



Karnataka Forest Department

EFFECTIVE, HUMAN-SNAKE CONFLICT MANAGEMENT AND MITIGATION

An Operation Manual for Certified Snake Rescuers



**HUMANE SOCIETY
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Karnataka Forest Department acknowledges the contributions of the following experts as primary authors in formalting this document:

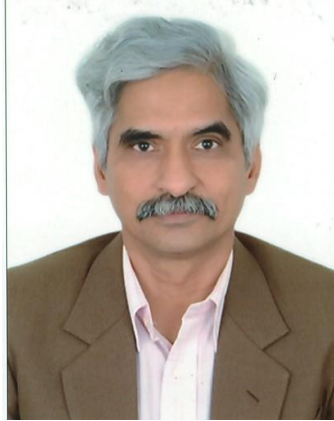
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FOREWORD



In order to streamline and bring in more accountability in the process of rescue of snakes in human dominated areas, the Principal Chief Conservator of Forests (Wildlife) and Chief Wild Life Warden, Karnataka has taken the right step in bringing out 'An Operational Manual for Effective Human-Snake Conflict Management and Mitigation'. The manual has covered important aspects including legal provisions related to snake rescue, basics of snake biology, standard operating procedure for managing snake conflict, handling of snake bite including first aid etc. There is a need to initiate a training and certification process for volunteers and develop a database of all complaints and rescue operations. This will be helpful to understand the geographic spread and intensity of the problem, identify hotspots and take suitable long-term measures for redressal of the problem. Awareness creation among the public should also be addressed through the certified volunteers. I congratulate Karnataka Forest Department for taking a step in right direction in tackling the problem of human-snake conflict.

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PREFACE



Due to rapid urbanization and conversion of natural landscape to human dominated landscape, human-snake interactions have become frequent leading to unfortunate incidents of human deaths and killing of snakes. The present publication titled ‘Operational Manual for Certified Snake Rescuers for Effective Human-Snake Conflict Mitigation’ is intended to provide a structured protocol to the people engaged in snake rescue for dealing with human-snake conflict situation. This manual and any subset of standard operating procedures resulting from it, is intended to serve the primary purpose of establishing best practices for the management of human-snake conflict in its immediacy and for the long-term. The manual has covered the following aspects:

- Broad objectives and scope of the manual
- Legal provisions related to ‘snake rescue
- Basics of snake biology
- Standard operating procedure for managing human-snake conflict including granting permission and certification by Forest Department
- Snake rescue, working with people, a rescuer’s toolkit, documentation and reporting etc.
- Do’s and Don’ts in case a snake bite happens

In a nutshell, the manual is designed to provide a framework within which individuals engaged in managing conflict scenarios and physical handling of snakes can operate with the best interest of all stakeholders viz. the community in conflict, the state forest department, the rescuer, and the snake itself.

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ACKNOWLEDGEMENTS



With increasing human-snake conflict situations, a need has been felt in recent years to develop manual or operational guidelines for snake rescuers engaged in human-snake conflict mitigation. The present document titled ‘Operational Manual for Certified Snake Rescuers for Effective Human-Snake Conflict Mitigation’ is primarily intended to establish Standard Operating Procedures and bridge the knowledge gap in matters related to snake rescue and also to initiate a certification process and create a documentation and reporting system with regards to snake rescue for long-term understanding of the problem.

For preparation of the document, the following experts are the primary contributors:

- Gerard Martin, Founder Trustee, The Liana Trust, Hunsur, Karnataka
- Sumanth Bindumadhav, Senior Manager, Humane Society International/ India, Bangalore, Karnataka
- Romulus Whitaker, Herpetologist and Co-author of ‘Snakes of India’

Shri Vijay Kumar Gogi, PCCF (Wildlife) and Chief Wildlife Warden, Karnataka has guided the process of preparation of the manual from the beginning till the finalization and approval. Shri. Subhash Malkhede, APCCF (Working Plan) and Shri. Kumar Pushkar, APCCF (Wildlife) have shared their valuable suggestions on the draft manual. Some of the field officers, particularly, Shri Maria Christu Raja D., Field Director, Kali Tiger Reserve have provided valuable suggestions that have been incorporated for finalizing the manual. I am thankful to the office staff of PCCF (Wildlife) office including Madhumalathi, Administrative Officer, Geethanjali, Manager and Arun FDA for ministerial support.

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1. Introduction to Human-Snake Conflict-

India has always been known as a land of snakes. Our country accounts for almost 10% of the global diversity of snakes and there are new species being discovered and described regularly. Historically, snakes have been venerated, worshipped, and tolerated through most parts of India. However, over the last few decades, this tolerance has vanished, and snakes have been killed on sight or captured and relocated.

There is also an unparalleled level of human-snake conflict in India. Out of the approximately 1,40,000 global annual deaths due to venomous snakebite, an estimated 58,000 to 62,000 occur in India. In addition, there is a much higher number of Indians who suffer permanent loss of life function due to snakebite. This could be the loss of a limb, tissue damage, kidney failure, etc. The socio-economic and psychological costs are also tremendous as snakebite is truly a disease that primarily affects agricultural and lower economic communities.

As urban expansion is at an all-time high, the incidence of snakes and humans interacting is frequent with cities and towns seeing dozens and sometimes, hundreds of cases a day. Unfortunately, this has led to a spate in so-called rescues, with interventions being conducted by untrained, often unlicensed, and unscrupulous individuals. Snake rescue has become a viable way for youth to make quick money while also gaining adulation from people and on social media. This has further led to an increase in frequency of accidents, where snake handlers regularly get bitten and snakes are put through tremendous stress and trauma.

However, it is also important to consider the fact that relocated snakes most probably die due to starvation. With the impact that these interventions are likely to have on individual snakes as well as populations and ecosystems, there is a need to regulate the process in tune with scientific and conservation principles. Therefore Forest Department's regulatory role is imperative, and a structured training, testing, and monitoring system is the need of the hour.

This manual will address numerous aspects of snake biology and conservation as well as provide a structured protocol for dealing with human-snake conflict situations.

2. Scope Of the Manual-

This manual and any subset of standard operating procedures resulting from it, is intended to serve the primary purpose of establishing best practices for the management of human-snake conflict in its immediacy and for the long-term. It is designed to provide a framework within which individuals engaged in managing conflict scenarios and physical handling of snakes can operate with the best interest of all stakeholders viz. the community in conflict, the state forest department, the rescuer, and the snake itself. The background, context and content provided in this manual is applicable across the State of Karnataka.

Further, this manual will provide snake conflict managers with the scientific information they need in which to base their conversation with communities in conflict, it will serve as a guide to identify situations that warrant a snake to be handled and moved and provide key pointers on safe and least stressful handling of snakes, should the need arise.

Furthermore, this manual, will assist the officers of Karnataka Forest Department in identifying practices in human-snake conflict management that are rooted in science and over time, ensure compliance of everyone involved to these standards, for effective conflict resolution, and promoting coexistence.

