

INVESTIGATORS OF THE LAST FRONTIER
WHITE BEAR PRODUCTIONS
EPISODE 2: BATS AND RATTLESNAKES
WRITER: TYSON MIELKE

SOUTHERN OKANAGAN VALLEY

Establishing shot depicting the desert like qualities of the area. Tape 95-6138 9:40,

ROGER V/O

Air barely moves...

DISSOLVE TO:

Shots continue.6138 10:10, 10:59

ROGER V/O

as the land bakes under a heavy sun.

Shots of flowers.Tape: 6138 12:20, 13:28 Followed by TCU of River Tape 6145 24:50

ROGER V/O

It seems a place devoid of life...but looks are often deceiving.

DISSOLVE TO:

Shots of Dragon flies. Tape: 6148: 14:35 Followed by Tape 6140 14:47

ROGER V/O

The dryland habitat of British Columbia's Southern Okanagan is home to more species of birds, mammals, and invertebrates than most places in Canada.

DISSOLVE TO:

Shots of area continue.Tape 6148 17:50

ROGER V/O

We journeyed to this unique area to learn the truth about two animals; one shrouded in superstition, the other in fear.

DISSOLVE TO:

SEMI ARID GRASSLANDS

Establishing shot of grasslands. Tape: 6143 24:18, followed by 22:46, and 23:20

ROGER V/O

Our story begins here...the semi arid grasslands ...the heart of rattlesnake country.

CUT TO:

Two shot of Mike Sarrell and Roger walking up hill. Tape 6142: 23:11

ROGER V/O

...and speaking of hearts...when I met with biologist and snake expert Mike Sarrel to begin our search, mine beat a little faster than usual.

CUT TO:

Sync shot of Roger and Mike.Tape:6142 24:20

ROGER SYNC

What are the chances of actually finding some out there today? MIKE SYNC:

Reasonably good. It's not too hot yet, so that means that the snakes are still out foraging or moving between one foraging area and another one

CUT TO:

Shots of Mike and Roger continuing their search. Tape 6142 24:56

CUT TO:

Sync shot of Roger and Mike. Tape: 6142 25:29

ROGER SYNC:

There seems to be a lot of food in here. MIKE SYNC: It's climax bunch grass habitat. So in here there's sort of an old growth forest if you like. There's quite a number of species living in this-what would seem just from a glance to be an unproductive site, but in fact this is an extremely productive site, with lots of different animals living in here.

CUT TO:

Mike and Roger Tape 6142 25:03 Followed by shot of ground. Tape 6143 3:08

ROGER V/O

To prove his point, Mike directed me to a patch of loose soil..

CUT TO:

Shot of Mike sprinkling water. Tape: 6143 2:00

ROGER V/O

Underneath...a very unusual animal...one that ventures out only when it rains.

CUT TO:

Shot of dirt followed by Toad emerging. Tape: 6143 5:00- followed by 5:15

ROGER V/O

We waited...

CUT TO:

Shot of Toad struggling out of ground. Tape: 6143 5:36, 6:32-6:41 Followed by 8:08

ROGER V/O

Then it emerged...one of the rarest amphibians in British Columbia..the Spade Foot Toad.

CUT TO:

Close up of hard "spade" skin. Tape: 6143 7:46

ROGER V/O

Using a hardened piece of skin on their hind foot...

CUT TO:

Close up shot of Toad in Roger's hand. Tape 6143 7:12-7:24

ROGER V/O

...These Toads survive the gruelling heat of summer by burying themselves into the ground.

CUT TO:

Shot of Toad in Roger's hand getting a bath. 6143 6:58 followed by shot on ground 8:08

ROGER V/O

Too much sun can be deadly however...so after a refreshing bath, this toad returned home.

CUT TO:

Sync shot of Mike and Roger Tape 6143 Audio: 16:46 Followed by close up 17:24

ROGER V/O

Mike had other surprises. MIKE SYNC

This is a Tiger Salamander. They've got a really restricted range in British Columbia. They're found only in the Okanagan, Similkameen valleys, in just the south ends.

CUT TO:

Close up shot in Roger's hand. 17:51 followed by 18:20 Audio 18:09

MIKE S. SYNC

They are one of the top predators in their environment. They will eat anything from worms to crickets- all the way up to the Spade Foot Toad.

CUT TO:

Shots of Salamander continue. 6143 18:40, 19:07

ROGER V/O

These exotic animals are the largest of the Salamander family, and the only kind to exist in this dry area.

