SEPAN v0.1 - Information Model & Schema

Snake Encounter Pattern Analysis Network

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1. Introduction

SEPAN, the Snake Encounter Pattern Analysis Network, brings together information about snake encounters from different sources, including members of the public, citizen scientists, community responders, Forestry, the Ministry of Health and researchers. It keeps track of what was originally reported, what was later confirmed or clarified, how people responded, what happened to the snake, and any associated bites, so that patterns can be analysed and the information used to support management and decision-making.

Information about the same encounter may be reported more than once, and a single report may sometimes describe more than one encounter. What is known about an encounter may also become clearer as photographs are reviewed, responders attend the scene, a snake is captured, or further details are received. SEPAN therefore keeps Reports separate from Encounters. A Report records information that was received; an Encounter represents the distinct snake event that one or more reports describe**.** This avoids counting repeated reports of the same event as separate encounters, while allowing reporting activity to be examined separately from the encounters being recorded.

SEPAN is designed to be *simple, adaptable and scalable*. It should collect enough information to support useful decisions without making routine use unnecessarily difficult, allow a programme to use the parts that fit its needs and add others as those needs change, and grow to accommodate more users, reports and capabilities without changing what existing records mean or requiring the system to be rebuilt.

The rest of this document sets out that structure in plain language. It explains the main kinds of records SEPAN keeps, how they connect, what information each contains, who can create or change them, and how the same structure can be adapted as programme needs change. It also shows how these ideas are translated into the tables, fields and links that form SEPAN's underlying data structure.

Release scope

This document defines the SEPAN v0.1 core information model and the principal schema used to represent reports, reviewed encounters and connected operational records. The Kandy demonstration also contains implementation-support tables for configuration, access roles, interface state, release features, migrations and analysis summaries. Those support tables are described briefly in Appendix A; they are not additional encounter entities and should not be interpreted as part of the minimum biological or operational data model.

2. How SEPAN organises information

SEPAN can be described at two levels. The *information model* explains what kinds of information SEPAN needs to keep, what each kind means, and how they relate to one another. The *schema* is the exact structure used to store that information within the SEPAN database.

For example, the information model says that several Reports may describe the same Encounter. The schema then specifies how Reports and Encounters are stored and how they are connected.

In this document, a *record* means one stored item, such as one Report or one Encounter. A *table* is simply a collection of records of the same kind, and a *field* is one piece of information within a record, such as a date, location or species.

SEPAN records what is known, including uncertainty, rather than forcing precise answers where none exist. Dates and locations may be approximate, species identifications may be suspected or unknown, and information that was not collected should remain unknown rather than be guessed.

3. Reports and Encounters

A *Report* is a single submission or account received by SEPAN about one or more possible snake encounters. It might come through WhatsApp, a phone call, an online or field form, another agency, or another agreed source. A Report may be anonymous. Most importantly, a Report records what was received and does not automatically become an Encounter.

Every Report is reviewed by a small number of *designated reviewers.* They decide whether it describes a new Encounter, belongs to an Encounter already recorded, describes more than one Encounter, needs further clarification, or should not be used as an Encounter record. Only designated reviewers can create, combine, separate or substantially change Encounters.

An *Encounter* is the best current record of a distinct snake event, based on the information that has been reviewed. Several Reports may relate to the same Encounter, while a single Report may sometimes relate to more than one Encounter. A Report can also remain unlinked when there is not yet enough information to determine what it describes.

For example, five Reports may all concern the same snake seen at the same place and time. One person may phone Forestry and four may send WhatsApp messages, all referring to that one event. A reviewer can link those Reports to one Encounter while each Report remains separately stored. Where the connection is clear, SEPAN is designed to let reviewers review and link a group of Reports in one action.

A designated reviewer who directly observes an encounter can record it in a single step. SEPAN creates the corresponding Report in the background and treats it as already reviewed, so the reviewer does not have to record the same information twice.

How SEPAN stores this

The schema uses three connected tables:

- *Reports* contains one record for each Report received. Each Report also shows its review status, so it is clear whether it is awaiting review, has been reviewed, needs clarification, or will not be used to create or support an Encounter.
- *Encounters* contains one record for each distinct snake event recognised by designated reviewers.
- *Report–Encounter Links* contains one record for each connection between a Report and an Encounter. This is what allows several Reports to connect to one Encounter, or one Report to connect to several Encounters, without duplicating either.

4. Information connected to an Encounter

An Encounter is the central record around which other information can be organised. Some encounters require no further action, while others involve a response, capture, release or relocation, bite, or the identification of an individual snake. SEPAN keeps these additional records separate and connects them when they are relevant.