3. Objectives Of the Manual-

The objectives of this document are as follows:

- To provide standard operating procedures that guide a rescuer to successfully manage a conflict situation including humane handling of snakes in conflict
- To serve as the guiding principles or outline within which to create program(s) to institutionalize snake rescue in the state of Karnataka
- To distinguish between ‘snake rescue’ and ‘snake catching’ as it relates to managing conflict
- To build a system of accountability that will seek to provide a pathway, and regulate snake rescue in the state of Karnataka
- To provide an outline that would enable the law enforcement agency (forest department) to identify current bad practices and instead administer reforms or penalties as may be warranted by law

4. Legal Provisions Related to Snake Rescue-

The Wildlife Protection Act, 1972, (WLPA) enacted by the Parliament in the fifty-seventh year of the republic of India serves to “provide for the protection of wild animals, birds and plants and for matters connected therewith or ancillary or incidental thereto with a view to ensuring the ecological and environmental security of the country”. Conflict with wild animals and its repercussions is directly tied to the ecological and environmental security of the country thereby, rendering WLPA the primary legislation under which policies and guidelines may be issued by relevant authorities to address this issue.

4.1 Key Definitions Under WLPA-

(a) Section 2, sub-section (1)

“Animal” includes mammals, birds, reptiles, amphibians, fish, other chordates and Invertebrates and also includes their young and eggs.

Interpretation: this encompasses snakes as part of reptiles and extends to the eggs of snakes as well.

(b) Section 2, sub-section (14)

“Government property” means any property referred to in section 39 [or section 17-H].

Interpretation: the relevance of this definition is echoed in the reading and understanding of section 39 further below in this section of the document.

(c) Section 2, sub-section (15)

“Habitat” includes land, water or vegetation which is the natural home of any wild animal.

Interpretation: the emphasis on the term ‘natural home’ seeks to remove the bias that exists that only a forest or any wooded area needs to be ‘home’ to animals such as snakes. Cities and community lands are the ‘natural home’ for snakes as well.

(d) Section 2, sub-section (16)

“Hunting”, with its grammatical variations and cognate expressions, includes-

- (i) Killing or poisoning of any wild animal or captive animal and every attempt to do so;*
- (ii) Capturing, coursing, snaring, trapping, driving or baiting any wild or captive animal and every attempt to do so;*
- (iii) Injuring or destroying or taking any part of the body of any such animal or, in the case of wild birds or reptiles, damaging the eggs of such birds or reptiles, or disturbing the eggs or nests of such birds or reptiles.*

Interpretation: physically moving a snake from one place to another (irrespective of the intent) falls into the definition of ‘hunting’ as it involves ‘capturing’ a snake. Hence, despite the common interpretation of the word hunting, in the context of WLPA as it relates to snake rescue, it needs to be understood differently.

4.2: Key Sections Under WLPA-

(a) Section 12:

Grant of permit for special purposes- Notwithstanding anything contained elsewhere in this act, it shall be lawful for the Chief Wildlife Warden, to grant a permit, by an order in writing stating the reasons therefore, to any person, on payment of such fee as may be prescribed, which shall entitle the holder of such permit to hunt, subject to such conditions as may be specified therein, any wild animal specified in such permit, for the purpose of, -

(a) education;

(b) scientific research;

(bb) scientific management

Explanation- for the purpose of clause (bb), the expression scientific management means-

- (i) Translocation of any wild animals to an alternative suitable habitat;***
- (ii) population management of wild life, without killing or poisoning or destroying any wild animals***

(c) collection of specimens-

(i) for recognized zoos subject to permission under section 38-I

(ii) for museums and similar institutions

(d) derivation, collection or preparation of snake venom for the manufacture of live-saving drugs

Interpretation: rescue of a snake from a conflict scenario might involve having to capture a snake and move it to another location irrespective of the distance. Hence, this action falls under the meaning of the term 'scientific management' as explained in the section above and warrants a permit to be sought in writing from the Chief Wild Life Warden of the state prior to undertaking any form of rescue or capture of snakes. Rescuing/capturing of snakes, with all good intention, without prior permission under section 12, clause (bb) contravenes the act and is a prosecutable offence.

5. Basics of Snake Biology-

5.1: Understanding snakes:

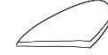
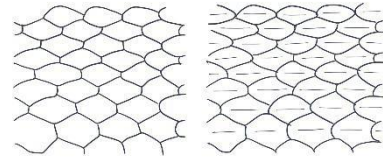
An understanding of basic snake biology is important while mitigating conflict. This chapter will address the basics of anatomy, taxonomy, behavior, natural history, and ecology.

5.1.1: What is a snake?

Snakes are elongate, limbless reptiles with no eyelids or external ears. There are over 3,000 species of snakes in the world. According to the World Health Organization, out of these, approximately 600 are significantly venomous to humans (able to cause damage or death) and about 200 of these are medically significant (bites occur in number and frequency that is significant). India has over 315 known species, with many new species being discovered and described frequently. We have approximately sixty species that are significantly venomous to humans and around 15 to 17 species that are medically significant.

5.2: Taxonomy and Identification:

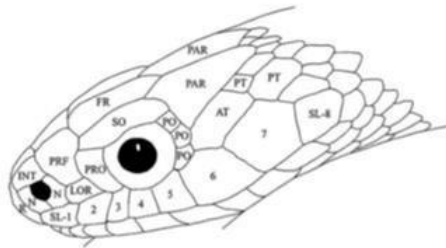
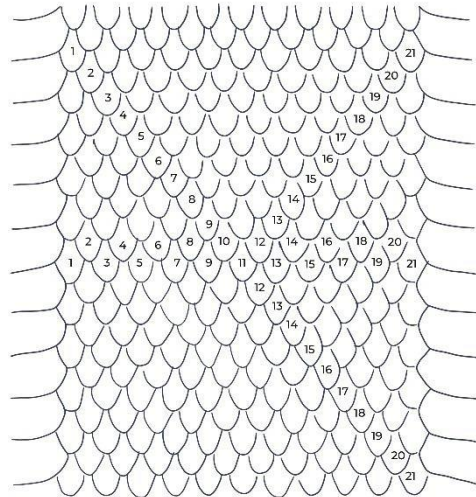
One of the key steps in assessing risk is knowing which species is involved in the interaction. The common species are easy to identify in most cases. However, even seasoned rescuers from all over the country are often unable to identify any species that is out of the ordinary. It is very important to keep up to date with the latest species descriptions. This section explains how to identify snakes based on scalation and how to follow identification keys.



