**Mon\_25963\_Sylvie\_PLSQL\_Phase3\_Report**

**Phase III – Logical Model Design**

**Course**: INSY 8311 – Database Development with PL/SQL  
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### **Project Title:**

**Wildlife Poaching Prediction System for National Parks**

### **Objective:**

To develop a normalized, efficient, and relational logical data model to support the proactive detection and response to wildlife poaching activities in Rwanda's national parks.

### **Entity Descriptions:**

**1. Animal**

* animal\_id (PK)
* species\_name
* gps\_collar\_id (UNIQUE)
* last\_known\_location
* status (CHECK: 'endangered', 'common')

**2. Poaching\_Incident**

* incident\_id (PK)
* animal\_id (FK)
* timestamp
* location
* severity\_level (CHECK: 'Low', 'Medium', 'High')

**3. Environmental\_Data**

* env\_id (PK)
* timestamp
* location
* weather
* moon\_phase
* vegetation\_density

**4. Ranger\_Unit**

* ranger\_id (PK)
* unit\_name
* patrol\_area
* contact\_info

**5. Incident\_Response**

* response\_id (PK)
* incident\_id (FK)
* ranger\_id (FK)
* response\_time
* action\_taken
* logged\_at

### **Relationships:**

* One Animal can be involved in many Poaching\_Incidents (1:N).
* Each Poaching\_Incident may result in one Incident\_Response (1:1).
* One Ranger\_Unit can respond to many incidents (1:N).
* Many Poaching\_Incidents may reference the same Environmental\_Data snapshot (M:1).

### **Constraints:**

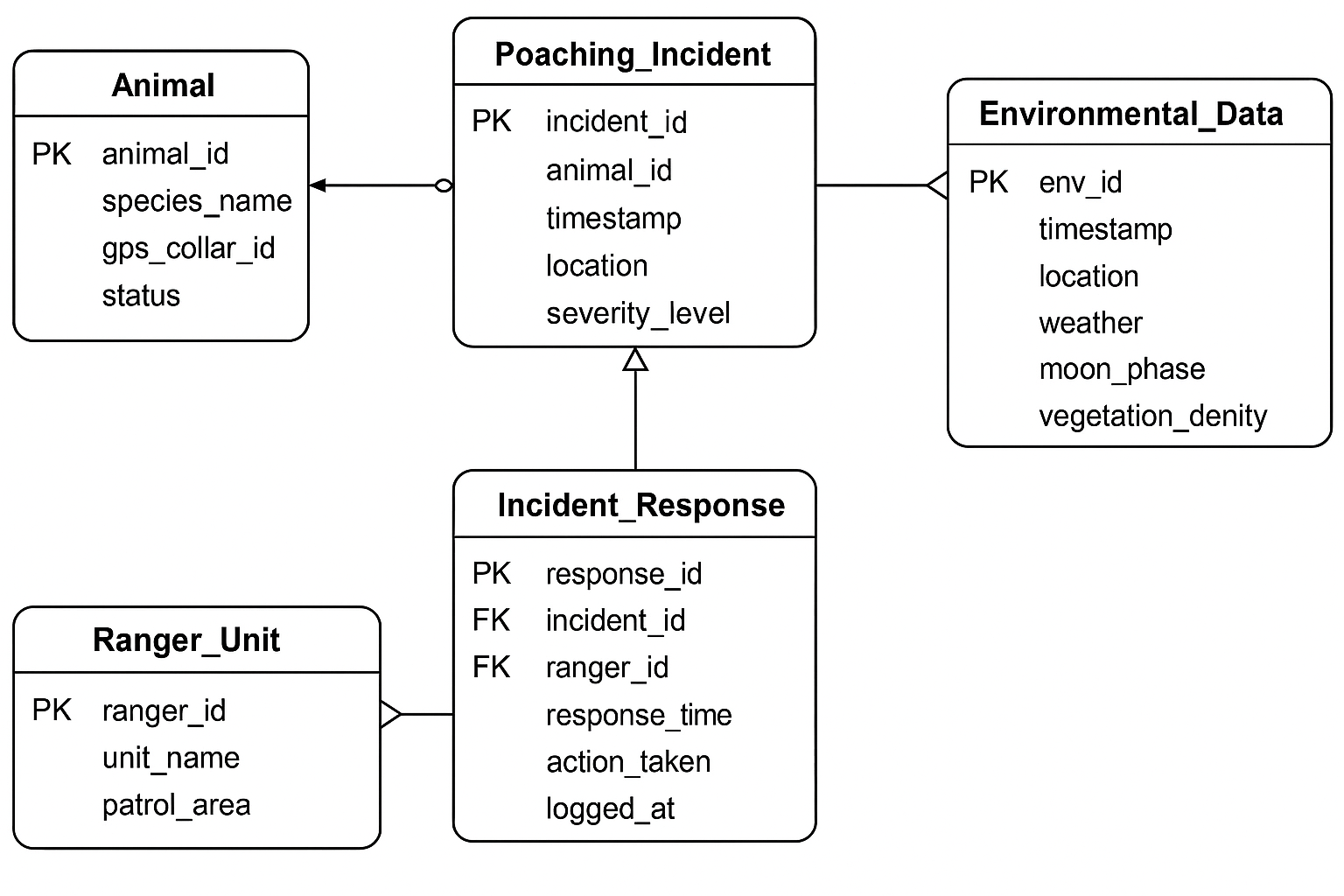
* NOT NULL on essential fields (e.g., PKs, foreign keys)
* UNIQUE constraint on gps\_collar\_id
* CHECK constraints for predefined statuses and severity levels
* DEFAULT values as needed for data consistency

### **Normalization:**

The logical model adheres to **Third Normal Form (3NF)**:

* All attributes are atomic (1NF)
* All non-key attributes depend fully on the primary key (2NF)
* No transitive dependencies (3NF)

### **ERD Diagram:**



The ERD shows the entities and their relationships using crow’s foot notation. It clearly defines primary and foreign keys, as well as entity associations to ensure referential integrity.

**End of Phase III**