Sync shot of Roger and Mike. Tape 6143 20:32

ROGER SYNC:

Are they good eating for the rattle snake. MIKE: Not so much the rattle snake, but the garter snakes. Probably the yellowbellied racer as well. Rattle snakes like warm bodied animals more so than some of the others. They have those thermal receptor pits on their faces they use to key in on their prey. ROGER: So they see better through heat rather than regular vision? MIKE: Yeah, their vision is really poor. So it detects movement really well, but it can't focus on an image. That's why when you're around rattlesnakes, and you hear one, you stop and cease to exist. You become a tree-a warm tree mind you.

ROGER: One could be watching us right now! MIKE: Could be.

CUT TO:

Camera pans to Roger looking nervously around. 6143 21:22 Shot of camera simulating low angle of someone walking. Shots of Mike with snake hook. 6143 25:00 Tape 6144 11:29

ROGER V/O

Our search continued...then soon ended.

CUT TO:

Shot of Mike and Roger. Mike is pointing towards the snake. 6143 Audio 25:14

ROGER V/O

With a trained eye, Mike spotted our quarry. At first, I could not see it...

CUT TO:

Shots of snake in bunch grass. Tape 6144 3:49, 4:36, 9:50

ROGER V/O

...Amongst the bunch grass..rattle snakes are masters of camouflage.

CUT TO:

Shot of snake coiled and rattling. 6144 8:55-9:07

ROGER V/O

Once exposed however...their presence is obvious.

DISSOLVE TO:

Mike hooking snake. Tape 6143 25:24 Followed by Mike holding snake. Tape 6143 26:18

ROGER V/O

Using a practiced, but dangerous technique, Mike manages to grab the snake...Forgetting my fear, I reached out to touch this beautiful animal.

CUT TO:

Roger reaching out to touch snake. Sync shot 6143 audio: 26:38 Followed by close up of rattle. 6143 30:44

ROGER SYNC:

He's quite dry. MIKE: There is no moisture associated with their skin...26:53 (Roger touches rattle) MIKE: Each segment on the rattle is created everytime it sheds, and it is shedding one or two times a year..so this ones got 8 segments on it, so it could be a 4 year old.

CUT TO:

Sync shot of Mike and Roger. Tape 6143 Audio: 27:14 Followed by close up of tongue darting. 6143 30:44 Followed by shot of heat pits. 6144 :44

ROGER SYNC:

Its tongue is amazing. MIKE: It is sensing the air right now. The molecules that are in the air are sticking to the tongue. The tongue is going back into the mouth, and there is two little pockets at the roof of the mouth called Jacobsens organs. The two forks on the tongue stick into there, and whatever molecules are in the air, like our scent right now, are being transferred there. So he is getting a fix on us. Now there's a couple of heat pits on either side of his nose here, and he's using those to get an infrared image of us, and the rest of his environment. Because there is one on each side of his face, that's kind of a 3-D image as well. So he can tell distance.

CUT TO:

Shot of fangs. Tape 6144 1:00-1:14 (May need to be slowed down)

ROGER V/O

Finally...the dreaded fangs. This one has a double one, but because they are deciduous, one will fall out and be replaced.

CUT TO:

Shot of snakes body. Tape 6144 :12

MIKE S. SYNC

The plight of the rattle snake is an unfortunate story. It's been persecuted ever since the Europeans got here...The natives however have a lot of spiritual power associated with the rattlesnake. Since European settlement there has been really massive snake kills.

DISSOLVE TO:

Photograph of Carlton skinning snake.

ROGER V/O

When the Investigators returns. We will meet Carlton McNaughton, a local pioneer, and long time rattle snake hunter.

CUT TO:

COMMERCIAL BREAK ONE.

Carlton and Roger Tape 6145 18:39 Shot of Carlton unravelling snake skin. Tape 6145 4:59 Followed by photo of Reverend Mackie. Tape 6145

ROGER V/O

Displaying a souvenir from his hunting days, Carlton recounts the story of Reverend Austin Mackie. His friend and snake hunting partner; a man who turned tragedy into revenge.