Smooth scales

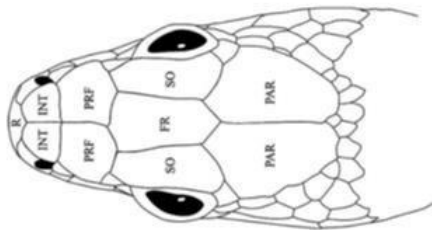


Keeled scales



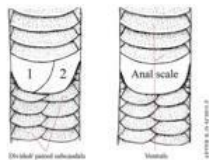
R - rostral INT - internasal N - nasal LOR - loreal PRF - prefrontal FR - frontal SO - supracocular PO - postocular SL - supralabial PAR - parietal AT - anterior temporal PT - posterior temporal

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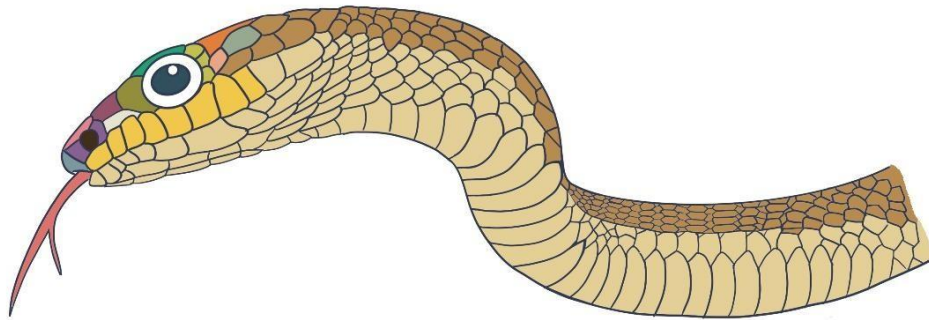
R - rostral INT - internasal PRF - prefrontal FR - frontal SO - supracocular PAR - parietal

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Dorsal paired subcaudals

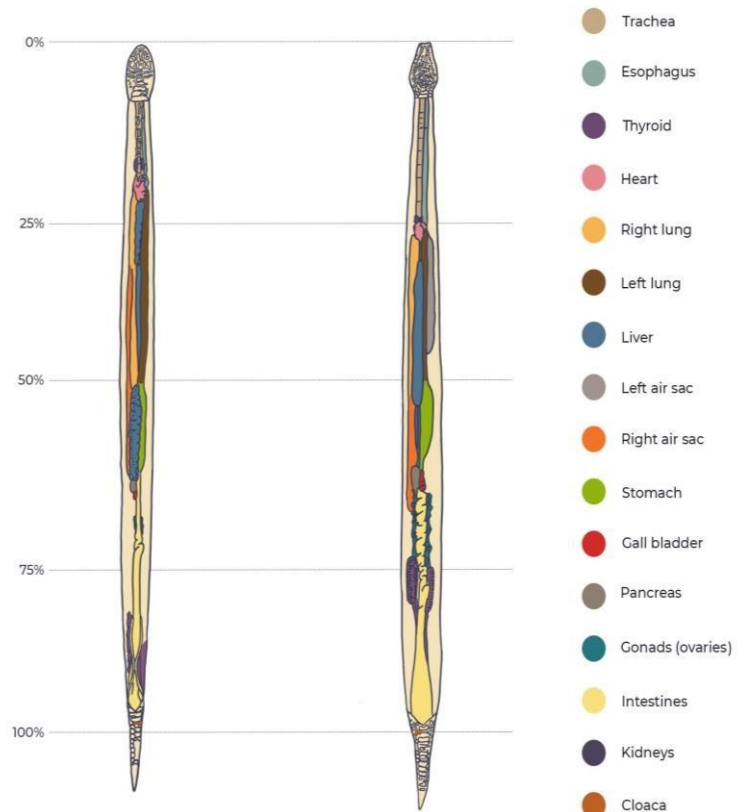
Ventral



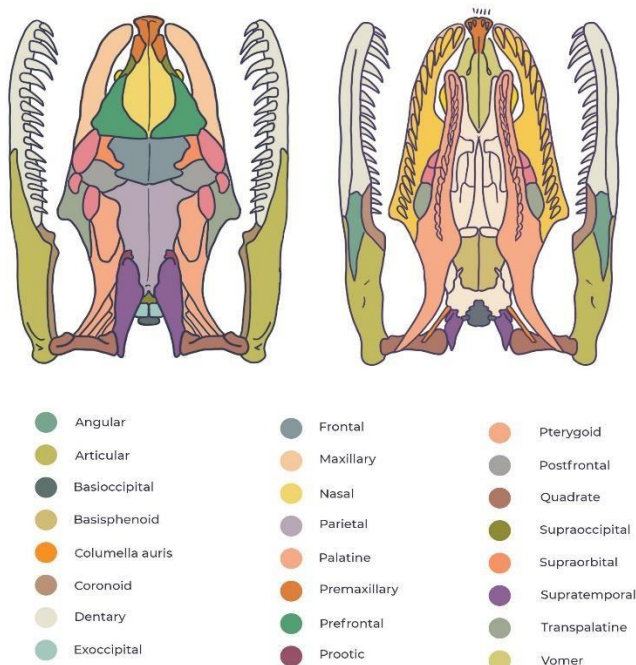
- | | | |
|--|---|--|
|  Rostral |  Pre-frontal |  Anterior temporal |
|  Internasal |  Supraocular |  Posterior temporal |
|  Nasal |  Postocular |  Prerostral |
|  Loreal |  Supralabial |  Parietal |

5.3: Anatomy and Physiology:

Snakes' bodies and internal organs are all elongated to enable their effective functioning through all their behavioral activities. Anatomy and physiology are not only required for research but are imperative to know and followed even while handling snakes. Research has shown that poor handling of snakes not only adds to stress but also physiologically damages snakes. Unfortunately, most of this damage does not become obvious until much later.



5.3.1: Dentition:



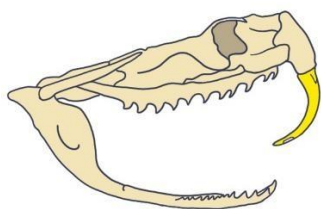
Most snakes have numerous teeth that are located on the lower jaw (mandible), the Maxilla (where the venomous front fangs are), the palatine (front part of the inner roof of the mouth), and the pterygoid bone (rear part of the inner roof of the mouth). Altogether, snakes generally have six rows of teeth- one on each side of the lower jaw and two on each side of the upper jaw. Snakes like boa constrictors can have over a hundred teeth, while king cobras have much fewer teeth. The teeth can be replaced

repeatedly throughout the snake's life.

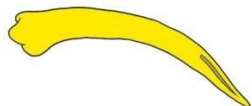
The palatine teeth along with the teeth on the lower jaw allow the snake to 'walk' the prey into its mouth by pulling in alternate sides of the prey at a time. Because many snakes need to swallow prey that is much bigger than their mouths, the jaws are very loosely joined only with an elastic ligament that allows the snake to stretch its jaws over prey that can be up to ten to twenty times the size of its relaxed head.

Generally, there are 4 kinds of snake dentition types. Snakes with (1) Aglyphous dentition have no venom dispatching apparatus and only have 'normal' teeth. They are usually harmless aside from the large pythons, boas, and anacondas. (2) Opisthoglyphous snakes are those that have enlarged grooved venom fangs toward the rear part of the upper jaw. These snakes need to chew onto their prey subjects to be able to envenomate them. Many snakes from the Family *Colubridae* possess this type of dentition. (3) Proteroglyphous dentition is found in snakes from the *Elapidae* Family. These snakes have fixed, grooved fangs in the front of their mouth. (4) Solenoglyphous dentition is found in vipers, where the fangs are long, canaliculate and hinged. These snakes can dispatch venom very efficiently and their fangs are like hypodermic needles.

