00:18:40,870 --> 00:18:38,880

could take personal action and not worry

463

00:18:42,630 --> 00:18:40,880

about what either corporations or

464

00:18:44,549 --> 00:18:42,640

governments were doing but something

465

00:18:46,470 --> 00:18:44,559

that they could do in their own lives

466

00:18:48,630 --> 00:18:46,480

and that idea of earth day has stayed

467

00:18:49,830 --> 00:18:48,640

with us to the present okay so martin i

468

00:18:53,190 --> 00:18:49,840

think we're going to take a couple of

469

00:18:55,430 --> 00:18:53,200

questions do we have an online question

470

00:18:56,710 --> 00:18:55,440

when did earth day become recognized

471

00:18:58,789 --> 00:18:56,720

worldwide

472

00:19:00,950 --> 00:18:58,799

from the very beginning uh the people

473

00:19:01,750 --> 00:19:00,960

who were intimately involved in earth

474

00:19:04,630 --> 00:19:01,760

day

475

00:19:06,230 --> 00:19:04,640

saw this not only only as a problem in

476

00:19:07,909 --> 00:19:06,240

the united states

477

00:19:10,230 --> 00:19:07,919

but an issue that affected the whole

478

00:19:12,870 --> 00:19:10,240

world remember that sort of image of the

479

00:19:15,029 --> 00:19:12,880

whole planet it created a conversation

480

00:19:16,789 --> 00:19:15,039

not just here in the united states but

481

00:19:19,669 --> 00:19:16,799

around the world that protecting the

482

00:19:21,510 --> 00:19:19,679

planet was a responsibility of people

483

00:19:24,710 --> 00:19:21,520

everywhere on earth okay we have an

484

00:19:27,909 --> 00:19:24,720

audience question

485

00:19:33,350 --> 00:19:29,669

what's your question

486

00:19:35,510 --> 00:19:33,360

my name is nada my question is how

487

00:19:39,830 --> 00:19:35,520

how do the belly work when you go out to

488

00:19:40,630 --> 00:19:39,840

space how what

489

00:19:44,390 --> 00:19:40,640

how

490

00:19:46,789 --> 00:19:44,400

to space ah that's an interesting

491

00:19:49,190 --> 00:19:46,799

question uh jennifer answered that a

492

00:19:51,669 --> 00:19:49,200

little bit it's having certain kinds of

493

00:19:52,870 --> 00:19:51,679

cameras that allow you to look down at

494

00:19:54,390 --> 00:19:52,880

the earth

495

00:19:56,310 --> 00:19:54,400

and those cameras

496

00:19:58,630 --> 00:19:56,320

take pictures is it any different than

497

00:20:00,789 --> 00:19:58,640

taking a picture here on earth not very

498

00:20:03,190 --> 00:20:00,799

much it's the same basic idea you have

499

00:20:05,990 --> 00:20:03,200

to have a camera that provides you with

500

00:20:08,149 --> 00:20:06,000

a certain kind of resolution provides

501
00:20:09,750 --> 00:20:08,159
you with the right kind of picture

502
00:20:11,750 --> 00:20:09,760
and then you have to get the image back

503
00:20:13,590 --> 00:20:11,760
to earth that typically has been one of

504
00:20:15,590 --> 00:20:13,600
the challenges and we have solved that

505
00:20:17,430 --> 00:20:15,600
in a number of different ways thank you

506
00:20:18,789 --> 00:20:17,440
so much martin for clearing that up for

507
00:20:20,710 --> 00:20:18,799
us and telling us a little bit about

508
00:20:21,510 --> 00:20:20,720
earth day now we're going to go back to

509
00:20:25,029 --> 00:20:21,520
our

510
00:20:30,789 --> 00:20:25,039
gardens we're going to take a look at

511
00:20:34,470 --> 00:20:32,789
i'm back and i've moved into the desert

512
00:20:36,710 --> 00:20:34,480
area and i'm joined by ari novi the

513
00:20:39,029 --> 00:20:36,720

director of the u.s botanic gardens

514

00:20:41,029 --> 00:20:39,039

it's really hot and dry in here but

515

00:20:43,350 --> 00:20:41,039

there are some amazing plants how do

516

00:20:44,950 --> 00:20:43,360

these all grow in here well thank you so

517

