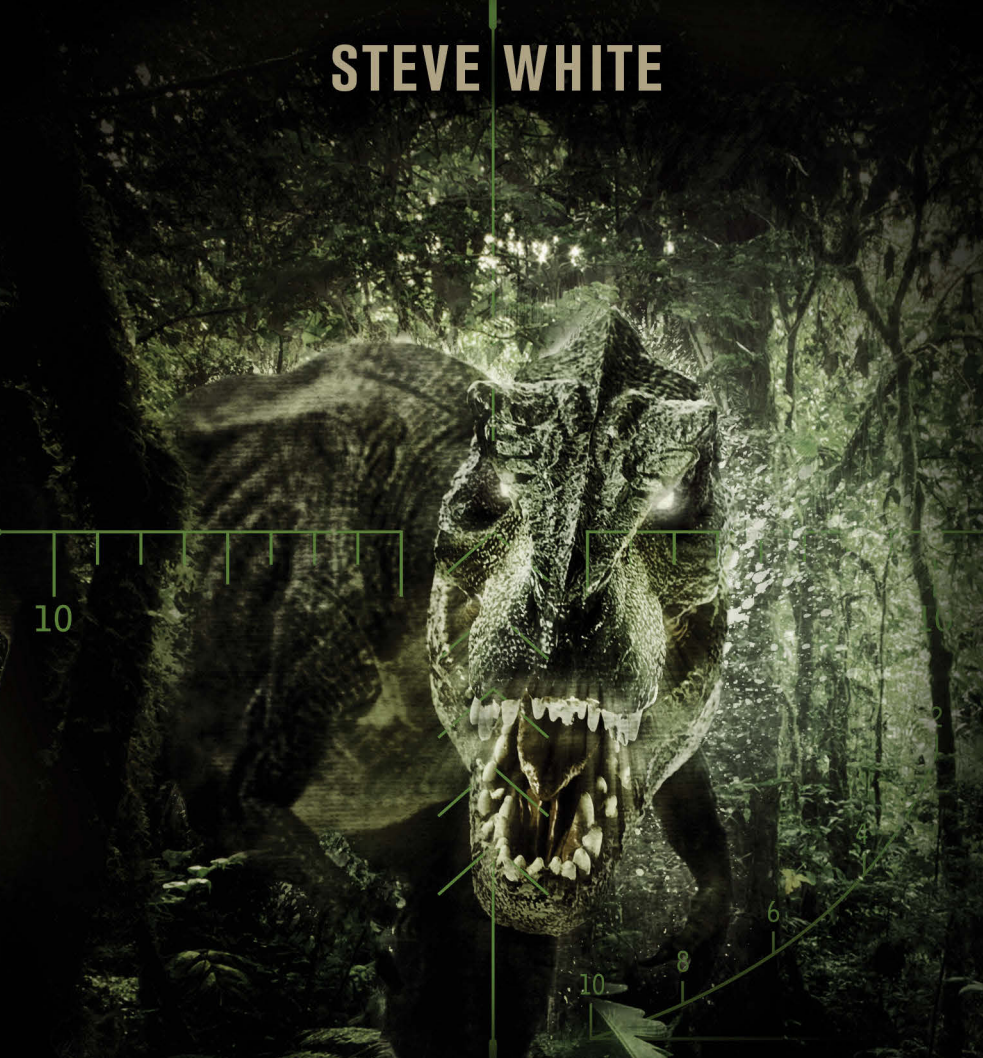


STEVE WHITE



DINOSAUR HUNTER

THE ULTIMATE GUIDE TO THE BIGGEST GAME

DINOSAUR HUNTER

OSPREY
PUBLISHING

Written and illustrated by

STEVE WHITE



**THE ULTIMATE GUIDE TO
THE BIGGEST GAME**

This electronic edition published 2015 by Bloomsbury Publishing Plc

First published in Great Britain in 2014 by Osprey Publishing,
PO Box 883, Oxford, OX1 9PL, UK
PO Box 3985, New York, NY 10185-3985, USA
E-mail: info@ospreypublishing.com

Osprey Publishing is part of the Osprey Group

© 2015 Osprey Publishing Ltd.