An Encounter may therefore be connected to:

- *Response Actions* — what responders or agencies did in response to the encounter
- *Captures and Checks* — information recorded when a snake is captured or examined
- *Individually Identified Snakes* — snakes that can be reliably recognised as the same individual across different encounters, using a PIT tag or another accepted identification method
- *Releases and Relocations* — what happened when a captured snake was released at the capture site or moved elsewhere
- *Bites* — information about snakebites and the circumstances in which they occurred

Keeping these records separate keeps routine recording simple while allowing SEPAN to capture additional information when it is needed.

5. Response Actions

A *Response Action* records what was done in response to an encounter. Not every Encounter requires a response, and an Encounter may involve more than one Response Action.

A Response Action might include giving advice, contacting another agency or service, assigning a responder, visiting the location, searching for the snake, or attempting to capture it. The record should show the action taken, when it occurred, who carried it out, and its outcome.

Keeping Response Actions separate from Encounters allows SEPAN to distinguish what is known about an Encounter from what was done in response to it. This makes it possible to examine questions such as what kinds of responses are being provided, how often field responses are made, how quickly responses occur, and what their outcomes are.

If a response leads to a snake being captured or examined, the details of that snake are recorded separately under *Captures and Checks* rather than being repeated in the Response Action.

6. Captures and Checks

A *Capture or Check* record is created when a particular snake is captured or examined closely enough for information about that individual snake to be recorded. An Encounter may involve no captured snakes, one captured snake, or several.

The record can hold information such as when and where the snake was captured or checked, its species, sex, length, mass, condition, photographs, and any information collected to help establish its individual identity. Only information that is actually collected needs to be recorded.

Each snake is recorded separately. If two snakes are captured during the same Encounter, for example, each has its own Capture or Check record. This makes it possible to connect the correct measurements, individual-identification information, release or relocation, and other outcomes to the correct snake.

A Capture or Check record identifies that snake for as long as its identity is known through that capture or period of care. It does not mean that the same snake can be recognised again after it has been released, unless there is a reliable way to identify that individual again, such as a PIT tag, scale-clipping pattern, or another validated method. Persistent individual identity is recorded separately through *Individually Identified Snakes*, described in the next section.

7. Individually Identified Snakes

An *Individually Identified Snake* is a snake that can be reliably recognised as the same individual across different encounters. This requires a dependable method of identification, such as a PIT tag, a unique scale-clipping pattern, or another validated method.

The method used to identify the snake is recorded along with the information needed to recognise it again. For a PIT-tagged snake, this includes the unique PIT tag number. For a scale-clipped snake, it includes the scale-clipping pattern. Other methods, such as photographic identification, should only be used to confirm individual identity where the method has been shown to work reliably for the species concerned.

A Capture or Check may establish a new individual identity or reconnect a snake with one already recorded in SEPAN. For PIT tags, SEPAN should distinguish between a snake that was *not scanned*, one that was *scanned but no tag was detected*, and one in which a *tag was detected*. Implanting a new tag is recorded separately from checking for an existing one.

Once an individual has been reliably identified, records from different times can be connected to the same snake. For example, a snake captured, PIT tagged and relocated during one Encounter may later be encountered again, recognised from the same tag, and connected to the same individual record.

A snake should not be treated as the same individual in a later encounter simply because it looks similar. Where identity is uncertain, SEPAN can record a possible match, but it should only link encounters to the same individual when there is sufficient evidence to support that identification.

8. Releases and Relocations

A *Release* records the return of a captured snake to the wild. If the snake is released at a different location from where it was captured, SEPAN records this as a *Relocation*.

The record should capture when and where the snake was released, who carried out the release, and whether it was released at or near the capture location or moved elsewhere. This allows SEPAN to distinguish ordinary releases from relocations and to examine where relocated snakes are being moved.

A Release or Relocation is connected to the relevant Capture or Check so that it is clear which snake was released. Other outcomes, such as a snake dying or escaping before release, are recorded with the Capture or Check instead.

9. Bites

A *Bite* record captures information about a snakebite and the circumstances in which it occurred. A bite may happen during the initial encounter with the snake or later, for example during a response, attempted capture, handling or examination, PIT tagging, scale clipping, release or relocation. Where known, SEPAN records what transpired when the bite occurred. If more than one person is bitten, each person's bite is recorded separately.

The record can include the date and location of the bite, the activity taking place, the part of the body bitten, the species involved where known, and other relevant circumstances such as *footwear, protective clothing and lighting conditions*. These details can help identify recurring circumstances associated with bites and inform prevention measures.