00:20:46,950 --> 00:20:44,960

much for having me and it's really fun

518

00:20:48,470 --> 00:20:46,960

to be here in the desert with you today

519

00:20:50,950 --> 00:20:48,480

we often think of the desert as kind of

520

00:20:53,270 --> 00:20:50,960

a barren wasteland full of sand but

521

00:20:55,029 --> 00:20:53,280

really plants have found amazing ways to

522

00:20:56,630 --> 00:20:55,039

make life happen and they're dealing

523

00:20:58,470 --> 00:20:56,640

with the really twin challenge of

524

00:21:00,310 --> 00:20:58,480

extreme temperatures especially heat but

525

00:21:02,230 --> 00:21:00,320

also a real lack of moisture and

526
00:21:04,789 --> 00:21:02,240
precipitation and so they have wonderful

527
00:21:07,190 --> 00:21:04,799
adaptations like succulent thick stems

528
00:21:08,549 --> 00:21:07,200
for storing water on very thick skin

529
00:21:10,230 --> 00:21:08,559
that makes sure that they they don't

530
00:21:12,149 --> 00:21:10,240
evaporate water and lose it um during

531
00:21:14,870 --> 00:21:12,159
the process of photosynthesis as well as

532
00:21:16,710 --> 00:21:14,880
highly reduced leaves and a lot of anti

533
00:21:18,310 --> 00:21:16,720
um herbivory compounds and thorns and

534
00:21:20,070 --> 00:21:18,320
things like that as well now there are

535
00:21:21,350 --> 00:21:20,080
some really interesting plants in here

536
00:21:23,270 --> 00:21:21,360
can you tell me about some of them

537
00:21:25,990 --> 00:21:23,280
absolutely one of my favorites is called

538
00:21:27,430 --> 00:21:26,000

the giant stapilia or stapilia gigantea

539

00:21:29,270 --> 00:21:27,440

and it's really neat because not only is

540

00:21:31,110 --> 00:21:29,280

it succulent and able to live in the in

541

00:21:32,630 --> 00:21:31,120

the in the arid environment but also

542

00:21:34,070 --> 00:21:32,640

it's got to think about pollination it's

543

00:21:35,510 --> 00:21:34,080

got to think about well you know i've

544

00:21:37,029 --> 00:21:35,520

got to live but i also have to take

545

00:21:38,710 --> 00:21:37,039

advantage of these these insects that

546

00:21:40,870 --> 00:21:38,720

are going to allow me to reproduce and

547

00:21:43,270 --> 00:21:40,880

it does that by producing this really

548

00:21:45,350 --> 00:21:43,280

ugly horrific flower looks kind of like

549

00:21:47,750 --> 00:21:45,360

the the really ugly alien in the movie

550

00:21:50,070 --> 00:21:47,760

predator and it not only is really ugly

551
00:21:52,230 --> 00:21:50,080
but it smells really really bad and it

552
00:21:53,669 --> 00:21:52,240
attracts these flies that basically like

553
00:21:55,430 --> 00:21:53,679
rotting flesh

554
00:21:58,070 --> 00:21:55,440
and so it's able to take advantage not

555
00:22:00,149 --> 00:21:58,080
only of of of the desert conditions to

556
00:22:02,789 --> 00:22:00,159
live but also of the insects that live

557
00:22:04,710 --> 00:22:02,799
in the desert that sounds horrible but

558
00:22:06,470 --> 00:22:04,720
awesome at the same time what other ones

559
00:22:08,630 --> 00:22:06,480
do you like in here i love the barrel

560
00:22:10,390 --> 00:22:08,640
cacti um barrel cacti are kind of the

561
00:22:12,070 --> 00:22:10,400
quintessential cacti they're large they

562
00:22:13,270 --> 00:22:12,080
have big thorns

563
00:22:14,789 --> 00:22:13,280

and they're really interesting because

564

00:22:16,630 --> 00:22:14,799

they're all swollen they're really a

565

00:22:18,630 --> 00:22:16,640

giant swollen stem and that's a

566

00:22:20,710 --> 00:22:18,640

mechanism for the cactus to conserve

567

00:22:22,710 --> 00:22:20,720

water when it does rain it often pours

568

00:22:24,149 --> 00:22:22,720

in the desert just very infrequently and

569

00:22:25,830 --> 00:22:24,159

