

PANDORA KNOWLEDGE GUARDIAN

Comprehensive RAG Knowledge Corpus

Builderthon Challenge Dataset • 2026 Edition

PURPOSE

This fictional corpus is designed for document ingestion, chunking, embedding, retrieval, citation, summarization, comparison, and grounded question answering during the Pandora RAG Builderthon. It contains environmental, social, medical, logistical, cultural, settlement, species, plant, accommodation, emergency, and policy information.

IMPORTANT NOTICE: This is an original, event-specific fictional knowledge base inspired by themes of interconnected ecosystems, ocean stewardship, bioluminescent landscapes, and community resilience. It is not an official guide to the Avatar films, does not reproduce film scripts or proprietary reference material, and should not be treated as canonical lore.

Document Map and Retrieval Metadata

Chapter	Title
1	World Overview and Planetary Systems
2	Regions, Climate, Water and Geological Zones
3	Settlements, Villages and Community Governance
4	Oceans, Rivers, Reefs and Wetland Systems
5	Fauna Species Profiles
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12	Environmental Threats and Emergency Response
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1. World Overview and Planetary Systems

Pandora, as defined in this corpus, is a large inhabited moon with dense forests, island chains, inland seas, high mountains, broad wetlands, and interconnected bioluminescent ecosystems. The society described here is organized around ecological reciprocity: communities may harvest, travel, build, and heal, but every activity is expected to preserve long-term ecosystem function. The phrase “the living network” refers to the combined biological, hydrological, social, and informational connections that allow one region to affect another.

The atmosphere is breathable for native life but may contain pollen, spores, salt aerosols, and trace gases that affect visitors differently. Weather changes rapidly near mountain walls and warm seas. Night illumination is produced by fungi, algae, insects, reef organisms, and plant tissues. Bioluminescence is not merely decorative; it supports navigation, pollination, warning signals, mating behavior, and community ceremonies.

The planetary management model divides concerns into six linked systems: atmosphere, water, soil and rock, living species, settlements, and knowledge. A failure in one system should be investigated for effects in the others. For example, unusual water color can be caused by harmless seasonal algae, toxic nutrient loading, volcanic minerals, disturbed sediment, or decaying plant matter. A response team must therefore combine visual observation with measurements, local testimony, and historical records.

The corpus assumes no single central government. Regional councils coordinate standards while villages retain autonomy. Guardians, healers, navigators, growers, builders, educators, and researchers all contribute knowledge. Decisions are usually made through evidence review, community consultation, risk assessment, and a restoration plan. Emergency authority may temporarily be assigned to an incident leader when life, water, or habitat is at immediate risk.

Information quality is classified as verified observation, community tradition, provisional interpretation, modeled estimate, or disputed report. RAG applications should preserve these labels. A generated answer should distinguish between what is directly documented and what is an inference. When sources disagree, the system should present the disagreement rather than silently selecting one claim.

1.1 Ecological Principles

Principle	Operational meaning
Reciprocity	Use of a resource requires protection, replacement, or restoration.
Connectivity	Water, migration routes, food webs, and cultural practices cross village boundaries.
Precaution	When evidence is incomplete and harm could be severe, choose the least damaging action.
Local knowledge	Residents who observe an area daily provide essential context.
Traceability	Major decisions should cite measurements, witnesses, and documents.
Adaptive management	Policies must change when monitoring shows unexpected outcomes.
Intergenerational duty	Plans are evaluated for effects on children and future habitats.
Minimum disturbance	Research and tourism should collect the least material and produce the least noise, waste, and light.

1.2 Time, Seasons and Navigation

The standard planning year contains four operational seasons rather than strict astronomical seasons. Rising Waters brings stronger river flow and wetland expansion. Clear Sky favors mountain travel and construction. Bloom Tide is the main flowering and pollination period. Deep Current brings strong offshore circulation and increased storm risk. Exact timing varies by region.

Navigation combines landmarks, star patterns, current direction, wind, animal movement, scent markers, and bioluminescent route plants. Electronic or magnetic instruments may be unreliable near mineral-rich mountains. Every expedition should therefore carry a non-electronic route record and identify two safe return paths.