CUT TO:

Sync shot of Carlton Tape 6144 20:15 Followed by shot of boys school. 1023 58:00, shot of Mackie 1023 48:00

CARLTON SYNC

He had this boys school, and along came a polio epidemic. It was spreading fast through the school, so they took all the boys out of the school, and put them out at Otter Bay, and warned them about the snakes. A couple of them felt they were smarter than the snakes, and they started handling them. One boy got bitten. 21:35: And there was no anti-venom anywhere around in those days. So they wired down to San Diego. Everyone that handled it had trouble with it. Finally they got it in on a motorcycle but it was too late..the boy died. 22:14 Then Mackie went on this vendetta against snakes.

CUT TO:

Photographs of Carlton and Mackie. 6145 15:00, 9:00

ROGER V/O

For the next fifteen years, Carlton and Mackie killed 1000s of snakes; Using guns, dynamite and various pummeling techniques. One snake struck back.

CUT TO:

Shot of Carlton Tape 6144 Audio 23:20 Photo: 16:13 Tape 6145

CARLTON SYNC

...There was a snake there. Nabbed him on the finger. He went back to Vernon to the hospital, and there was a room full of pregnant ladies. And he got sicker and sicker while he waited. Finally in desperation he told the nurse "I've been bitten by a rattlesnake. I need an injection right away." Ever afterwards that finger was as purple as you could be.

CUT TO:

Photographs of Carlton 6145 4:47, 7:13

ROGER V/O

Carlton reflects on his past. CARLTON SYNC

Audio: Tape 11:20 6145 I don't like killing wildlife, except for something that's poisonous. 29:53 There is not much place left for the rattlers, but there's still a few around. We see 1 or 2 every year around the house. I don't bother them anymore. They go away now. I got mad at one once. I had a tame chipmunk here and he disappeared. I saw this rattler all swollen up, so I skinned him and sure enough, out came the little chipmunk, completely whole, wet, and flat.

CUT TO:

UBC FIELD SCHOOL

Est. Shot of school Tape 6137 1:06

For old timers like Carlton, habits die hard, but here at the University of British Columbia's Geology Field School, new ways of thinking are presented..

CUT TO:

Shot of Jim Shaver Tape 1021 24:07 Followed by cutaways of the students. Tape 6138 17:06

ROGER V/O

Snake handler and Park Naturalist Jim Shaver, informs these summer students from the University of Calgary, that snakes do not have to be feared and ultimately destroyed.

CUT TO:

Shot of snake in action. Tape 1021 15:40sb, 18:03rf, Tape 6138: 20:05sb, 25:09cu, Tape 6139 2:23, 3:10, 15:13

JIM SHAVER

Audio 6138 17:17 These are not creatures you have to be so concerned about you have to kill them. They are much a part of the ecosystem. 16:10 A snake cannot strike more than half its body length, so if you are far enough back, you are not gonna get struck. 19:38 The profile a bite victim is a male, 24 yrs of age; drinking, and trying to handle the snake. 6139 6:14 If out hiking, usually snakes will step aside, if you get too close it will rattle. Just stop and look around. Don't take off running there may be others near by...It's a nice sighting.

CUT TO:

Shots of snake continue.

ROGER V/O

Though protected under the wildlife act, rattlesnakes have a hard time competing with a growing human population.

MIKE S. SYNC

26:13 6139 Where they do see them is near a den sight where a new subdivision is being put in. So for the next few years people are always finding snakes in their backyards.

Unfortunately for the rattlesnakes they kill them. 26:50 There must have been a time when there was a lot more suitable habitat because it sure is decreasing.

CUT TO:

Shot of students with garter snakes etc.

ROGER V/O

Though enjoying their time with the rattle snake, and other less dangerous reptiles, these students travelled to British Columbia to focus on another misunderstood creature.

CUT TO:

WATER DOG LAKE.

Shot of Investigators team heading down to lake. Tape 1020 :32

ROGER V/O

As sunset neared, the Investigators team followed the students to scenic Water Dog Lake. The objective: to capture and study the only flying mammal... commonly known as the bat.

CUT TO:

Shots of area continue.

ROGER V/O

We have definitely come to the right place. The Southern Okanagan has the most diverse and abundant bat population in Canada. During the summer, 14 species reside here. In the winter some species hibernate...others migrate south.

CUT TO:

Shot of Robert Barkley Tape 6136

ROGER V/O

Leading the expedition is Dr. Robert Barkley, Associate Professor of Biology from the University of Calgary. I asked Robert what effect human encroachment has on these mammals.