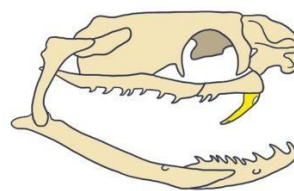
Viperidae - Solenoglyphous



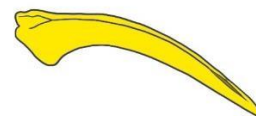
Eg: Russell's viper, Bamboo pit viper



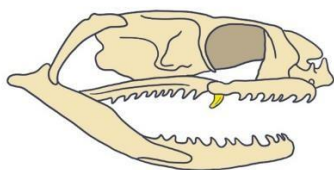
Elapidae- Proteroglyphous



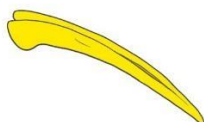
.Eg: Cobra, Coral snake, Sea snake



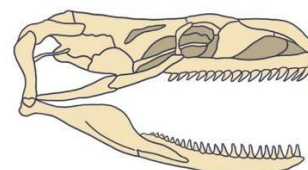
Colubridae & Homalopsidae- Opisthoglyphous



.Eg: Cat snake, Vine snake and Dog-faced watersnake



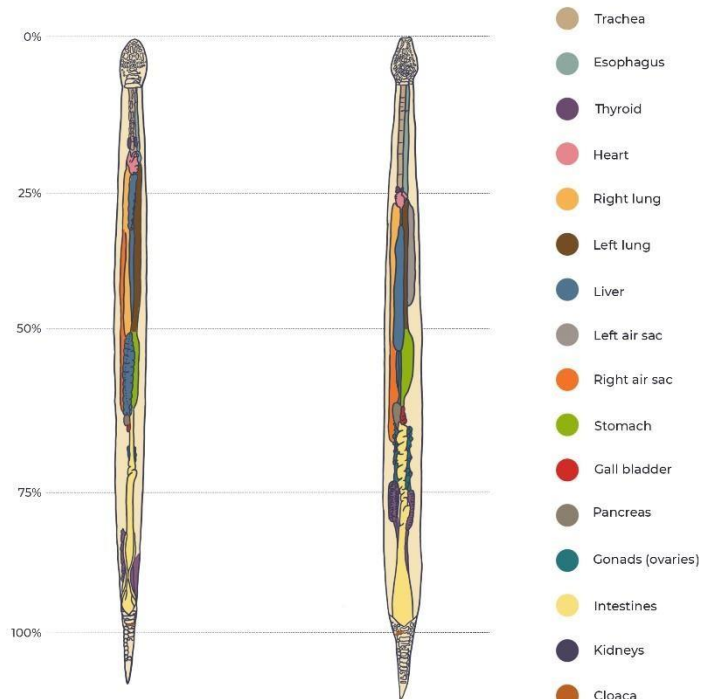
Boidae and Coubridae- Aglyphous



.Eg: Python, Sand boa, Rat snake and Trinket snake

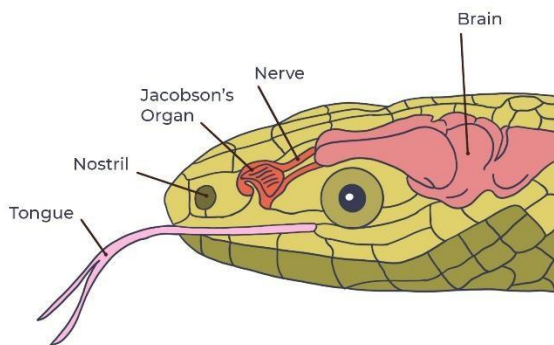
5.3.2: Anatomy:

An understanding of the internal build of individual snake species is very important to be able to handle them effectively, ensure their well-being and arrive at positive results from interactions. It is imperative that all snakes are not treated the same way as there are numerous differences in their needs, weaknesses and behaviour that stem from physiology. Some of the most important aspects are the general build of the snake (whether it is robust or slender), the musculature, position of the heart, etc. Very few handlers consider these aspects and hence, are by and large dysfunctional in



This is even more important to consider while handling snakes during different states of being or events in their lives; for instance, if a snake has just fed or if it is gravid.

Some key points to remember are:



- (i) Snakes have relatively slender and long bodies.
- (ii) They have extremely flexible vertebral columns with ribs attached to most of the vertebrae.
- (iii) They do not have a sternum to hold the ribs in place. The ends of the ribs are attached to the internal ends of the ventral scales.
- (iv) Snakes' hearts are positioned

differently in different species, depending on whether they are largely terrestrial (living on land), arboreal (living in trees), aquatic (living in water), etc.

(v) It is useful to divide a snake's body into quarters:

- The first quarter consists primarily of the head, esophagus, heart and traches.
- The second quarter holds the front part of the lungs (especially the part with blood vessels), liver, and stomach.

- The third quarter gallbladder, spleen, and gonads. The small intestine passes through these and the right lung passes alongside them.
- The fourth quarter is where the junction between the small and large intestine is along with the kidneys, cloaca (vent where reproductive and digestive systems access the outside) and hemipenes (male reproductive organs present in the tail region).

5.4: Snakes of Karnataka:

Karnataka has 10 of the 18 families of snakes known worldwide. These are listed in the table below along with examples of species from each of them.

Sl. No.	Family	Example	Common Name
1	Typhlopidae	<i>Indotyphlops braminus</i>	Brahminy Worm Snake
2	Uropeltidae	<i>Uropeltis ellioti</i>	Elliot's Shieldtail Snake
3	Boidae	<i>Eryx johnii</i>	Red Sand Boa
4	Pythonidae	<i>Python molurus</i>	Indian Rock Python
5	Achrochordidae	<i>Achrochordus granulatus</i>	Little File Snake
6	Colubridae	<i>Ptyas mucosa</i>	Indian Rat Snake
7	Elapidae (including Hydrophidae)	<i>Naja naja</i>	Spectacled Cobra
8	Natricidae	<i>Fowlea piscator</i>	Checkered Keelback
9	Viperidae	<i>Daboia russelii</i>	Russell's viper
10	Homalopsidae	<i>Cerberus rynchops</i>	Dog-faced Water Snake

Of the families listed here, only some snakes are important for professionals called upon by the public to resolve their conflicts with snakes in their immediate living and working spaces.

Sl. No	Species	Common Name	Distribution
1	<i>Ophiophagus hannah</i>	King Cobra	Western Ghats
2	<i>Naja naja</i>	Spectacled Cobra	Throughout the State
3	<i>Bungarus caeruleus</i>	Common Indian Krait	
4	<i>Calliophis nigriscens</i>	Striped Coral Snake	Western Ghats
5	<i>Calliophis bibronii</i>	Bibron's Coral Snake	Western Ghats
6	<i>Daboia russelii</i>	Russell's Viper	Throughout the State
7	<i>Echis carinatus</i>	Saw-scaled Viper	Found in rocky areas throughout the State
8	<i>Trimeresurus malabaricus</i>	Malabar pit Viper	Western Ghats
9	<i>Trimeresurus gramineus</i>	Bamboo pit Viper	Western Ghats and Rocky Areas at the edge of the Deccan Plateau
10	<i>Hypnale hypnale</i>	Hump nosed pit Viper	Western Ghats
11	<i>Ptyas mucosa</i>	Indian Rat Snake	Throughout the State
12	<i>Fowlea piscator</i>	Checkered keelback	Throughout the State
13	<i>Ahaetulla borealis</i>	vine snake	Northwestern Ghats of Karnataka