A Bite may also be the first or only detailed information SEPAN receives about a snake event. In such cases, an Encounter can still be created using whatever information is available. Its time, location, species or other details may remain approximate, uncertain or unknown rather than being inferred or filled in without evidence.

Information about medical assessment and treatment may also be connected to the Bite. Because detailed health information can be sensitive, access to it should be restricted to authorised users.

10. Photos, Videos and Other Files

Photos, videos and other files can preserve evidence that written information alone may not capture. They may support species identification, document injuries or other notable features, record markings used to recognise an individual snake, or provide evidence of a capture, release or relocation.

SEPAN should retain media *selectively*. A file should be kept when it has continuing value for identification, verification, management or later review. Duplicate, poor-quality or otherwise uninformative files do not need to be retained.

For each file that is kept, SEPAN should preserve *how it was obtained and what it documents*. The same file may be relevant to more than one record; for example, a photograph received with a Report may later support the species identification recorded for the Encounter. It should be stored once and connected wherever it is useful rather than copied repeatedly.

Because photos and especially videos can require substantial storage, the files themselves do not always need to be stored inside the main SEPAN database. They may be kept in suitable file storage, while SEPAN retains the information needed to locate them and connect them to the relevant records. Sensitive files, such as clinical photographs, should only be retained when there is a clear need and should be accessible only to authorised users.

11. The SEPAN Schema

The information model described above explains what SEPAN needs to store and how the different kinds of information relate to one another. The *schema* turns that model into the actual structure of the database: the tables SEPAN uses, the information held in each one, and the connections between them.

The schema should preserve the distinctions established in the information model without making SEPAN unnecessarily difficult to use. People should only be asked for information that is relevant to what they are recording, information already available elsewhere in SEPAN should not have to be re-entered, and anything that can be calculated reliably should be calculated automatically.

The same principle applies to uncertainty. SEPAN should store information at the level of detail actually known rather than requiring people to provide false precision. An approximate time, broad location, uncertain species identification or genuinely unknown value should therefore remain that way in the database. For instance, if all that is known is that a bite occurred near Dennery late on Monday night and the snake may have been a fer-de-lance, SEPAN should preserve exactly that level of uncertainty rather than inventing a precise location, time or confirmed species.

In the tables below, fields are described as *Required, Optional, Conditional* or *Automatic*. *Required* fields must have a value for the record to be complete. *Optional* fields are recorded when useful or available. *Conditional* fields are required or shown only in particular circumstances. *Automatic* fields are created or filled by SEPAN rather than entered by the user; an automatic field may also be required.

11.1 Reports

The *Reports* table contains one record for each submission or account received by SEPAN.

Field	Field name in database	Data type	Requirement / definition
Report ID	report_id	Text	*Required; Automatic.* Permanent unique identifier for the Report.
Received date/time	received_datetime	Date and time	*Required for new Reports; Automatic where possible.* Records when the Report was received. May remain unknown for historical or imported Reports where the original receipt time cannot be established.
Reporting channel	reporting_channel	Choice	*Required; Automatic where possible.* Records how the information entered SEPAN, such as WhatsApp, phone call, reporting form, email, in-person report, direct observation, social media, other or unknown.
Original Report content	original_report_content	Long text	*Required.* Preserves the information originally received. This may be the content of a text message, a transcript of a WhatsApp voice message, or a summary of a phone call.
Review status	review_status	Choice	*Required.* Values: Awaiting review, Needs clarification, Linked or Not used. Defaults automatically to *Awaiting review*. Changes automatically to *Linked* when a Report–Encounter Link is created; *Needs clarification* and *Not used* are selected by the reviewer.
Reviewed by	reviewed_by	User	*Conditional; Automatic.* Recorded automatically when review is completed by linking the Report to its Encounter(s) or marking it Not used.
Reviewed date/time	reviewed_datetime	Date and time	*Conditional; Automatic.* Recorded automatically when review is completed by linking the Report to its Encounter(s) or marking it Not used.

Connections: A Report connects to an Encounter through the *Report–Encounter Links* table rather than holding an Encounter ID directly. This allows one Report to relate to several Encounters and several Reports to relate to the same Encounter. Retained photos, videos and other files can also be connected to the Report through the *Media* table.

Key rules: Anonymous reporting is allowed. The original Report is preserved rather than rewritten after review. Where a reporting channel already provides information such as receipt time or a submission identifier, that information should be captured automatically rather than re-entered. A direct observation entered by a designated reviewer creates the corresponding Report automatically and records its basis as first-hand.

Clarifications

Received date/time records when the Report was received, which may differ from when the Encounter occurred. For new digital Reports this is normally captured automatically; for historical or imported Reports it may be unknown.