All rights reserved. Apart from any fair dealing for the purpose of private study, research, criticism or review, as permitted under the Copyright, Designs and Patents Act, 1988, no part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, electrical, chemical, mechanical, optical, photocopying, recording or otherwise, without the prior written permission of the copyright owner. Enquiries should be addressed to the Publishers.

A CIP catalogue record for this book is available from the British Library

ISBN (print): 978-1-4728-1282-7
ISBN (ePub): 978-1-4728-1284-1
ISBN (ePDF): 978-1-4728-1283-4

To find out more about our authors and books visit www.bloomsbury.com.
Here you will find extracts, author interviews, details of forthcoming events
and the option to sign up for our [newsletters](#).

www.ospreypublishing.com

Osprey Publishing is supporting the Woodland Trust, the UK's leading woodland conservation charity, by funding the dedication of trees.

CONTENTS

INTRODUCTION	7
CHAPTER 1: THE CHINLE FORMATION	18
CHAPTER 2: THE MORRISON FORMATION	53
CHAPTER 3: THE BAHARIYA FORMATION	98
CHAPTER 4: DINOSAUR PARK FORMATION	142
CHAPTER 5: HELL CREEK FORMATION	196



INTRODUCTION

CONGRATULATIONS!

Your application for a Mesozoic Hunting Licence has been accepted!

SO, WHAT HAPPENS NOW?

You have successfully passed your preliminary physical and psychological profile; your financial status has been approved; and your non-refundable deposit has been paid.

We will now offer you a selection of time zones in which to hunt. However, before you rush off to hunt *T-rexes* in the Maastrichtian, please read this guide. It will help inform your decision. You will then be asked to make three choices in descending order of preference. We cannot guarantee that your first preference will be the one offered. The final choice is legally binding; no discussion will be entered into.

Once you have agreed to the selection, your training and acclimatization will begin. Hunting in the Mesozoic is as much about survival as it is about the tracking and killing of your target. As such, you will be given intensive training in some of

DINOSAUR HUNTER

the planet's harshest environments; depending on your final choice of hunting ground, this could be the jungles of Vietnam and Sierra Leone; the plains of the Masai Mara; the Florida Everglades; or the Saharan desert. Should you choose a high carbon-dioxide environment such as the Chinle of the Upper Triassic, you will also spend time acclimatizing in high-altitude, low-oxygen locations and in specially designed tanks.

You will also be subject to intensive physical training by our highly skilled fitness teams, and to extensive and rigorous psychological profiling. The former is key to your survival in case of emergency and the latter is to provide continued assessment of your mental suitability to the stress and trauma you will face on your excursion.

These two aspects of your personal wellbeing are vital. While you may be well armed, well trained and logistically well cared for, it is worth pointing out the following maxim:

HUNTING IN THE MESOZOIC IS EXTREMELY DANGEROUS!!!

No matter how prepared you think you are, nothing can prepare you for what you are about to face. You may be an experienced hunter; you may have hunted Big Game all over the world, but this is not controlled lion hunting in South Africa. There is no room for morbidly obese braggarts squatting in an SUV with a high-powered rifle; this is not the place for supermodels overcoming food disorders by killing for sport. This is *ONLY* for true hunters willing to place their lives on the line and place themselves in harm's way. For many, it is a way to experience a more primal state, to imagine how our ancestors lived and died as hunter-gatherers.

But imagining that and doing it are two extremely different things. The psychological screening is to assess how you, the

INTRODUCTION

hunter, will cope with separation anxiety. The screening is modelled on that given to astronauts, sent millions of miles from Earth without hope of being rescued.

Whilst there will be rescue available to you, many find the anxiety of being millions of years from home unendurable; many hunters have experienced breakdowns. Others, suffering from dissociative amnesia, have wandered off and been lost. You may think you have the machismo to handle such fears but bear in mind, should you allow bravado to subsume common sense, we still get paid, no matter what happens to you.