14	<i>Ahaetulla farnsworthi</i>	Farnsworth's vine snake	Southwestern Ghats of Karnataka
15	<i>Ahaetulla oxyrhyncha</i>	Indian vine snake	Deccan Plateau
16	<i>Ahaetulla sahyadriensis</i>	Brown vine snake	Western Ghats
17	<i>Ahaetulla malabaricus</i>	Malabar green vine snake	Southwestern tip- border with Kerala
18	<i>Coelognathus helena helena</i>	Common Trinket Snake	Throughout the state aside from Western Ghats
19	<i>Coelognathus monticollaris</i>	Montane Trinke tSnake	Western Ghats
20	<i>Amphiesma stolatum</i>	Buff striped keelback	Throughout State
21	<i>Amphiesma beddomei</i>	Beddome's keelback	Western Ghats
22	<i>Rhabdophis plumbicolor</i>	Green keelback	Western Ghats
23	<i>Atretium schistose</i>	Olive keelback	Throughout state
24	<i>Lycodon aulicus</i>	Indian wolf snake	Throughout state
25	<i>Lycodon striatus</i>	Barred wolf snake	Drier rocky areas of the state
26	<i>Lycodon annamallaiensis</i>	Slender wolf snake	Accurate distribution lacking
27	<i>Oligodon arnensis</i>	Banded Kukri snake	Throughout state
28	<i>Oligodon taeniolatus</i>	Streaked Kukri snake	Throughout state
29	<i>Oligodon affinis</i>	Western Kukri snake	Western Ghats
30	<i>Dendrelaphis tristis</i>	Common Bronzeback snake	Throughout state
31	<i>Dendrelaphis giri</i>	Giri's Bronzeback snake	Western Ghats
32	<i>Dendrelaphis grandocularis</i>	Large-eyed Bronzeback snake	Western Ghats
33	<i>Chrysopelea ornata</i>	Ornate flying snake	Western Ghats
34	<i>Python molurus</i>	Indian rock python	Throughout state
35	<i>Gongylophis conicus</i>	Russell's boa	Throughout state
36	<i>Eryx whitakeri</i>	Whitaker's boa	Western Ghats
37	<i>Eryx johnii</i>	Indian sand boa	Drier areas of the state
38	<i>Boiga beddomei</i>	Beddome's cat snake	Western Ghats
39	<i>Boiga forstenii</i>	Forsten's Cat Snake	Western Ghats, Deccan and Eastern Ghats

5.4.1: Common Venomous Snakes of Karnataka:

The 'Big Four': This term refers to the four species of snakes that are most medically significant or most involved in venomous snakebite in the country. These are:

1. Spectacled Cobra (*Naja naja*)
2. Common krait (*Bungarus caeruleus*)
3. Russell's viper (*Daboia russelii*)
4. Saw-scaled viper (*Echis carinatus carinatus*)

However, research has shown that there are many more medically significant species around the country. In fact, Karnataka has at least two other species of medically significant species: With further research, we are quite likely to find more species within the state that are medically significant.

For a rescuer, it is imperative to be able to identify snakes down to at least a genus level promptly.



6. Standard Operating Procedure for Managing Snake Conflict:

6.1: Rules of Procedure

- (a) **Certification-** Karnataka Forest Department will conduct periodic certification programs in Forest Training Institutes/Academies or any other location as may be notified in due course. Any individual who wishes to be involved in rescue of snakes will mandatorily undergo the certification and assessment program every two years. The certification program shall be residential in nature, span a duration of 4-5 days and cover essential topics such as crowd management, understanding snake conflict, humane snake handling practices, snakebite management, recognizing the need for snake rescue, understanding snake biology and ecology among other relevant topics essential for any snake rescuer to have knowledge about.

Further information on the certification process including frequency, application procedure, location, duration and curriculum will be published as a separate document titled “Human-Snake Conflict Management Training Program 2022” and shall be available for reference on the Karnataka Forest Department website and divisional offices.

- (b) **Permission for rescue-** Upon successful completion of the certification program, the

office of the Chief Wildlife Warden, Karnataka Forest Department may issue a time-bound, division bound, license to the rescuer contingent to the best practices being followed as prescribed in this document. Should any rescuer be found to not be following any of the practices thus outlined, shall be subject to stringent action under relevant sections of the Wildlife Protection Act, 1972 and revocation of the permission to rescue snakes. Any individual whose permission has been revoked once shall not be eligible to undergo the certification and subsequently obtain permission for one year.

Any individual or organization found to be rescuing snakes without completing the certification and assessment as described above shall be deemed to be in violation of Section 9 and Section 12 of the Wildlife Protection Act, 1972 and suitable action initiated.

All rescuers shall be required to submit a monthly report of their rescues, in the manner prescribed, to the jurisdictional Deputy Conservator of Forests, Jurisdiction being defined on the basis of proof of residence provided by the individual.

6.2 : Snake Rescue

Rescue is defined as the ‘act of saving someone or something from danger’. Hence, by definition, there needs to be some level of real danger in the scenario to even begin the conversation of wildlife rescue. If not, capturing or moving the animal is unwarranted and not legal.

It is imperative that conflict mitigation efforts follow certain avenues for decision making when it comes to the appraisal of situations as well as ascertaining what is the best response to said situation. From examining thousands of cases of snake “rescue”, it is apparent that most often, the decision to capture and move the snake was ill-advised. What follows is a description and a flowchart to guide the decision-making process during potential snake rescue scenarios.

The interaction with people usually begins when they call in distress about a snake in or on their premises. The rescuer should:

- Ascertain the location of the snake: If it is inside the house/ office or other habitation, efforts should be made to identify the species. If it is confirmed to be a non-venomous snake, it can be driven out of the premises by leaving an escape route clear and creating a disturbance from the opposite side. If the species cannot be identified or if it is a venomous snake, it’s best to visit the location and advise them further. The concerned people should be instructed to keep watch on the snake from a distance, allow it an escape route and not disturb the snake. Once at the location, snakes can be removed from the situation.

- If the snake is non-venomous, it should not be bagged or handled more than is necessary to remove it from the situation. Nonvenomous snakes can be released outside the building in a suitable location. If it is a nonvenomous snake outside a building, there is absolutely no need to touch it and the attending snake rescuer should engage with the people to explain why it is best to leave that snake right there. (Refer chapter on crowdcontrol and working with people)
- Venomous snakes should preferably be released as close as possible to the site of capture. If the snake is outside a residence, office or other human habitation, ideally, it shouldnot be touched. This is when it is important to assess risk and levels of threat or danger. Most often, the snake can simply be chased away. In situations where there are large numbers of people or if children are involved, venomous snakes can be shifted from the situation and moved to a viable location as near as possible. This could be a sewer, empty plot of land, canal, lake land, etc. Location for the release of rescued snake shall be finalized based on the species, its ecology and behavior and accessibility to the natural habitat most suitable for the species. Repeated release to the same area should be avoided as it may disturb the local ecological balance.
- All release of snakes shall be documented, including photos and submitted to the jurisdictional DCF and RFO on a monthly basis. Snakes shall not be moved across divisional boundaries for release without prior information, and written permission of the jurisdictional DCF, specifying the reasons thereof. The rescued snake, if injured, should be released only after ascertaining the fitness and health condition, in consultation with officials of Forest Department. If the snake appears to be a non-native species, it should not be released and handed over to the Forest Department.