A Report preserves the information as it was received. Review may change what SEPAN later records about the Encounter, but it does not rewrite the original Report.

Where one Report describes more than one Encounter, information specific to each occurrence is handled through the *Report–Encounter Links* rather than forcing the Report itself to represent only one snake occurrence.

For *Review status*, *Needs clarification* is used when there is not yet enough information to decide whether or how a Report relates to an Encounter, but further information may resolve this. *Not used* is selected when, after review, the Report is judged not to describe a snake encounter or is too incomplete or unreliable to support an Encounter. The Report is still retained in SEPAN; it is simply not linked to an Encounter. A repeated or duplicate Report is not automatically *Not used*: if it refers to a genuine Encounter, it can still be linked to that Encounter.

11.2 Encounters

The *Encounters* table contains one record for each distinct snake occurrence recognised after review. If a Report describes two snakes, two Encounter records are created and both can be linked to that Report. A single Response Action may later be connected to both Encounters.

Core fields

Field	Field name in database	Data type	Requirement / definition
Encounter ID	encounter_id	Text	*Required; Automatic.* Permanent unique identifier for the Encounter.
Encounter date	encounter_date	Date	*Optional.* Best known date of the Encounter. When only a possible date range is known, records the earliest possible date.
Encounter time	encounter_time	Time	*Optional.* Best known clock time. If a time range is known, this records the start of the range. Left blank when no clock time is known.
Community/locality	locality	Choice	*Optional.* Community or locality where the Encounter occurred, where known. Uses a configurable list.
Place/landmark	place_landmark	Text	*Optional.* More specific description of the location where useful.
Latitude	latitude	Decimal	*Optional.* Recorded when coordinates are available.
Longitude	longitude	Decimal	*Optional*. Recorded when coordinates are available.
Snake seen	snake_seen	Choice	*Required*. Yes, No or Unknown.
Species	species	Reference	*Required.* Best current identification; Unknown/unidentified is an allowed value.
Species certainty	species_certainty	Choice	*Conditional.* Required when a species other than *Unknown/unidentified* is recorded. Values: Confirmed

			or Unconfirmed.
Encounter setting	encounter_setting	Choice	*Optional.* General setting such as inside a building, yard, road/path, agricultural area or natural area. Choices are configurable.
Snake status at end of encounter	snake_status_end	Choice	*Conditional.* Required when there is no Capture/Check for the Encounter. Records the snake's known status when the Encounter concluded. Values: Alive, Killed, Found dead or Not known.
Notes	encounter_notes	Long text	*Optional.* Used only for important information not recorded elsewhere.

Fields used only when needed

These fields preserve uncertainty or additional detail when the core fields alone are not sufficient.

Field	Field name in database	Data type	Requirement / definition
Date approximate	date_approximate	Yes/No	*Conditional.* Used when the recorded Encounter date is approximate rather than exact.
Date range end	encounter_date_range_end	Date	*Conditional. Set to Yes whenever the exact date is not known.*
Time approximate	time_approximate	Yes/No	*Conditional.* Used when the recorded clock time is approximate rather than exact.
Time range end	encounter_time_range_end	Time	*Conditional.* Used when the possible Encounter time spans a range. *Encounter time* records the start of that range.
Part of day	part_of_day	Choice	Conditional. Used when no clock time is known but the part of day is known. Values: Morning, Afternoon, Evening or Night.
Location approximate	location_approximate	Yes/No	*Conditional.* Used when a place or coordinate is known only approximately.
Location accuracy	location_accuracy_m	Decimal	*Optional; Automatic where available.* Accuracy in metres when supplied by a device or otherwise known.

Clarifications

One Encounter represents *one snake occurrence*. If a Report describes two snakes, two Encounter records are created, although they may share the same Report and Response Action.

A *Reference* field links to an existing record in another SEPAN table or controlled list rather than storing free text. For example, *Species* links to the configurable Species list, which includes *Unknown/unidentified*.

Species certainty is used only when a species has been identified. SEPAN distinguishes between *Confirmed* and *Unconfirmed* rather than asking reviewers to make finer subjective distinctions.

Snake status at end of encounter is used only when there is no Capture/Check. *Killed* means the snake is known to have been killed; *Found dead* means it was encountered already dead, without assuming how it died. Keeping these separate allows SEPAN to distinguish known killing from the discovery of a dead snake. If the snake is captured, what happens while it is in care, including death or escape, is recorded in the Capture/Check; any later release or relocation is recorded separately.