Night travel is permitted only when local guides confirm that luminous trail species are active and that predator activity is within normal limits. White floodlights are discouraged because they can disorient pollinators and marine hatchlings. Low-intensity amber or filtered blue-green lamps are used where artificial light is necessary.

2. Regions, Climate, Water and Geological Zones

ID	Region	Description	Primary hazards
REG-01	Luminous Shelf	Warm coastal shelf with shallow reefs, seagrass plains and tidal villages.	Cyclones, coral heat stress, harmful blooms.
REG-02	Emerald Canopy	Lowland rainforest with giant root systems and layered habitats.	Flooding, fungal outbreaks, canopy fire after drought.
REG-03	Cloudspine Highlands	Cool mountains, suspended rock formations and cloud forest.	Landslides, altitude illness, magnetic interference.
REG-04	Silverreed Wetlands	River delta, reed marshes and floating gardens.	Waterborne disease, invasive plants, sediment shifts.
REG-05	Obsidian Reach	Volcanic coast with black beaches and geothermal vents.	Toxic gases, hot springs, ashfall, underwater eruptions.

ID	Region	Description	Primary hazards
REG-06	Whispering Dunes	Dry inland basin with mobile dunes and seasonal oases.	Heat stress, dust storms, water scarcity.
REG-07	Deep Current Expanse	Open ocean migration corridor and deep trench network.	Strong currents, pressure hazards, navigation loss.
REG-08	Mistroot Basin	Montane valley with cool lakes, moss forest and terraces.	Fog, crop fungal disease, cold exposure.
REG-09	Aurora Mangroves	Brackish forest protecting coastlines and nurseries.	Salinity change, root damage, mosquito surges.
REG-10	Sunfall Archipelago	Remote islands with cliffs, caves and seabird colonies.	Isolation, freshwater limits, cliff collapse.

REG-01 — Luminous Shelf

Luminous Shelf is characterized by warm coastal shelf with shallow reefs, seagrass plains and tidal villages. Communities plan activities around water availability, migration cycles, soil stability, and storm exposure. Primary hazards include cyclones, coral heat stress, harmful blooms. Regional monitoring stations record rainfall, water temperature, salinity, turbidity, wind, seismic vibration, and unusual species behavior.

Recommended baseline assessment: interview two local observers, inspect the nearest upstream and downstream sites, record visual and odor conditions, collect non-destructive water or soil measurements, compare with the previous seasonal record, and document uncertainty. Visitors should not interpret a single unusual color, sound, or animal movement as proof of a disaster without supporting evidence.

Restoration priorities are ranked as follows: protect people and drinking water; prevent spread of contamination; preserve breeding and nursery habitat; restore natural water flow; replant locally adapted species; and monitor recovery for at least one complete seasonal cycle.

REG-02 — Emerald Canopy

Emerald Canopy is characterized by lowland rainforest with giant root systems and layered habitats. Communities plan activities around water availability, migration cycles, soil stability, and storm exposure. Primary hazards include flooding, fungal outbreaks, canopy fire after drought. Regional monitoring stations record rainfall, water temperature, salinity, turbidity, wind, seismic vibration, and unusual species behavior.

Recommended baseline assessment: interview two local observers, inspect the nearest upstream and downstream sites, record visual and odor conditions, collect non-destructive water or soil measurements, compare with the previous seasonal record, and document uncertainty. Visitors should not interpret a single unusual color, sound, or animal movement as proof of a disaster without supporting evidence.

Restoration priorities are ranked as follows: protect people and drinking water; prevent spread of contamination; preserve breeding and nursery habitat; restore natural water flow; replant locally adapted species; and monitor recovery for at least one complete seasonal cycle.

REG-03 — Cloudspine Highlands

Cloudspine Highlands is characterized by cool mountains, suspended rock formations and cloud forest. Communities plan activities around water availability, migration cycles, soil stability, and storm exposure. Primary hazards include landslides, altitude illness, magnetic interference. Regional monitoring stations record rainfall, water temperature, salinity, turbidity, wind, seismic vibration, and unusual species behavior.