so they're able to suck up a whole bunch

570

00:22:27,590 --> 00:22:25,840

of water and hold on to it so they can

571

00:22:29,669 --> 00:22:27,600

use it later on even when there's a very

572

00:22:31,510 --> 00:22:29,679

very little rainfall interesting now

573

00:22:32,950 --> 00:22:31,520

there's another plant that kind of grows

574

00:22:35,110 --> 00:22:32,960

in this area but you don't have it in

575

00:22:36,630 --> 00:22:35,120

this room that's absolutely right should

576

00:22:40,710 --> 00:22:36,640

we go take a look absolutely let's go

577

00:22:45,270 --> 00:22:42,390

this plant's something that we can grow

578

00:22:47,909 --> 00:22:45,280

at home right yes absolutely um this is

579

00:22:49,190 --> 00:22:47,919

aloe or aloe vera is the latin name it's

580

00:22:50,870 --> 00:22:49,200

a plant that a lot of us are very

581

00:22:52,149 --> 00:22:50,880

familiar with because you can buy it

582

00:22:53,830 --> 00:22:52,159

pretty much at any garden center a lot

583

00:22:56,230 --> 00:22:53,840

of people do have it in their homes both

584

00:22:58,230 --> 00:22:56,240

because it's beautiful but also because

585

00:23:00,230 --> 00:22:58,240

when you have a burn or a sunburn the

586

00:23:02,070 --> 00:23:00,240

the the sap or the juice inside the

587

00:23:03,830 --> 00:23:02,080

plant is a really wonderful salve

588

00:23:05,190 --> 00:23:03,840

against those burns so you just can grow

589

00:23:06,950 --> 00:23:05,200

this plant at home

590

00:23:08,710 --> 00:23:06,960

whenever you need to you snap off a

591

00:23:10,230 --> 00:23:08,720

little piece of it kind of rub it on you

592

00:23:11,430 --> 00:23:10,240

and uh and you're kind of good to go so

593

00:23:12,630 --> 00:23:11,440

you've got your medicine right there on

594

00:23:14,230 --> 00:23:12,640

your counter at home growing in this

595

00:23:15,830 --> 00:23:14,240

place it's right there for you and in

596

00:23:17,750 --> 00:23:15,840

fact in addition to being used as a burn

597

00:23:19,430 --> 00:23:17,760

um medicine a lot of traditional

598

00:23:21,029 --> 00:23:19,440

cultures also use it as actually potent

599

00:23:23,350 --> 00:23:21,039

laxative but but i'll warn you because

600

00:23:24,789 --> 00:23:23,360

it is truly potent okay if you'd like to

601
00:23:26,630 --> 00:23:24,799
learn more about medicinal plants here

602
00:23:28,070 --> 00:23:26,640
at the u.s botanic garden go to the stem

603
00:23:29,830 --> 00:23:28,080
30 website where we're going to post a

604
00:23:31,830 --> 00:23:29,840
short video showing you some of these

605
00:23:33,350 --> 00:23:31,840
other medicinal plants thank you so much

606
00:23:37,029 --> 00:23:33,360
for joining us today my pleasure thank

607
00:23:39,190 --> 00:23:37,039
you for having us now back to bath

608
00:23:41,029 --> 00:23:39,200
okay so we've looked at earth from space

609
00:23:43,110 --> 00:23:41,039
we've looked at earth from satellite

610
00:23:45,909 --> 00:23:43,120
images and we've looked at some of these

611
00:23:48,310 --> 00:23:45,919
ecosystems but what can you do on this

612
00:23:49,830 --> 00:23:48,320
earth day well to help us answer that

613
00:23:52,310 --> 00:23:49,840

question we have some friends from

614

00:23:54,870 --> 00:23:52,320

smithsonian gardens and marty's going to

615

00:23:57,029 --> 00:23:54,880

help us answer it marty

616

00:23:58,710 --> 00:23:57,039

like beth said today is a day for action

617

00:24:01,350 --> 00:23:58,720

we want you guys to be able to do

618

00:24:03,669 --> 00:24:01,360

something and this is something that you

619

00:24:05,669 --> 00:24:03,679

guys can do in your backyards and every

620

00:24:08,390 --> 00:24:05,679

little bit counts you know everything

621

00:24:10,230 --> 00:24:08,400