Please consider, then, carefully, your options.

IF I PASS THE TRAINING/ ACCLIMATIZATION?

Once you have been deemed fit by our staff, you will continue with exercises in both simulated and actual environments, and begin the process of familiarizing yourself with your equipment and with the logistical support who will be operating alongside you.

Your final payment covers the following field kit. Please be aware you will be expected to only use equipment sanctioned by Mesozoic Hunter Corporation (MHC)[®]:

- Hunting rifle (see below)
- Shotgun (see below)
- Smoke grenades: for position marking and, in emergencies, to obfuscate the hunting team from aggressive animals
- Pepper spray: a useful deterrent to any overly inquisitive or aggressive animals
- Ghillie suit: an air-conditioned camouflage suit; these are specifically adapted to each hunting zone

DINOSAUR HUNTER

- **Body armour:** there are Kevlar composite armour plates to cover all regions of the body; experienced hunters can find these an encumbrance and choose to wear only those they consider vital. This varies from hunter to hunter; it should be pointed out that while the armour may prevent penetration by even the biggest teeth, it can do little to deter bite pressure or prevent crushing. Most experienced hunters usually wear armour plates on the arms and legs, which are considered most vulnerable to attack
- **Machete:** generally used as a clearing tool but, in desperate situations, can be employed as a weapon
- **Rebreather and CO₂ scrubbers:** the Mesozoic (particularly the Triassic) has higher concentrations of carbon dioxide than the present. Not only does this result in the 'greenhouse effect' of markedly raised temperatures through the Era (again, particularly during the Triassic but also the Jurassic) but it also makes breathing a troubling affair for humans. Accordingly, the rebreather is a respiratory apparatus similar to those used by SCUBA divers; however, unlike the closed system of underwater rebreathers, the Mesozoic version works in virtually the opposite way, drawing air in and over the CO₂ scrubbers, which reduce the amount of carbon dioxide and make it more palatable to human lungs. The scrubbers can be changed quickly and easily in the field
- **Webbing and pony rig:** the pony rig is a small air bottle and respirator used as an emergency air supply; it is hung in the small of the back from the military webbing fitted out beneath the ghillie suit
- **Bergen backpack**
- **Compass**
- **Waterproofs**
- **Walking boots**

INTRODUCTION

- Bush hat
- Goggles
- Gloves
- Strobes (infra-red and white light)
- Flares
- Insect hood
- Insect repellent
- First aid kit (includes broad-spectrum antibiotics, painkillers, anaesthetic, speed glue, stapler, band aids, gauze and bandages)
- Head-mounted camera: these are used to film all hunts and downloaded to a hard drive at the Forward Operating Base (FOB). All material filmed on the head cameras is copyright © Mesozoic Hunting Corporation
- MREs (Meals Ready to Eat): lightweight pre-prepared meals including hot food
- Water packs and drinking tubes
- Camping equipment: includes two-person tent, portable stove, cooking utensils, portable air-conditioning unit, UV anti-insect light, motion detectors, electric lamps and sleeping bags
- Communication equipment

Important: No hunt will be undertaken without valid life insurance coverage for the hunting team.

ORGANIZATION AND FACILITIES

Whilst many of you may already be experienced hunters, the environments and conditions you will be entering will be unfamiliar, as will the animals you will be hunting.

You will be operating in pairs. Again, some of you may only be familiar with hunting alone. However, this is non-negotiable.

DINOSAUR HUNTER

For the sake of expediency, we will refer to the second team member as the ‘spotter’; however, the spotter’s duties include providing cover for the ‘shooter’ or ‘hunter’; their second set of eyes is there to look for trouble while the hunter is engaging the target and therefore they are equipped with a scope or binoculars. The spotter is also armed with a shotgun containing lethal rounds, to be used in case of emergencies; the hunter is similarly equipped with a back-up shotgun, but fitted with non-lethal rounds to act as a deterrent to any inquisitive or aggressive animals.