6.3: Working with People:

Upon receiving a distress call-

- ✓ Insist and ascertain that you are speaking with the person who has seen the snake or is at the site of conflict and will remain there until you arrive. Often, people who are not at site will choose to communicate with you leading to a loss of information in transmission.
- ✓ Gather as much information as possible- ask questions such as how long ago they saw the snake, where they saw it and where it went and size of the snake. These questions and more will enable you to determine that the snake is present, warrants your intervention and not a passing incident.
- ✓ Seek and save an alternate contact number of another person in the same location if possible and make note of the exact location as precisely as possible to avoid confusion.
- ✓ Instruct the caller to not disturb the snake themselves or allow anyone else to do so until you arrive, keep an eye on the snake from a safe distance to watch its movements, not to block the snakes only exit, remain calm, avoid a crowd of on-lookers and to not notify any other rescuers in the interest of being judicious.

Upon reaching the site-

- ✓ Ensure you meet the caller first and reassure them.
- ✓ If there is a crowd gathered, speaking to and managing the crowd before attempting to handle the snake is of primary importance:
 - (i) Draw the crowd away from the spot where the snake is

- (ii) Address the crowd in a patient, calm and genial manner
- (iii) Speak to the crowd about rising instances of conflict with snakes, the root cause for it, what they could do to reduce conflict in future, the benefits of having snakes around communities and ill effects of killing or removing snakes from the location.
- (iv) Once sufficient time has been spent with the crowd, request for their cooperation for the rescue itself by keeping a safe distance. For this, identify a physical marker from the surrounding area and instruct people to not cross that barrier. If required, a simple rope could be used to mark this barrier. The caller and their family or cooperative members of the crowd could be used as gatekeepers for this purpose.

Remember: do not antagonize people. Have a firm but gentle conversation that is based in science and reasoning.

- ✓ Refer Snake Capture and Handling section (9.4) for information post the previous step.

Post rescue-

Irrespective of the outcome of the rescue, i.e., whether the snake is simply driven out or captured for release nearby, communicate with the crowd gathered on the following:

- ✓ Inform them of what species of snake it was, the size of it, whether it was venomous or not.
- ✓ Downplay the instance of conflict as much as possible to emphasize how common it is to have snakes around communities
- ✓ Communicate most prevalent poor practices around human settlements that encourage conflict with snakes.
- ✓ Reiterate the ill effects of relocating or killing snakes and the importance of having them around.
- ✓ Speak about the big four venomous snakes and identification of these in brief.
- ✓ At any cost, do NOT take out the snake or open the bag for the community to see it.
- ✓ Provide information in brief on snakebite management.
- ✓ Provide any standardized, informative material you might have such as posters/videos etc. for the purpose of awareness.

6.4 : A Rescuers Toolkit- Basic Equipment Required and Preparedness-

Being suitably prepared and equipped, to confidently manage a conflict situation involves disciplined effort each time, to ensure a rescuer has all these items handy:

- ✓ Head torch- a flashlight that can be mounted on the rescuer's head before going into the place where a snake might be, irrespective of the time of day. The headtorch needs to be sufficiently charged or have spare batteries handy.
- ✓ Clothing- comfortable clothing that allows for a free-range of motion of all limbs. Full-length trousers are a must.
- ✓ Shoes- well-fitting sneakers or any other shoes that cover the entire foot all the way up to the ankle is a must. Slippers or sandals are to be avoided at all costs irrespective of the location of the snake in question.
- ✓ Snake hook- a standard sized snake hook as demonstrated in the illustration is all that is required for safe handling of a snake. Other equipment such as tongs or grabbers should not find a place in most rescue situations. Periodically check the snake hook to ensure the joints, if any, are secure. Please note that collapsible snake hooks, while

- handy, are a hazard owing to the vulnerability of the joints.
- ✓ PVC Pipe- a clean, unbroken, PVC pipe of 3-inch diameter and 10-12 inches in length (for all snakes except King Cobra and Indian Rock Python).
 - ✓ Other Implements- depending on the history of rescues in the region, it is advisable to carry a pair of scissors to rescue snakes out of fishing nets or any other situation as may be warranted.
 - ✓ Snake Bag- two, dark coloured cotton bags measuring 12 inches in width and 36 inches in length (if you are in a region wherein the occurrence of pythons and King cobras in rescue is relatively common, the length of the bag may extend to 56 inches). The bags to have a drawstring at the mouth and a lace stitched on to it approximately 10 inches down the hem from the mouth. The bottom two corners of the bag to be double stitched across their diagonal to provide for a safe spot to hold the bag when need be. Before each use ensure:
 - (i) All the stitches are secure
 - (ii) No visible damage to the bag
 - (iii) No loose hanging threads inside or outside the bag
 - (iv) The drawstring and lace are secure
 - (v) Bag is clean, dry and has no odor
 - (vi) Information Card- at all times, the rescuer must have on himself or herself a printed and laminated card with the following information:
 - Full name
 - Address
 - In case of emergency, contact person
 - Blood group information
 - Allergens, if any
 - Insurance information (such as policy number and TPA)
 - Protocols for snakebite management in the event the rescuer gets bit
 - (vii) Backpack- a secure and sufficiently large backpack that can house all of the items above in an orderly manner, preferably with a thick cardboard against the back wall.

6.5: Documentation and Reporting:

As specified in the early parts of this document, all snake species are protected under the erstwhile Wild Life Protection Act, 1972 thereby rendering documentation of both, rescue and release of snakes extremely crucial.

- All trained and certified snake rescuers will be provided with a booklet of data sheets (sample attached as Annexure I) that are to be used to record the information prescribed
- In future, the data sheet maybe replaced by a mobile application. Rescuers will be encouraged to use the mobile application instead of the data sheet through a notification
- Data sheets to be filled in duplicate with a copy of all originals to mandatorily be submitted to the office of the jurisdictional Deputy Conservator of Forest on or before the 5th of every month, with a covering letter (sample attached as Annexure II)

- Rescuers are mandated to safely store a copy of the data sheets and covering letters with them as it is a pre-requisite for renewal of permit
- Failure to comply with the documentation and reporting requirements may be grounds to not renew the existing permit, or revoke the permit (during the term) provided by the office of the Chief Wildlife Warden

6.6: Snake Capture and Handling:

As mentioned earlier, capturing a snake should only be undertaken if unavoidable and as a last resort. Further, the actual capture, handling, and restraint should be done with the snake's wellbeing and the handler's safety as top priorities.

It is to be remembered that snakes are not toys or objects to use to show off. Handling snakes is a responsibility that needs to be done with due care. The important thing is to be able to handle snakes calmly and with the animals' and people's well being at the forefront of our mind and intentions.