Recommended baseline assessment: interview two local observers, inspect the nearest upstream and downstream sites, record visual and odor conditions, collect non-destructive water or soil measurements, compare with the

previous seasonal record, and document uncertainty. Visitors should not interpret a single unusual color, sound, or animal movement as proof of a disaster without supporting evidence.

Restoration priorities are ranked as follows: protect people and drinking water; prevent spread of contamination; preserve breeding and nursery habitat; restore natural water flow; replant locally adapted species; and monitor recovery for at least one complete seasonal cycle.

REG-04 — Silverreed Wetlands

Silverreed Wetlands is characterized by river delta, reed marshes and floating gardens. Communities plan activities around water availability, migration cycles, soil stability, and storm exposure. Primary hazards include waterborne disease, invasive plants, sediment shifts. Regional monitoring stations record rainfall, water temperature, salinity, turbidity, wind, seismic vibration, and unusual species behavior.

Recommended baseline assessment: interview two local observers, inspect the nearest upstream and downstream sites, record visual and odor conditions, collect non-destructive water or soil measurements, compare with the previous seasonal record, and document uncertainty. Visitors should not interpret a single unusual color, sound, or animal movement as proof of a disaster without supporting evidence.

Restoration priorities are ranked as follows: protect people and drinking water; prevent spread of contamination; preserve breeding and nursery habitat; restore natural water flow; replant locally adapted species; and monitor recovery for at least one complete seasonal cycle.

REG-05 — Obsidian Reach

Obsidian Reach is characterized by volcanic coast with black beaches and geothermal vents. Communities plan activities around water availability, migration cycles, soil stability, and storm exposure. Primary hazards include toxic gases, hot springs, ashfall, underwater eruptions. Regional monitoring stations record rainfall, water temperature, salinity, turbidity, wind, seismic vibration, and unusual species behavior.

Recommended baseline assessment: interview two local observers, inspect the nearest upstream and downstream sites, record visual and odor conditions, collect non-destructive water or soil measurements, compare with the previous seasonal record, and document uncertainty. Visitors should not interpret a single unusual color, sound, or animal movement as proof of a disaster without supporting evidence.

Restoration priorities are ranked as follows: protect people and drinking water; prevent spread of contamination; preserve breeding and nursery habitat; restore natural water flow; replant locally adapted species; and monitor recovery for at least one complete seasonal cycle.

REG-06 — Whispering Dunes

Whispering Dunes is characterized by dry inland basin with mobile dunes and seasonal oases. Communities plan activities around water availability, migration cycles, soil stability, and storm exposure. Primary hazards include heat stress, dust storms, water scarcity. Regional monitoring stations record rainfall, water temperature, salinity, turbidity, wind, seismic vibration, and unusual species behavior.

Recommended baseline assessment: interview two local observers, inspect the nearest upstream and downstream sites, record visual and odor conditions, collect non-destructive water or soil measurements, compare with the previous seasonal record, and document uncertainty. Visitors should not interpret a single unusual color, sound, or animal movement as proof of a disaster without supporting evidence.

Restoration priorities are ranked as follows: protect people and drinking water; prevent spread of contamination; preserve breeding and nursery habitat; restore natural water flow; replant locally adapted species; and monitor recovery for at least one complete seasonal cycle.

REG-07 — Deep Current Expanse

Deep Current Expanse is characterized by open ocean migration corridor and deep trench network. Communities plan activities around water availability, migration cycles, soil stability, and storm exposure. Primary hazards include strong

currents, pressure hazards, navigation loss. Regional monitoring stations record rainfall, water temperature, salinity, turbidity, wind, seismic vibration, and unusual species behavior.

Recommended baseline assessment: interview two local observers, inspect the nearest upstream and downstream sites, record visual and odor conditions, collect non-destructive water or soil measurements, compare with the previous seasonal record, and document uncertainty. Visitors should not interpret a single unusual color, sound, or animal movement as proof of a disaster without supporting evidence.

Restoration priorities are ranked as follows: protect people and drinking water; prevent spread of contamination; preserve breeding and nursery habitat; restore natural water flow; replant locally adapted species; and monitor recovery for at least one complete seasonal cycle.