SEPAN preserves uncertainty in dates and times rather than forcing an exact value. If the exact date is known, only *Encounter date* is needed. If the date is approximate, the best available date is recorded and *Date approximate* is set to Yes. If the encounter is known only to have occurred within a date range, *Encounter date* records the earliest possible date, *Date range end* records the latest possible date, and the date is treated as approximate. For example, *"sometime in August 2026"* can be represented as 1 August to 31 August without implying that the specific date in August is known.

Time is handled in the same way. An exact time is recorded directly; an approximate time is recorded with *Time approximate = Yes*; a known time range uses *Encounter time* as the earliest possible time and *Time range end* as the latest; and where only a part of the day is known, such as *night*, no clock time is invented and *Part of day* is used instead.

Location follows the same principle. A broad locality, approximate place or approximate coordinate remains approximate rather than being converted into a falsely precise location. Where a device supplies a measure of coordinate accuracy, this can be retained separately.

11.3 Report–Encounter Links

The *Report–Encounter Links* table records each connection *between a Report and an Encounter*. One Report can therefore connect to several Encounters, and several Reports can connect to the same Encounter.

Field	Field name in database	Data type	Requirement / definition
Link ID	report_encounter_link_id	Text	*Required; Automatic.* Permanent unique identifier for the connection.
Report	report	Reference	Required. Links to the relevant Report.
Encounter	encounter	Reference	*Required.* Links to the Encounter that the Report describes.
Species as reported	reported_species	Reference	*Required.* Records the species identified in the Report for this Encounter. *Unknown/unidentified* is used when no species was identified.
Linked by	linked_by	User	*Required; Automatic.* Records the reviewer who made the connection.
Linked date/time	linked_datetime	Date and time	*Required; Automatic.* Records when the connection was made.

Clarifications

Species as reported records what the source identified the snake as before any later review or clarification. If no species was identified, the value is Unknown/unidentified. The source's original wording remains preserved in the Report.

A Report is marked *Linked* automatically once it is connected to an Encounter. If the Report describes more than one Encounter, additional links can be added.

11.4 Response Actions

A *Response Action* records one meaningful response, such as providing advice or deploying a response team. A single response may relate to more than one Encounter.

Field	Field name in database	Data type	Requirement / definition
Response Action ID	response_action_id	Text	*Required; Automatic.* Permanent unique identifier for the Response Action.
Action type	action_type	Choice	*Required.* Type of response. Values may include *Advice*, *Response team deployed* and *Other*. Choices are configurable.
Action date/time	action_datetime	Date and time	*Optional.* Records when the response occurred or began, where known.
Carried out by	carried_out_by	Text	*Optional.* Person, people or team that carried out the response.
Response outcome	response_outcome	Choice	*Conditional.* Records the result of the response when that result does not have its own SEPAN record. For example, a successful capture is recorded under *Captures and Checks*, a release or relocation under *Releases and Relocations*, and a bite under *Bites*. This field is therefore used for outcomes such as *Snake not found*, *Response not completed* or *Other*. Choices are configurable.
Notes	response_notes	Long text	Optional. Used only for important information not captured elsewhere.

Because one Response Action may address several Encounters, the connection is stored separately:

Field	Field name in database	Data type	Requirement / definition
Link ID	response_encounter_link_id	Text	*Required; Automatic.* Permanent unique identifier for the connection.
Response Action	response_action	Reference	*Required.* Links to the relevant Response Action.
Encounter	encounter	Reference	*Required.* Links to an Encounter addressed by that response.

Clarifications

One Response Action represents a meaningful response, not every individual step taken during it. A response team that travels to a location, searches for the snake and does not find it can therefore be represented by one *Action type* (*Response team deployed*) and one *Response Outcome* (*Snake not found*), rather than several separate records.

A later, distinct response can be recorded separately. For example, advice given by phone and a response team deployed later that day can be recorded as two Response Actions.

11.5 Captures and Checks

A *Capture or Check* record describes either the capture of a snake associated with an Encounter or a later close examination of that same snake while it remains in care. Information collected when the snake is first captured can be recorded in the Capture record; a later examination can be recorded as a separate Check.

Field	Field name in database	Data type	Requirement / definition
Capture/Check ID	capture_check_id	Text	*Required; Automatic.* Permanent unique identifier for the Capture or Check.
Encounter	encounter	Reference	Required. Links to the Encounter involving the snake.
Response Action	response_action	Reference	Optional. Links to the Response Action during which the capture or check occurred, where applicable.
Record type	record_type	Choice	Required. Values: Capture or Check.
Date/time	capture_check_datetime	Date and time	*Required for new records.* Records when the capture or check occurred. May remain unknown for historical records.
Outcome while in care	care_outcome	Choice	*Conditional.* Used on a Capture record if the snake dies or escapes while in care before release. Values: Died in care or Escaped from care.
Notes	capture_check_notes	Long text	Optional. Used only for important information not recorded elsewhere.