from recycling one water bottle to

622

00:24:12,230 --> 00:24:10,240

making a container garden helps our

623

00:24:14,390 --> 00:24:12,240

environment so i'm joined today by

624

00:24:16,230 --> 00:24:14,400

christine price abello and your

625

00:24:18,310 --> 00:24:16,240

horticulturalist at the smithsonian

626

00:24:19,830 --> 00:24:18,320

gardens tell us a little about a little

627

00:24:21,430 --> 00:24:19,840

bit about what these guys are doing sure

628

00:24:23,430 --> 00:24:21,440

these guys are helping us plan up some

629

00:24:25,110 --> 00:24:23,440

container gardens uh the great thing

630

00:24:27,669 --> 00:24:25,120

about containers is it's something you

631

00:24:30,310 --> 00:24:27,679

can do anywhere whether you have sun or

632

00:24:32,070 --> 00:24:30,320

shade or a small space like a balcony a

633

00:24:33,909 --> 00:24:32,080

deck or a patio or you want to put them

634

00:24:36,470 --> 00:24:33,919

out in your regular landscape you can

635

00:24:38,149 --> 00:24:36,480

add a great splash of color or bring in

636

00:24:39,909 --> 00:24:38,159

pollinators to your garden by planting

637

00:24:42,070 --> 00:24:39,919

these containers up and the ones we're

638

00:24:44,149 --> 00:24:42,080

doing today are specifically pollinator

639

00:24:45,269 --> 00:24:44,159

friendly containers

640

00:24:46,390 --> 00:24:45,279

you can see the guys here they're

641

00:24:48,870 --> 00:24:46,400

planting up

642

00:24:50,390 --> 00:24:48,880

these beautiful flowers here these are

643

00:24:51,830 --> 00:24:50,400

actually pentas they attract

644

00:24:53,830 --> 00:24:51,840

hummingbirds

645

00:24:55,510 --> 00:24:53,840

because of the red color

646

00:24:57,909 --> 00:24:55,520

we've also got some other samples of

647

00:25:00,549 --> 00:24:57,919

containers over here

648

00:25:01,669 --> 00:25:00,559

we've got a one that's yellow and white

649

00:25:03,590 --> 00:25:01,679

and silver

650

00:25:05,830 --> 00:25:03,600

most of those things bloom in the

651
00:25:08,230 --> 00:25:05,840
early evening or early morning hours

652
00:25:10,470 --> 00:25:08,240
when mauls are out the white colors and

653
00:25:11,830 --> 00:25:10,480
the silver color foliage attracts malls

654
00:25:13,029 --> 00:25:11,840
for that one that's another type of

655
00:25:15,510 --> 00:25:13,039
pollinator

656
00:25:17,590 --> 00:25:15,520
and the large containers beside me here

657
00:25:19,990 --> 00:25:17,600
these are bee and butterfly friendly

658
00:25:22,710 --> 00:25:20,000
plants bees and butterflies see colors

659
00:25:25,750 --> 00:25:22,720
differently than people do they actually

660
00:25:28,390 --> 00:25:25,760
see tracks or patterns on those petals

661
00:25:30,230 --> 00:25:28,400
that guide them in to the nectar source

662
00:25:31,830 --> 00:25:30,240
when they come in to feed and then the

663
00:25:33,830 --> 00:25:31,840

pollen sticks to them and then they take

664

00:25:35,990 --> 00:25:33,840

it to the next plant and transfer it

665

00:25:38,149 --> 00:25:36,000

over so we've got the butterfly and bee

666

00:25:40,549 --> 00:25:38,159

containers there and this last one here

667

00:25:42,950 --> 00:25:40,559

is a hummingbird container it's if you

668

00:25:45,990 --> 00:25:42,960

notice it's all featuring red full red

669

00:25:47,750 --> 00:25:46,000

flowers on here a lot of tubular shapes

670

00:25:49,830 --> 00:25:47,760

where they'll put it come in and land on

671

00:25:51,750 --> 00:25:49,840

the plants and then

672

00:25:53,830 --> 00:25:51,760

stick their little beak down in there

673

00:25:54,870 --> 00:25:53,840

get the nectar and bring it out on them

674

00:25:56,390 --> 00:25:54,880

that way

675

00:25:58,230 --> 00:25:56,400

so with one thing with container