REG-08 — Mistroot Basin

Mistroot Basin is characterized by montane valley with cool lakes, moss forest and terraces. Communities plan activities around water availability, migration cycles, soil stability, and storm exposure. Primary hazards include fog, crop fungal disease, cold exposure. Regional monitoring stations record rainfall, water temperature, salinity, turbidity, wind, seismic vibration, and unusual species behavior.

Recommended baseline assessment: interview two local observers, inspect the nearest upstream and downstream sites, record visual and odor conditions, collect non-destructive water or soil measurements, compare with the previous seasonal record, and document uncertainty. Visitors should not interpret a single unusual color, sound, or animal movement as proof of a disaster without supporting evidence.

Restoration priorities are ranked as follows: protect people and drinking water; prevent spread of contamination; preserve breeding and nursery habitat; restore natural water flow; replant locally adapted species; and monitor recovery for at least one complete seasonal cycle.

REG-09 — Aurora Mangroves

Aurora Mangroves is characterized by brackish forest protecting coastlines and nurseries. Communities plan activities around water availability, migration cycles, soil stability, and storm exposure. Primary hazards include salinity change, root damage, mosquito surges. Regional monitoring stations record rainfall, water temperature, salinity, turbidity, wind, seismic vibration, and unusual species behavior.

Recommended baseline assessment: interview two local observers, inspect the nearest upstream and downstream sites, record visual and odor conditions, collect non-destructive water or soil measurements, compare with the previous seasonal record, and document uncertainty. Visitors should not interpret a single unusual color, sound, or animal movement as proof of a disaster without supporting evidence.

Restoration priorities are ranked as follows: protect people and drinking water; prevent spread of contamination; preserve breeding and nursery habitat; restore natural water flow; replant locally adapted species; and monitor recovery for at least one complete seasonal cycle.

REG-10 — Sunfall Archipelago

Sunfall Archipelago is characterized by remote islands with cliffs, caves and seabird colonies. Communities plan activities around water availability, migration cycles, soil stability, and storm exposure. Primary hazards include isolation, freshwater limits, cliff collapse. Regional monitoring stations record rainfall, water temperature, salinity, turbidity, wind, seismic vibration, and unusual species behavior.

Recommended baseline assessment: interview two local observers, inspect the nearest upstream and downstream sites, record visual and odor conditions, collect non-destructive water or soil measurements, compare with the previous seasonal record, and document uncertainty. Visitors should not interpret a single unusual color, sound, or animal movement as proof of a disaster without supporting evidence.

Restoration priorities are ranked as follows: protect people and drinking water; prevent spread of contamination; preserve breeding and nursery habitat; restore natural water flow; replant locally adapted species; and monitor recovery for at least one complete seasonal cycle.

3. Settlements, Villages and Community Governance

ID	Settlement	Region	Form	Primary activities	Governance
STL-001	Awa Reef Village	Luminous Shelf	stilt-and-reef settlement	fishing, shell craft, reef monitoring	Council of Tides
STL-002	Kelutral Canopy Hamlet	Emerald Canopy	tree-platform village	fruit gardens, medicinal plants, canopy mapping	Circle of Roots
STL-003	Toruk Pass Station	Cloudspine Highlands	mountain transit settlement	guiding, rope bridges, weather observation	High Pass Wardens
STL-004	Neyra Floating Gardens	Silverreed Wetlands	floating agricultural community	reed grain, wetland vegetables, water testing	Garden Assembly
STL-005	Vitra Ash Coast	Obsidian Reach	volcanic coastal village	geothermal ceramics, vent research	Ember Council
STL-006	Sahri Oasis Camp	Whispering Dunes	seasonal oasis settlement	water stewardship, fiber weaving	Well Keepers
STL-007	Maroa Navigator Enclave	Deep Current Expanse	mobile seafaring community	navigation, rescue, migration records	Current Speakers
STL-008	Ilyan Terrace Village	Mistroot Basin	terraced mountain village	herbs, cool-climate crops, lake care	Terrace Forum
STL-009	Ralu Mangrove Haven	Aurora Mangroves	root-platform village	nursery protection, canoe building	Mangrove Mothers Council
STL-010	Peyral Cliff Community	Sunfall Archipelago	cliff and cave settlement	seabird care, rain capture, cave mapping	Island Moot

STL-001 — Awa Reef Village

Awa Reef Village is a stilt-and-reef settlement in the Luminous Shelf. Its primary activities are fishing, shell craft, reef monitoring. Local decisions are coordinated by the Council of Tides, which includes household representatives, at least one healer, one youth observer, one ecological guardian, and one logistics coordinator. Emergency decisions may be taken by a smaller response circle but must be reviewed publicly after the incident.