During your month in the Mesozoic, you will operate out of a Forward Operating Base (FOB), which includes living quarters; a field hospital; a drone shack; and hangars for the helicopter/tilt-rotor pair known as the Pink Team.

THE PINK TEAM

The Pink Team derives its name from the callsigns of the two aircraft that form the flight: the ‘white’ utility helicopter or tilt-rotor (a UH-74 Shasta or V-32 Victor respectively), and the ‘red’ scout/gunship (an RAH-80 Osage).

The Pink Team’s primary role is the support of the hunting team, both generally and in cases of emergency. The ‘white’ aircraft is used in the transport and medevac role, inserting the hunting team into their location, running supplies and extracting the team. The Osage is there to provide overwatch and, in extreme cases, cover for the white aircraft. The Pink Team is kept on five-minute standby or ‘alert five’; it can be airborne in five minutes should the necessity arise and the hunting team is kept within a geographical radius that allows the Pink Team to be with the hunting party within 20 minutes should an emergency situation arise. In more dangerous

INTRODUCTION

environments, the Pink Team will be airborne to provide top cover for the hunting team.

A pair of aircraft are kept at the FOB as replacements should one or the other be grounded due to maintenance or mechanical failure. The FOB also hosts ground crews to service the aircraft and drones.

In addition to the Pink Team is a pair of KV-32s, a version of the Victor fitted out as an airborne tanker used for in-flight refuelling. These can refuel the Pink Team in flight and extend its flying time if the situation requires it.

DRONE COVERAGE

Once the hunting team is on the ground, drones are airborne 24/7. These are equipped with cameras (low-light, heat-sensitive, UV and infra-red, as well as white light optics) and also HV flechettes. These weapons are essentially high-velocity, warhead-less composite darts that can be used to defend the hunting team in case of extreme emergency.

The drones can be used to track target animals should the hunting team so choose; this is especially useful in areas of dense forest, where heat-sensitive cameras can distinguish animals below and help steer the hunting team to their target or away from trouble. (Some hunters prefer to use the drones only for the latter, relying on their own field craft to track prey.)

RULES OF ENGAGEMENT

One of the most frequently asked questions MHC® is asked is 'will you affect the time line?' No. No matter what Ray Bradbury wrote, you will not come back to the present to find the Earth

DINOSAUR HUNTER

ruled by monkeys. Why not? Well, quantum physics and temporal theory are outside the remit of this guide; you'll just have to take our word for it.

That said, the hunting expeditions are rigorously controlled. The number of animals taken is strictly limited to three per expedition. This number is also restricted to only certain types or species, according to the time period you are in. The breaking of these rules will result in prosecution by MHC[®], leading to heavy fines and imprisonment. There is a self-defence clause but this will be rigorously examined in a court of law.

WHAT HAPPENS WHEN I ARRIVE AT MY CHOSEN DESTINATION?

It's worth pointing out at this juncture that we cannot guarantee precisely where your expedition will arrive in the Mesozoic. The Artificial Intelligences used to calculate the opening of the windows into the Era are about as advanced as is possible at this time but they still lack the capability to calculate a precise point in time. Each window has a plus/minus factor of approximately 1–1.5 million years. This can affect the fauna to be expected. For instance, the Morrison Formation lasts 8 million years. The aim point is the lower/mid-Morrison 150 million years ago, a point in time when the most iconic members of the fauna were common, including *Allosaurus*, *Stegosaurus* and *Diplodocus*. Any later sees a faunal changeover as the Morrison became wetter, giving rise to new genres and species, and resulting in the extinction of others.

On arrival at your destination, you will begin your familiarization training. This will include navigational exercises and Theatre Indoctrination Training (TIT) flights with the Pink Team that will allow the hunting team to develop a geographical

INTRODUCTION

understanding of the hunting range (termed reserves). This will be followed by ‘walkabouts’: on-foot safaris that are not for the purposes of hunting but for acclimatization and familiarization with the equipment and procedures to be employed.