CUT TO:

ROBERT:Audio 1:50 Historically there seems to be evidence that certain species in North America have declined. Part of that was due to pesticide problems; especially DDT in the past, being incorporated into the insects the bats were feeding on and causing them to die. Urbanization in general tends to take away sites where bats roost. Draining out or altering the courses of bodies of water. Alter the sorts of insects that occur there and take away a major feeding area that bats use. So areas around water, because they are so rich in insects, are typically a favorite place for many species of bats.

CUT TO:

Students walking up road. Tape 1020 15:38

ROGER V/O

For their research, these future biologists used a combination of ancient and modern technologies.

CUT TO:

Shots of setting up mist net. 1020 20:17, 19:01, 25:40

Developed 300 years ago by Japanese bird hunters, the mist net is so fine bats cannot detect them with their echo location system.

CUT TO:

Shot of Carol with bat detector.6136 8:48

ROGER V/O

While airborne, bats emit a sound pulse which returns to them in the form of an echo. This echo location system allows them to navigate and capture prey in total darkness. With the aid of a bat detector, this student is able to hear these pulses, which are normally out of the range of human hearing.

CUT TO:

Shot of Roger and Carol. Tape 6136 9:14

ROGER SYNC:

So were actually picking up the the echolocation system of the bat? So we will hear them swooping down across the lake? CAROL: Right.

CUT TO:

Close up shots of bat detector.10:17

CAROL SYNC

You hear these little clicks, and when it gets closer to the insect it goes bzzzt! Then there's a blank, and then they catch it. Roger: So you can almost hear them catching the insect? Carol: Ya you can.

CUT TO:

Shot of Roger with bat detector. 15:05 Ambient sound of detector going off.

ROGER SYNC:17:17

Now the bats are coming closer, and are feeding a lot more. Robert and the crew are opening up the nets across the lake to see if they can catch them. We'll go and see if they have anything.

CUT TO:

Student untying bat from net. 17:47

CUT TO:

Shots of bat in hand. 1020 46:10, 46:35, 49:25

ROGER V/O

Not shy with its feelings, this species, known as the little brown, is the most common throughout North America..

CUT TO:

FIELD SCHOOL NEXT DAY

Cutaways of school Tape 6137 4:41, 5:17 Followed by 7:20

ROGER V/O

The following day students performed various examinations on the bats caught the night before. Though it seems cruel, these tests can provide important clues. For example, Wing tracings can determine what kind of habitat bats feed in. For example bats with long wings cannot fly slowly, so high flying insects would be their main diet. The Little Brown prefers insects over the surface of the water, and their wing shape coincides with this.

CUT TO:

OBSERVATION BOX

Shot of bat cleaning. Tape 6141 11:49-12:20, 12:44-13:00, 13:20, 14:35

ROGER V/O

In a special observation area, Dr. Barclay, gives us more insight into these fascinating animals. ROBERT SYNC: Tape 6142 15:09 Many people think of bats as being dirty animals. I'm never really sure where that comes from. They are in fact very clean animals. They groom themselves very thoroughly. They lick the wing membranes to keep clean because it's obviously very important to them...and they keep the fur very clean.

DISSOLVE TO:

RABIES

Shots 6142 8:00-8:07, 6:27-6:53, 8:13-8:32, 8:36-8:42, 9:15-9:24 Audio: 6142 7:43

ROBERT V/O

Many people have the impression that all bats have rabies...and that's far from the truth. Bats...like other mammals can get rabies, but the proportion of individuals that get it is very very low...its way under one percent of individuals. Once bats get rabies it appears to kill them very rapidly...and are able to pass it on to another animal for a very short period of time.

DISSOLVE TO:

TORPOR

Tape 6142 11:55, 14:40, 15:00, 15:28, 16:08, 16:25

ROGER V/O

This small footed bat is in a state known as Torpor. Robert explains.

ROBERT V/O AUDIO 6142 :13

Torpor is the use of cooling the body temperature to save energy. So bats, although they are warm blooded, can allow their body temperature to drop when conditions are poor..just like turning the thermostat down at night to save energy, bats turn down their thermostat to save energy. The use of torpor allows them to survive periods of cool weather, no insects, or wet weather when they can't fly

CUT TO:

Shots 18:31, 19:41-20:00-20:47 Audio 21:28 6142

ROBERT V/O

When a bat is roosting, but fully active, a Yuma or little brown will have a heart rate of about 2-300 beats per minute. When they are flying their heart rate is over 1000 beats per minute. When they are hibernating, it is maybe half dozen beats per minute

CUT TO: END OF SAMPLE