Settlement layout follows four safety zones. The living zone contains homes and shared kitchens. The clean-water zone protects springs, tanks, wells, or rain collectors. The working zone contains workshops, docks, crop preparation areas, and storage. The wild buffer remains lightly disturbed and serves as habitat, flood absorption, wind protection, and a fire break. Waste pits, fuel stores, and animal processing areas must remain downhill and downwind from drinking-water sources.

Daily records include water condition, food storage status, visitors, injuries, unusual species sightings, and maintenance needs. Weekly councils review shortages and conflicts. Seasonal councils set harvest limits, close breeding areas, repair evacuation routes, and update maps. Oral knowledge is recorded with permission; sacred or restricted knowledge is not placed in public databases without consent.

Visitor etiquette requires registration with a host, acceptance of quiet hours, use of assigned paths, respect for restricted ecological sites, and participation in waste return. Photography, specimen collection, drone use, and entry into healing spaces require explicit permission. Visitors who ignore safety or ecological instructions may be escorted out.

STL-002 — Kelutral Canopy Hamlet

Kelutral Canopy Hamlet is a tree-platform village in the Emerald Canopy. Its primary activities are fruit gardens, medicinal plants, canopy mapping. Local decisions are coordinated by the Circle of Roots, which includes household representatives, at least one healer, one youth observer, one ecological guardian, and one logistics coordinator. Emergency decisions may be taken by a smaller response circle but must be reviewed publicly after the incident.

Settlement layout follows four safety zones. The living zone contains homes and shared kitchens. The clean-water zone protects springs, tanks, wells, or rain collectors. The working zone contains workshops, docks, crop preparation areas, and storage. The wild buffer remains lightly disturbed and serves as habitat, flood absorption, wind protection, and a fire break. Waste pits, fuel stores, and animal processing areas must remain downhill and downwind from drinking-water sources.

Daily records include water condition, food storage status, visitors, injuries, unusual species sightings, and maintenance needs. Weekly councils review shortages and conflicts. Seasonal councils set harvest limits, close breeding areas, repair evacuation routes, and update maps. Oral knowledge is recorded with permission; sacred or restricted knowledge is not placed in public databases without consent.

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STL-003 — Toruk Pass Station

Toruk Pass Station is a mountain transit settlement in the Cloudspine Highlands. Its primary activities are guiding, rope bridges, weather observation. Local decisions are coordinated by the High Pass Wardens, which includes household representatives, at least one healer, one youth observer, one ecological guardian, and one logistics coordinator. Emergency decisions may be taken by a smaller response circle but must be reviewed publicly after the incident.

Settlement layout follows four safety zones. The living zone contains homes and shared kitchens. The clean-water zone protects springs, tanks, wells, or rain collectors. The working zone contains workshops, docks, crop preparation areas, and storage. The wild buffer remains lightly disturbed and serves as habitat, flood absorption, wind protection, and a fire break. Waste pits, fuel stores, and animal processing areas must remain downhill and downwind from drinking-water sources.

Daily records include water condition, food storage status, visitors, injuries, unusual species sightings, and maintenance needs. Weekly councils review shortages and conflicts. Seasonal councils set harvest limits, close breeding areas, repair evacuation routes, and update maps. Oral knowledge is recorded with permission; sacred or restricted knowledge is not placed in public databases without consent.

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STL-004 — Neyra Floating Gardens

Neyra Floating Gardens is a floating agricultural community in the Silverreed Wetlands. Its primary activities are reed grain, wetland vegetables, water testing. Local decisions are coordinated by the Garden Assembly, which includes household representatives, at least one healer, one youth observer, one ecological guardian, and one logistics coordinator. Emergency decisions may be taken by a smaller response circle but must be reviewed publicly after the incident.