Once familiarization is complete, your hunting team will be dropped at your first campsite; you will spend five days in the field before two days back at the FOB; followed by three similar rotations until you have completed four weeks.

YOUR DESTINATION

If this is your first (and possibly only) hunt, you now have the difficulty of choosing your destination. We have five hunting zones available:

1. Chinle Formation: Late Triassic (early-mid Norian stage) of what is now South-West North America, approximately 225–210 million years ago (mya)
2. Morrison Formation: Late Jurassic (very late Kimmeridgian to early Tithonian stage) of Mid-West North America, 152–148 mya
3. Bahariya Formation: Middle Cretaceous (Cenomanian stage) of North Africa, 98–93 mya.
4. Dinosaur Park Formation: Late Cretaceous (late Campanian stage) of Western North America, 75–72 mya
5. Hell Creek Formation: Late Cretaceous (late Maastrichtian stage) of Western North America, 66–65 mya

Each section in this book represents one particular destination and includes a story, memoir or report that not only gives you, the reader, a flavour of the various time zones but also serves as a cautionary tale. Most do not end well. They are there not to frighten you but to help inform your final choice by showing you the Mesozoic at its best and worst.

THUMP GUNS AND ELEPHANT LOADS

The basic weapon offered to the MHC® hunter is the bolt-action Ruger No.3 Elephant Load. The rifle is 41in long, with a 24in barrel and weighs 10lbs (without scopes). It uses open sights but is fitted out to carry modern optical sights. The Elephant Load fires a .505 1,300-grain cartridge with a velocity of 2,500ft/s; it can also use wildcat elephant gun cartridges that retain the .505's diameter but have a longer case and modern accelerants. These rounds have a higher muzzle velocity of 2,600ft/s without necessitating a bigger weapon and barrel to increase muzzle velocity. They can also be fitted out with Nitro Express tungsten flechette rounds with very high muzzle velocities or a 700g solid metal slug for use against particularly tough targets. These are modelled on the ironically named .577 Tyrannosaur manufactured by A-Square; even more ironically they have been found to be the best available cartridge for penetrating the skull of large Theropods. The action is smooth and simple; the rifle itself also contains very few parts, making it very reliable and easy to maintain in the field.

The second rifle is the Purdy Allosaur Express. It fires a Holland & Holland .705 NE cartridge with a maximum velocity of 2,000ft/s but the rifle itself is much lighter, only 7lbs. The Express is 36¹/₂in long with a barrel length of 22in. It generally uses open sights but can be fitted with modern scopes. Like the Ruger, the weapon is simple to operate and easy to maintain.

Both shooter and spotter will be equipped with shotguns. These are essentially for deterring overly inquisitive or aggressive animals, or for use in extreme emergency situations (for 'emergency', read 'animal attack').

The shooter is equipped with non-lethal rounds for the shotgun: CS gas, baton rounds and 'pepper' rounds. These are generally enough to dissuade even the most persistent of predators.

INTRODUCTION

However, should these fail, the spotter has a lethal load-out, including solid slug penetrators – generally considered the most effective round against large, dangerous animals.

The primary shotgun used by MHC® is the Benelli M6 12-gauge semi-automatic, which has an effective range of 165ft. The Italian-made weapon is 35in long, with an 18¹/₂in barrel. However, it does have a folding stock, which many experienced hunters prefer collapsed when moving in confined environments such as forest. Its weight is only 8¹/₂lbs.

The M6 generally uses a ghost ring open sight but also has a Picatinny rail on the top of the barrel for scopes and flashlights. The weapon has a 7 + 1 load (seven in the magazine, one in the chamber) and has seen action in a number of wars with armies around the world, where the weapon has proved tough and versatile. It has proved similarly effective in the Mesozoic.