Here are the steps in a smooth capture:

1. Set up your bagging apparatus- either your handheld bagger (if you have trained assistance) or the pipe and bag. (See illustrations for both methods).
2. Locate the snake with as little disturbance as possible.
3. Clear the space around you to ensure you will not get hindered, tripped, or troubled by anything there.
4. Lift the snake off the ground gently with your hook.
5. If it remains on the hook, simply carry it like that to the bag.
6. If the snake begins to move away, restrain it by the tail, while taking most of its weight on the hook.
7. Remember not to bend the tail and not to hold it at the very tip. These cause pain/ discomfort and add a lot of stress to the snake.
8. Hold the snake at an angle of about 30° to 45° with the head at the lower end.
9. Ensure that the hand holding the tail is extended to your side, away from you so the snake will not hit your legs if it swings off the hook.
10. Never drag the snake backwards along the ground as this cause tremendous discomfort and stress to the snake.

Please refer to the pictorial guide below for additional clarity on safe handling protocols:

If using a pipe and bag method:



Holding the snake vertically does not allow the snake to move forward into the bag





Keeping the hook steady, ensure the tail does not drop and hit the ground



Ensure your feet are well away from the mouth of the bag

Release the tail once the snake is heading into the bag. Ensure the tail does not hit the ground/floor





Things to remember:



If Using a Bagging System:



Once the snake starts entering the bag, the bagger is gently lifted up to ensure the snake does not come back out



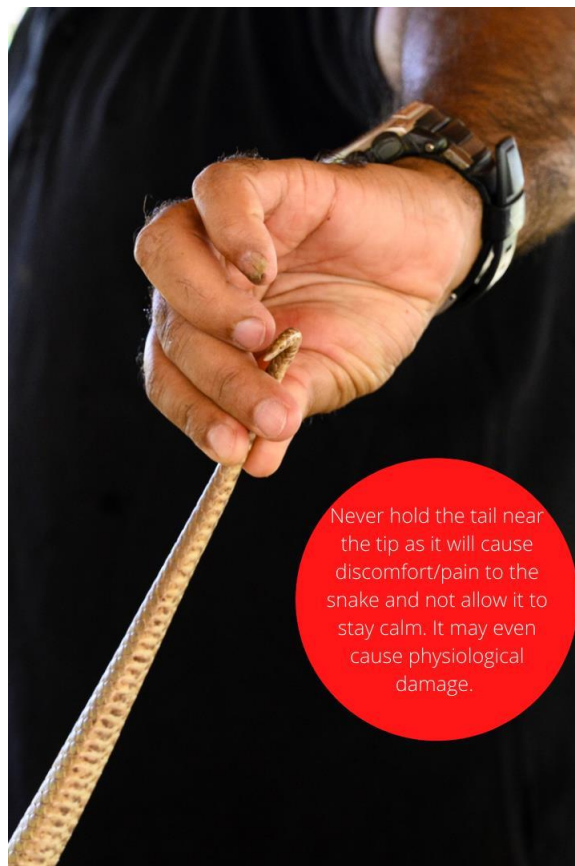
Handler and bagger always keep their bodies away from the bagging system

The snake's tail should be released without the handlers hand approaching the mouth of the bag and without the tail falling to the floor

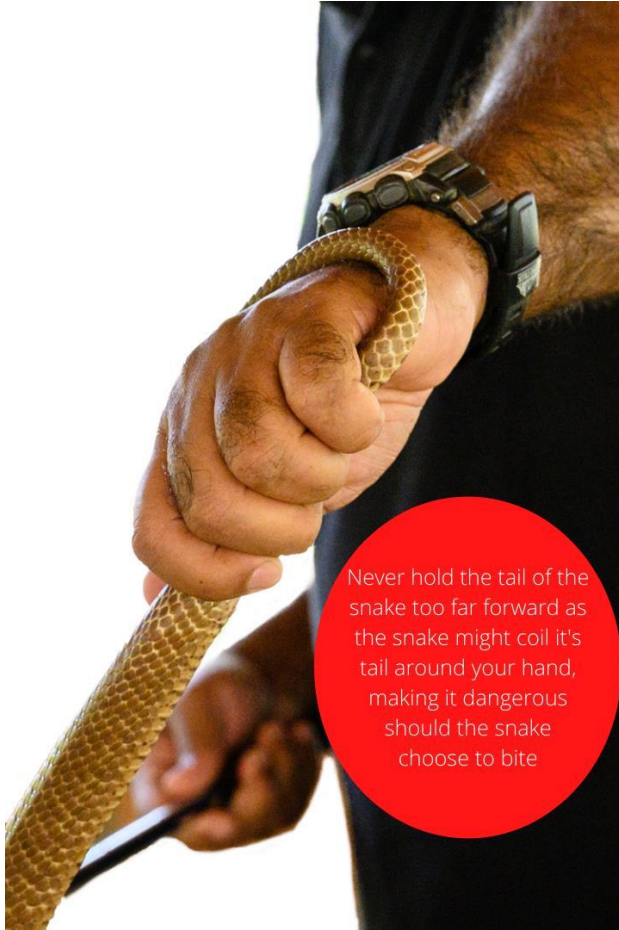
Things to Avoid While Handling A Snake:



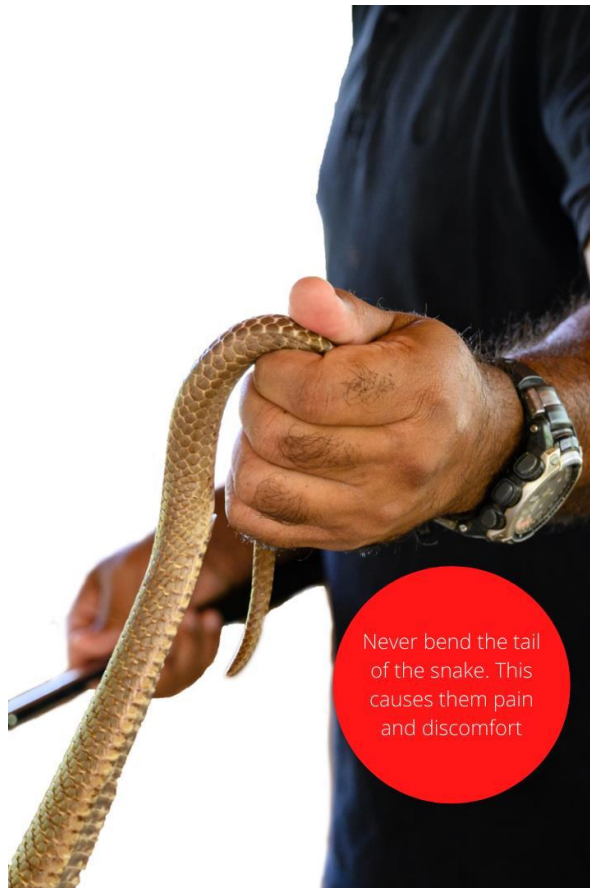
Snake's tail should be held firmly within the palm and using all fingers. This ensures there isn't too much pressure at one point of the tail.



Never hold the tail near the tip as it will cause discomfort/pain to the snake and not allow it to stay calm. It may even cause physiological damage.