676

00:25:59,669 --> 00:25:58,240

gardening depending on what kind of

677

00:26:01,669 --> 00:25:59,679

pollinators you want to attract you just

678

00:26:03,669 --> 00:26:01,679

want to make sure you have a full sun

679

00:26:06,149 --> 00:26:03,679

location so you can get lots of

680

00:26:07,669 --> 00:26:06,159

butterflies bees things like that

681

00:26:08,950 --> 00:26:07,679

visiting your garden and this is

682

00:26:10,870 --> 00:26:08,960

something that you can do even if you

683

00:26:13,830 --> 00:26:10,880

don't have a big yard right right any

684

00:26:15,990 --> 00:26:13,840

space a balcony a patio a deck

685

00:26:17,750 --> 00:26:16,000

anything like that awesome indoors too

686

00:26:19,830 --> 00:26:17,760

now you guys are the smithsonian gardens

687

00:26:21,669 --> 00:26:19,840

is sponsoring the competition correct

688

00:26:23,590 --> 00:26:21,679

right we have our annual garden fest

689

00:26:24,950 --> 00:26:23,600

event coming up that celebrates national

690

00:26:27,350 --> 00:26:24,960

public garden day

691

00:26:29,750 --> 00:26:27,360

it's friday may 8th and we usually have

692

00:26:31,909 --> 00:26:29,760

a container contest associated with the

693

00:26:33,990 --> 00:26:31,919

event we invite the public to come in

694

00:26:35,590 --> 00:26:34,000

and bring in their containers with them

695

00:26:37,830 --> 00:26:35,600

we display them in the help garden that

696

00:26:39,990 --> 00:26:37,840

day and have a friendly little judging

697

00:26:41,750 --> 00:26:40,000

or competition among the containers for

698

00:26:43,510 --> 00:26:41,760

different categories so if you'd like to

699

00:26:45,990 --> 00:26:43,520

participate there's information on our

700

00:26:47,990 --> 00:26:46,000

website that you can look up online and

701
00:26:49,750 --> 00:26:48,000
check out the event and come on out

702
00:26:52,149 --> 00:26:49,760
great guys you're doing a great job with

703
00:26:55,590 --> 00:26:52,159
this there's just one thing that we need

704
00:26:58,789 --> 00:26:55,600
to add to it if we add that right there

705
00:27:00,230 --> 00:26:58,799
this looks perfect now so beth i think

706
00:27:01,909 --> 00:27:00,240
we need to find a place to keep this i

707
00:27:03,190 --> 00:27:01,919
think the studio might be a great spot

708
00:27:08,310 --> 00:27:03,200
for this

709
00:27:11,750 --> 00:27:08,320
we have time for one very quick online

710
00:27:16,390 --> 00:27:14,149
how much worse is pollution now than it

711
00:27:18,950 --> 00:27:16,400
was in 1970

712
00:27:21,590 --> 00:27:18,960
pollution today is much less than it was

713
00:27:24,789 --> 00:27:21,600

in 1970.

714

00:27:27,669 --> 00:27:24,799

a variety of federal laws have helped

715

00:27:30,630 --> 00:27:27,679

clean up the air and the water

716

00:27:32,470 --> 00:27:30,640

people have taken steps individually to

717

00:27:35,029 --> 00:27:32,480

help the environment by not throwing

718

00:27:36,470 --> 00:27:35,039

plastic bags out their car windows to

719

00:27:38,149 --> 00:27:36,480

recycle

720

00:27:40,070 --> 00:27:38,159

today the the

721

00:27:42,710 --> 00:27:40,080

the pollution is a much lower level than

722

00:27:44,710 --> 00:27:42,720

it ever was in the 1970s

723

00:27:47,590 --> 00:27:44,720

well that that's all the time we have

724

00:27:50,310 --> 00:27:47,600

for today i'd like to thank christine

725

00:27:52,789 --> 00:27:50,320

and martin and jennifer and andrew for

726

00:27:55,110 --> 00:27:52,799

helping me out we'd like to thank our

727

00:27:57,350 --> 00:27:55,120

sponsor boeing and we hope to see you

728

00:27:59,190 --> 00:27:57,360

all again next month on may 20th when

729

00:28:02,950 --> 00:27:59,200

we'll talk about living and working in