THE CHINLE FORMATION

Period: Late Triassic

Age: Norian stage (225–210 mya)

Present location: South-West North America, principally Arizona

Reserve size: approx 5,000 square miles (slightly smaller than the Serengeti National Park)

CONDITIONS

The Chinle is considered to be the most arduous of the Mesozoic hunting reserves. The mean temperature is also far higher than today; dry seasons are generally 40°C (104°F) or higher, while there are prevalent ‘greenhouse’ conditions resulting from a greater percentage of carbon dioxide in the atmosphere (seven times more than present pre-industrial levels). This is the principal reason for the physical hardships of hunting in the Triassic; it requires the constant use of rebreathers in high-temperature, high-humidity environs. As such, much of the preparatory

THE CHINLE FORMATION

physical training takes place in areas of low oxygen at high altitudes to prepare the body for the remote possibility of being active without breathing equipment.

The continents are arranged into the giant supercontinent of Pangaea; the Chinle is situated close to its western edge, near the equator. The supercontinental arrangement results in extraordinary weather conditions and the Chinle is prone to 'mega-monsoons' that lead to particularly heavy rains and catastrophic flooding during the wet season. Humidity at this time is persistent and very high. This makes for very uncomfortable hunting conditions; without the proper clothing, immersion foot, crotch rot, bacterial and fungal infections and leeches can be a problem. Well-sealed waterproofs are considered vital.

Between the monsoons, the dry seasons can be harsh and incredibly hot, although many rivers and lakes remain well watered enough to run throughout the year.

GEOGRAPHY AND ENVIRONMENT

The high carbon dioxide, humidity and temperatures, as well as regular rainfall, mean that the Chinle is well vegetated; a floodplain fans out northwards from an epeiric body of water running north from the ocean. This floodplain forms a floodplain of numerous large rivers and lakes that fans out for thousands of square miles towards the Mogollon Highlands to the south and the Proterockies to the east.

The FOB is located in the well-forested southern foothills of the Mogollons while the reserve is away from the Chinle's interior heartlands and to the south of the range in rich coastal swamps and deltas. Like the interior, these deltas are well watered by numerous rivers, bayous and lakes. Gallery forests

DINOSAUR HUNTER

of large conifers, Araucarioxylons, overlook the rivers, braided streams, ponds and marshes; these trees can be massive, some measuring 200ft high. These thick forests of tightly packed, towering conifer trunks are dark and dank (especially in the wet season) and support few large animals.

The Araucarioxylons thin out away from the watercourses and are replaced by woodlands of smaller cycads and ginkgoes surrounded by beds of hardy ferns. During the wet season, larger herbivores will brave these fern prairies to feed on the new growth, followed, naturally, by their predators.

The rivers are lined with dense stands of huge horsetails that form the understoreys of the conifer forests. These horsetails can measure up to 100ft high and, in places, can be impenetrable. The ground covering is made up of various cycads, lycopods and club mosses, and ferns and mosses that can form coverings over the lower trunks of larger trees not unlike modern creepers and ivy.

The banks of the rivers can also be lined with thick mussel beds that can make the going underfoot difficult.

LICENSED TARGETS

You are licensed to hunt the following species in the Chinle:

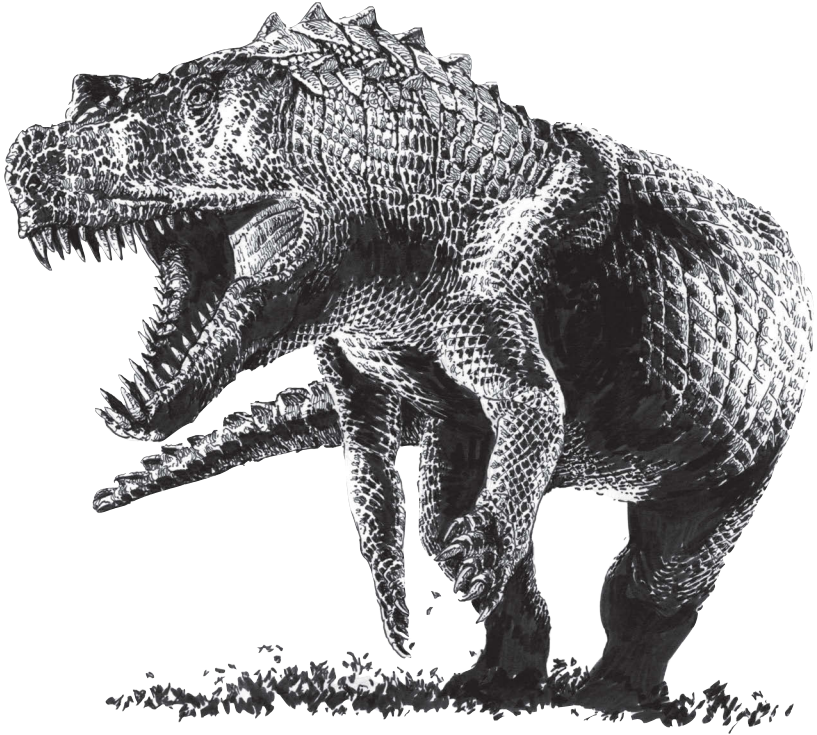
POSTOSUCHUS

Length: 12–13ft

Weight: 500–600lbs

This heavily armoured carnivore is not a dinosaur, although it does have the appearance of how the likes of *T-rex* were envisaged in the early 20th century. *Postosuchus* belongs to a group of reptiles called Rauisuchidae, part of a group called

THE CHINLE FORMATION



The Chinle's apex predator, *Postosuchus*.

the Pseudosuchia or 'false crocodiles' that does actually include modern crocodilians.

Undoubtedly the apex predator of the Chinle, its massive skull sports jaws are lined with long, serrated teeth adding to its dinosaurian appearance. The larger, less numerous teeth in the upper jaw are recurved to hook into prey. The lower jaw contains smaller but more numerous teeth, which act like the prongs of a fork, pinning the flesh of its prey while the large upper teeth slash and tear into it.

Postosuchus is equipped with large eyes and nostrils that provide excellent eyesight and sense of smell; it also has a

DINOSAUR HUNTER

Jacobson's organ (more properly known as the vomeronasal organ or VNO); this allows the predator to 'taste' the air for particles of scent trapped in the humid air. In the dense forests and undergrowth of the Chinle, this gives the *Postosuchus* a great advantage while hunting.

Postosuchus is a facultative biped (like many herbivorous dinosaurs); it can move in both bipedal and quadrupedal gaits. The heavily built predator usually walks on all fours, although, with the forelimbs half the size of the hind ones, it is slow and cumbersome. However, when required to move somewhat faster, such as attacking prey, it often lifts itself on to its hind legs, using its considerable weight and mass to build up speed and inertia, the massive head counterbalanced by the long tail.

This is its primary form of attack. *Postosuchus* is an ambush predator. Its primary habitat is the thick gallery forests (where they are open enough to allow it to travel) and dense riverside understoreys. From concealed positions it will charge its prey, launching forward, propelled by its powerful hind legs to deliver a savage bite. As much of its prey is large, even larger than itself, this bite is not intended to kill. Blood loss and shock are often left to do that in smaller prey animals, but in larger ones *Postosuchus* uses microscopic allies to finish off the prey. It will trail its victim, sometimes for many days until infection takes its toll. It is the primary function of the VNO to track such infected prey; the VNO may also be used to sniff out the state of the infection.

Postosuchus' primary prey includes *Placerias* and Aetosaurus, even other, smaller Rauisuchids and Poposaurs; but in its role as apex predator, almost no animal is immune to attack except the larger Phytosaurs. *Postosuchus* is also a keen scavenger, stealing kills from any predator unable to withstand its bullying.

OPPOSITE: The huge phytosaur, *Redondasaurus*, ambushes the metoposaur amphibian, *Koskinanodon* — itself a pretty mean predator. All this action startles a freshwater xenacanthid shark.