Never hold the tail of the snake too far forward as the snake might coil its tail around your hand, making it dangerous should the snake choose to bite



Never bend the tail of the snake. This causes them pain and discomfort

IMPORTANT POINTS TO RECALL FOR SNAKE RESCUE:

1. Do not engage in rescue of snakes without prior permission in writing from the Karnataka Forest Department as outlined in section 9.1 of this document
2. Remember- snake rescue is not the same as 'snake catching'
3. Do not utilize the photos of rescued snakes, or the rescued snakes themselves for the purpose of showboating
4. Ensure no harm is caused to the snake intentionally during capture or release
5. In case the snake is injured during, or prior to capture, the same may be notified to the jurisdictional Range Forest Officer in writing, an acknowledgement sought, and the snake presented to a CZA recognized wildlife rescue center or facility for further treatment
6. Do not relocate non-venomous and harmless snakes. Selection of release site and protocols for release of venomous and harmless snakes will be dealt with in detail in the certification program curriculum.
7. First attempt should always be to chase a venomous snake out of a residential or commercial building
8. Based on the assessment of the situation as specified in Section 9.2, if capture is absolutely warranted and unavoidable, the steps outlined above in Section 9.5 for capture should be followed under all circumstances.
9. All data related to the rescue to be captured in the data sheets or mobile application provided to the rescuer
10. Refrain from using any kind of materials or chemicals to flush a snake out from a burrow
11. Snakes may only be transported in the manner prescribed below in section 6.7 of this document

6.7: Transportation of A Rescued Snake

As described above, relocation of snakes should be avoided in the best interest of the snake and amicable management of conflict. However, certain circumstances may arise that warrant the snake to be moved- for example, a snake may be injured and would need to be transported to a wildlife rescue center for further treatment. Following steps are to be followed in such situations only.

- a) Snakes must be transported in cotton, breathable and clean snake bags only and not in plastic jars
- b) Once a snake is secured in the bag, the snake bag may be placed in a backpack with a thick barrier between the snake and an individual's back, or may be placed in a large, lockable box with sufficient ventilation. If placing the snake bag in a box, please remember to provide for ventilation before placing the snake and not after
- c) Snake bags should not be tied directly to the side of motorcycles or placed in any vehicle, in any manner that exposes them to direct sunlight and rainfall
- d) Any requirement for the snake to be transported should be accomplished in the shortest time possible thus minimizing the stress of transport on snakes
- e) Remember- once a snake is secured in the snake bag, utmost caution should be exercised while handling the bag or any container the snake may be in to cause the least stress to the snake and for the safety of the individual

7.Snakebite

Around 60,000 people die from venomous snakebite in India each year and almost three times that number suffers permanent morbidity or loss of life function. This scale of conflict is unparalleled anywhere in the world.

One of the major issues that is faced in India is the lack of knowledge and understanding about what is to be done in case of snakebite. Because of this, very damaging and even deadly practices are followed that make matters much worse than they need to be. Here are the “Do’s and Don’ts” of First Aid for snakebite:

Do:

- Reassure the patient
- Remove any constraining items like watches, rings, bangles, sleeve cuffs, etc.
- Immobilize the limb without tying anything tight around it.
- Head straight to hospital.
- Briefly report history of bite as well as any symptoms observed to the doctor.

Do Not:

- Panic
- Tie anything tight around the limb
- Wash the limb
- Try to cut the wound or suck out the venom
- Burn the wound
- Go to alternate healers
- Try to kill/ capture the snake

MYSORE DISTRICT SNAKEBITE MITIGATION AND MANAGEMENT PROJECT

VENOMOUS SNAKEBITE FIRST-AID

In case of a snakebite stay calm and organize for an ambulance or any vehicle to take the person to the nearest hospital, while you wait, here are Things to do and things to avoid

DO





Stay calm and collected



Get the patient to sit down with the site of the bite below the heart



Remove all constricting items- watch, bangles, rings, etc.



Immobilise the limb with a sling or carry the person carefully to transport



Head straight to the nearest hospital



Take note of symptoms along the way

DON'T






Never panic

Never tie a tourniquet or anything around the limb

Never cut or touch the wound

Never burn the wound



Never use any other treatment aside from antivenom in a proper hospital



Never go to local healers



Never waste time

SYMPTOMS FOR NEUROTOXIC VENOM

Droopy and closing eyes | Slurred speech | Difficulty swallowing | Difficulty breathing

SYMPTOMS FOR HEMOTOXIC VENOM

Intense burning pain at the bite | Spreading pain and/ or swelling. (Note when these cross a major joint) | Discolouration around the bite | Pain in lower back (Near kidneys)







For a digital copy of the poster, please scan here:



7.1: Understanding Snakebite First Aid

1. Stay Calm and Don't Panic: This is very important so as to not increase your heart rate as well as to enable you to make sensible decisions.
2. Immobilisation versus tying the limb: Tying a tourniquet or anything around the limb with the intension of slowing down the blood flow is counterproductive in India. Firstly, this creates greater pressure in our circulatory system and taxes the heart greatly. This pressure ends up causing the blood to rush when the ligature is removed and might lead to much faster and more intense envenomation. Secondly, many venomous snakes in India cause intense swelling. Tying anything around the limb will lead to further damage and possibly, even death.
3. Never wash, cut or burn the site of the bite: Very often, venom is stuck in the top layers of skin or fat and connective tissue like cartilage, where it will flow very slowly. Washing the wound, cutting it or trying to suck it out causes the venom to flow directly into the bloodstream. It is also impossible to suck out venom from the bite. Burning the wound will simply lead to long-term morbidity. Tampering with the wound in anyway causes much more damage and makes treatment far more difficult.
4. Never go to traditional healers or anyone who uses anything aside from antivenom: Traditional healers gain credibility from clients who have been bitten by non-venomous snakes or those who receive bites with either no venom or sub-lethal doses of venom injected in the bite. This is also true for many institutions that rely on

falsehoods like snake stones, various applications and other non-proven remedies. Extensive research has been done and continues to be done on alternate remedies for venomous snakebite, but, antivenom is the only one that has been proven to work in cases of actual envenomation.

5. Never try to kill or capture the snake: This could lead to further casualties and does not help in the treatment of the snakebite. In India, we have what's called a polyvalent antivenom serum that is made for the venoms of the 'Big Four' venomous snakes in the country. Identifying the snake does not provide any other form of treatment. However, taking a picture on a phone from a distance can be useful if the snake is nonvenomous or not one of the 'Big Four' species.

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Annexure I



Rescuer ID Number: _____

Snake Rescue And Release Data Sheet

Rescue Data

Reporters Full Name Date & Time Of Receipt Of Rescue Call

Postal Address

Date & Time Rescue Call Addressed Species

Location Of Snake Within Premises (Living Room, Kitchen etc.)

Approximate Length Feet Inches Is The Snake Injured? Y/N

If Injured, Where Was (or Will) The Snake (Be) Taken To?
.....

Reporters Signature Rescuers Signature

Additional Remarks If Any

Release Data

Release Date & Time

Mobile GPS Coordinates of Release Location

In Case Release Date & Time Is Beyond 24 Hours Of Rescue Date & Time, Please Specify Reason
.....

I have Taken A Photo Of The Release And Will Provide The Same When Asked

Name, Designation And Signature Of Any Forest Department Personnel If Present
.....

I hereby declare that I have rescued the snake specified in the form above, in the manner prescribed by the Karnataka Forest Department and have followed all protocols, rules and procedures as applicable in the process.

Rescuer's Signature With Date