Fields used only when needed

Field	Field name in database	Data type	Requirement / definition
Sex	sex	Choice	Optional. Recorded only when determined.
Life stage	life_stage	Choice	Optional. Recorded only when determined.
Snout–vent length	snout_vent_length_mm	Decimal	Optional. Recorded in millimetres only when measured.
Total length	total_length_mm	Decimal	Optional. Recorded in millimetres only when measured.
Mass	mass_g	Decimal	*Optional.* Recorded in grams only when measured.
Condition or abnormalities	condition_notes	Long text	Optional.Used only when an injury, abnormality or other notable condition is observed.
PIT scan result	pit_scan_result	Choice	*Conditional.* Used where PIT scanning is relevant. Values: Not scanned, No tag detected or Tag detected.
Confirmed individual snake	individual_snake	Reference	*Conditional.* Required when the snake's individual identity has been confirmed. Links to the corresponding *Individually Identified Snake*.

Clarifications

A *Capture* records the point at which the snake is taken into care or custody as part of that Encounter. Measurements, examination findings and other information collected at the time can be included in the same record; they do not require a separate Check.

A *Check* is used when that captured snake is examined again while still in care and new information needs to be recorded. It does not represent another capture or another Encounter.

Each Capture or Check relates to one Encounter and therefore one snake occurrence. If two snakes are encountered and captured together, each has its own Encounter and Capture record.

The Capture must clearly belong to the same occurrence as the Encounter. A snake seen at another time or place should normally be treated as a new Encounter, not assumed to be the same snake. If the snake can be reliably recognised as the same individual, for example from a PIT tag or another accepted identification method, the new Encounter can be connected to the same *Individually Identified Snake*.

The Encounter location serves as the capture location and does not need to be re-entered.

Species is not entered again in the Capture/Check record. If capturing or examining the snake changes or confirms its identification, the reviewed species and species certainty on the *Encounter* are updated instead.

Measurements are optional. A Capture or Check remains valid even if sex, life stage, length, mass or other measurements were not recorded.

PIT scan result distinguishes between a snake that was not scanned, one that was scanned but no tag was detected, and one in which a tag was detected. The PIT tag code itself is stored with the snake's identifier in the *Individual Identifiers* table. When a recognised identifier confirms the snake's identity, the Capture/Check is linked to the corresponding *Individually Identified Snake*.

Outcome while in care is used only when a captured snake dies or escapes before release. If the snake is returned to the wild, that is recorded separately in the *Releases and Relocations* table.

11.6 Individually Identified Snakes

The *Individually Identified Snakes* table represents snakes that can be reliably recognised across different Encounters. A snake may have more than one reliable identifier over its lifetime; for example, it could have both a PIT tag and a scale-clipping pattern.

Individually Identified Snakes

Field	Field name in database	Data type	Requirement / definition
Snake ID	snake_id	Text	*Required; Automatic.* Permanent SEPAN identifier for the individual snake.
Species	species	Reference	*Required.* Best current species identification. Filled from the reviewed Encounter when the individual record is created and updated if that identification is later corrected.
Notes	individual_snake_notes	Long text	Optional. Used only for important information about the individual that is not captured elsewhere.

The method used to recognise the snake is stored separately. This allows the same snake to have more than one reliable identifier without adding separate fields for every identification method.

Individual Identifiers

Field	Field name in database	Data type	Requirement / definition
Identifier record ID	identifier_record_id	Text	*Required; Automatic.* Permanent unique identifier for the identifier record.
Snake	individual_snake	Reference	Required. Links the identifier to the correct *Individually Identified Snake*.
Identification method	identification_method	Choice	*Required.* Values may include PIT tag, Scale clipping or another validated method.
Identifier code or pattern	identifier_value	Text	*Required.* Records the unique identifier used for the snake. For a PIT tag, this is the tag code; for scale clipping, it is the standardised clipping code used by the programme.
Established at Capture/Check	established_at_capture_check	Reference	*Conditional.* Links to the Capture/Check at which the identifier was applied or first recorded in SEPAN, where known.

Clarifications

A snake may have more than one Identifier record. For example, a snake identified through a scale-clipping pattern may later receive a PIT tag. Both identifiers remain linked to the same *Individually Identified Snake* rather than one replacing the other.

For PIT tagging, *Identifier code or pattern* stores the unique PIT tag code. For scale clipping, it stores the standardised clipping code assigned to that snake.

When an identifier already recorded in SEPAN is recognised during a later Capture/Check, that record is linked to the existing *Individually Identified Snake* rather than creating a new individual. If a new identifier is later applied to a known snake, a new Identifier record is added to the same individual.

Established at Capture/Check records where the identifier was applied or first recorded in SEPAN, when that information is known.

An *Individually Identified Snake* record is created only when individual identity is confirmed. A possible match is not treated as the same individual unless identity can be confirmed using an accepted identification method.

11.7 Releases and Relocations

A *Release or Relocation* record describes the return of a captured snake to the wild. A *Release* returns the snake at or near the location where it was captured; a *Relocation* moves and releases the snake elsewhere.

Field	Field name in database	Data type	Requirement / definition
Release ID	release_id	Text	Required; Automatic. Permanent unique identifier for the Release or Relocation.
Capture	capture	Reference	Required. Links to the Capture record for the snake being released.
Release type	release_type	Choice	Required. Values: Released at/near capture location, Relocated or Unknown.

Release date	release_date	Date	Required for new records. Records the date the snake was returned to the wild. May remain unknown for historical or imported records.
Release time	release_time	Time	Optional. Records the time of release where known.
Released by	released_by	Text	Optional. Person, people or team that carried out the release.
Notes	release_notes	Long text	Optional. Used only for important information not recorded elsewhere.

Release-location fields

These fields are used when the snake is relocated. They are not re-entered when it is released at or near the capture location.

Field	Field name in database	Data type	Requirement / definition
Release community/locality	release_locality	Choice	Conditional. Used for a Relocation where the release locality is known. Uses the same configurable locality list as Encounters.
Release place/landmark	release_place_landmark	Text	Optional. More specific description of the relocation site where useful.
Release latitude	release_latitude	Decimal	Optional. Recorded where release coordinates are available.
Release longitude	release_longitude	Decimal	Optional. Recorded where release coordinates are available.

Clarifications

Each Release or Relocation links to the *Capture record*, not separately to the Encounter or the *Individually Identified Snake*. The Capture already provides those connections, so they do not need to be entered again.

A Release/Relocation record is created only when a captured snake is returned to the wild. If the snake dies or escapes while in care, that outcome remains in the *Capture/Check* record and no Release/Relocation record is created.

For a release at or near the capture location, the Encounter location is already available and does not need to be entered again. When the snake is relocated, the destination is recorded using whatever location information is actually known. For a new Relocation, enough location information should be recorded to identify the release area.

Released by is kept as text rather than a User reference because the person carrying out a release may not be a SEPAN user.

Where suitable coordinates are available for both the Encounter and the relocation site, relocation distance can be calculated automatically rather than entered manually.

A later sighting of the released snake is a new Encounter. If the snake can be reliably identified as the same individual, that new Encounter can be connected to the same *Individually Identified Snake*; the earlier Release/Relocation record is not reopened or extended.

11.8 Bites

A *Bite* record describes one person's snakebite and the circumstances in which it occurred. If more than one person is bitten during the same sequence of events, each person has a separate Bite record.

Field	Field name in database	Data type	Requirement / definition
Bite ID	bite_id	Text	Required; Automatic. Permanent unique identifier for the Bite record.
Encounter	encounter	Reference	Required. Links the Bite to the Encounter involving the snake.
Bite date/time	bite_datetime	Date and time	Optional. Records when the bite occurred where a specific date and time are known. Broader or uncertain timing can remain represented by the Encounter.
Activity at bite	activity_at_bite	Choice	*Required.* Records what the person was doing when bitten. Choices are configurable and may include Walking, Gardening/farming, Sleeping/resting, Response/search, Capture/handling, PIT tagging or scale clipping, Release/relocation, Other and Unknown.
Body area bitten	body_area_bitten	Choice	Required. Records the part of the body bitten. Uses a configurable list that includes Unknown.
Notes	bite_notes	Long text	Optional. Used only for important information not recorded elsewhere.

Fields used only when needed

Field	Field name in database	Data type	Requirement / definition
Response Action	response_action	Reference	Conditional. Links to the Response Action when the bite occurred during a response and no more specific related record applies.
Capture/Check	capture_check	Reference	Conditional. Links to the Capture or Check when the bite occurred during capture, handling, examination or an individual-identification procedure.
Release/Relocation	release_relocation	Reference	Conditional. Links to the Release or Relocation when the bite occurred during that activity.
Footwear	footwear	Choice	*Optional.* Records the footwear worn at the time of the bite. Values may include Barefoot, Sandals/slippers, Ordinary closed shoes, Rubber boots, Snake-resistant boots, Other and Unknown.
Lighting conditions	lighting_conditions	Choice	*Optional.* Records visibility at the time of the bite and, where visibility was poor, whether a personal light was

			being used. Values: *Daylight, Well lit, Poor visibility—personal light in use, Poor visibility—no personal light in use, Unknown.*

Clarifications

One Bite record represents one person's bite episode. If more than one person is bitten, each person has a separate Bite record.

Activity at bite records what the person was doing at the moment of the bite. Where relevant, the Bite can also be linked to the broader SEPAN record during which it occurred. For example, a bite during handling or examination can link to the relevant *Capture/Check*, a bite during release or relocation can link to the *Release/Relocation*, and a bite during a search can link to the relevant *Response Action*. These links provide context without replacing the more specific description of the person's activity at the time of the bite.

Species is not entered again in the Bite record. The reviewed species and species certainty are taken from the associated *Encounter*. Similarly, the Encounter location normally provides the bite location. Where the bite occurs during a later activity at another location, the location of that linked record applies.

Bite date/time is recorded when a specific date and time are known. If the timing is only approximate or broadly known, that uncertainty is preserved rather than assigning a precise bite time without evidence.

Footwear records what the person was wearing on their feet at the time of the bite. This provides useful context about protective behaviour, although its relevance to the bite itself will depend on where on the body the person was bitten.

Lighting conditions records visibility at the time of the bite. *Daylight* means normal visibility from natural light; *Well lit* means artificial lighting provided good visibility. Where visibility was poor, the field also records whether the person was using a personal light source such as a torch, headlamp or phone light.

Detailed clinical information is not part of the core Bite table. Where medical assessment, treatment or outcome information is linked to SEPAN, it should remain in a restricted Health-controlled record or extension connected to the Bite.

11.9 Media

The *Media* table holds the information needed to locate and understand photos, videos and other files retained by SEPAN. The files themselves are stored in approved file storage rather than in the main SEPAN database.

Field	Field name in database	Data type	Requirement / definition
Media ID	media_id	Text	Required; Automatic. Permanent unique identifier for the Media record.
Storage reference	storage_reference	Text	Required. Durable link or file identifier used to locate the file in approved storage.
Media type	media_type	Choice	Required. Values: Photo, Video, Audio, Document or Other.
Description	media_description	Text	Optional. Briefly describes what the file shows, contains or documents.

The *Media Links* table is needed because the relationship runs both ways: one file may relate to several SEPAN records, and one SEPAN record may have several files. It records each connection without duplicating the Media record.

Field	Field name in database	Data type	Requirement / definition
Media Link ID	media_link_id	Text	Required; Automatic. Permanent unique identifier for the connection.
Media	media	Reference	Required. Links to the relevant Media record.
Related record type	related_record_type	Choice	Required. Identifies whether the file relates to a Report, Encounter, Response Action, Capture/Check, Individual Identifier, Release/Relocation or Bite.
Related record ID	related_record_id	Text	Required. Records the permanent SEPAN identifier of the related record.

Clarifications

Each file has one Media record. If it relates to more than one SEPAN record, a separate Media Link is created for each connection. For example, a photograph received with a Report can be linked to that Report and also to the Encounter if it supports the reviewed species identification.

The files themselves are kept in durable, access-controlled storage outside the main SEPAN database. Sensitive files, including clinical photographs, remain in appropriately restricted storage; recording their storage reference in SEPAN does not grant access to them.

Appendix A. Kandy v0.1 implementation-support structure

The live Kandy v0.1 Grist implementation contains the core tables documented above plus several support and derived tables. These tables help protect source provenance, manage configuration and release behaviour, and power the Record and Explore interfaces. They may evolve independently of the core information model.

Support table / group	Purpose in v0.1
Report_Amendments	Stores appended corrections or clarifications to a preserved source Report without rewriting the original account.
Species	Configurable species reference list used by reviewed identifications and reported-species fields.
Code_Lists	Configurable controlled choices used across SEPAN.
SEPAN_User_Roles	Deployment-level role configuration for authorised users.
SEPAN_UI_Sessions	Interface/session support used by the guided user experience.
SEPAN_System	Deployment metadata, release channel, schema/core versions and Record/Explore interface settings.
SEPAN_Features	Feature flags and configuration for capabilities that can be enabled or versioned separately.
SEPAN_Migrations	Records explicit schema or feature migrations so structural changes can be versioned and traceable.
Summary / analysis tables	Derived Grist summary tables used by Explore. They are analytical views of the core data, not new source records.

Release note

This reference describes the v0.1 conference release. It is intended to document meanings and relationships that should remain stable even when the user interface, analysis views or implementation platform change. Deployment-specific permissions, storage, integrations and governance remain local implementation decisions.