Settlement layout follows four safety zones. The living zone contains homes and shared kitchens. The clean-water zone protects springs, tanks, wells, or rain collectors. The working zone contains workshops, docks, crop preparation areas, and storage. The wild buffer remains lightly disturbed and serves as habitat, flood absorption, wind protection, and a fire break. Waste pits, fuel stores, and animal processing areas must remain downhill and downwind from drinking-water sources.

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STL-005 — Vitra Ash Coast

Vitra Ash Coast is a volcanic coastal village in the Obsidian Reach. Its primary activities are geothermal ceramics, vent research. Local decisions are coordinated by the Ember Council, which includes household representatives, at least one healer, one youth observer, one ecological guardian, and one logistics coordinator. Emergency decisions may be taken by a smaller response circle but must be reviewed publicly after the incident.

Settlement layout follows four safety zones. The living zone contains homes and shared kitchens. The clean-water zone protects springs, tanks, wells, or rain collectors. The working zone contains workshops, docks, crop preparation areas, and storage. The wild buffer remains lightly disturbed and serves as habitat, flood absorption, wind protection, and a fire break. Waste pits, fuel stores, and animal processing areas must remain downhill and downwind from drinking-water sources.

Daily records include water condition, food storage status, visitors, injuries, unusual species sightings, and maintenance needs. Weekly councils review shortages and conflicts. Seasonal councils set harvest limits, close breeding areas, repair evacuation routes, and update maps. Oral knowledge is recorded with permission; sacred or restricted knowledge is not placed in public databases without consent.

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STL-006 — Sahri Oasis Camp

Sahri Oasis Camp is a seasonal oasis settlement in the Whispering Dunes. Its primary activities are water stewardship, fiber weaving. Local decisions are coordinated by the Well Keepers, which includes household representatives, at least one healer, one youth observer, one ecological guardian, and one logistics coordinator. Emergency decisions may be taken by a smaller response circle but must be reviewed publicly after the incident.

Settlement layout follows four safety zones. The living zone contains homes and shared kitchens. The clean-water zone protects springs, tanks, wells, or rain collectors. The working zone contains workshops, docks, crop preparation areas, and storage. The wild buffer remains lightly disturbed and serves as habitat, flood absorption, wind protection, and a fire break. Waste pits, fuel stores, and animal processing areas must remain downhill and downwind from drinking-water sources.

Daily records include water condition, food storage status, visitors, injuries, unusual species sightings, and maintenance needs. Weekly councils review shortages and conflicts. Seasonal councils set harvest limits, close breeding areas, repair evacuation routes, and update maps. Oral knowledge is recorded with permission; sacred or restricted knowledge is not placed in public databases without consent.

Visitor etiquette requires registration with a host, acceptance of quiet hours, use of assigned paths, respect for restricted ecological sites, and participation in waste return. Photography, specimen collection, drone use, and entry

into healing spaces require explicit permission. Visitors who ignore safety or ecological instructions may be escorted out.

STL-007 — Maroa Navigator Enclave

Maroa Navigator Enclave is a mobile seafaring community in the Deep Current Expanse. Its primary activities are navigation, rescue, migration records. Local decisions are coordinated by the Current Speakers, which includes household representatives, at least one healer, one youth observer, one ecological guardian, and one logistics coordinator. Emergency decisions may be taken by a smaller response circle but must be reviewed publicly after the incident.

Settlement layout follows four safety zones. The living zone contains homes and shared kitchens. The clean-water zone protects springs, tanks, wells, or rain collectors. The working zone contains workshops, docks, crop preparation areas, and storage. The wild buffer remains lightly disturbed and serves as habitat, flood absorption, wind protection, and a fire break. Waste pits, fuel stores, and animal processing areas must remain downhill and downwind from drinking-water sources.

Daily records include water condition, food storage status, visitors, injuries, unusual species sightings, and maintenance needs. Weekly councils review shortages and conflicts. Seasonal councils set harvest limits, close breeding areas, repair evacuation routes, and update maps. Oral knowledge is recorded with permission; sacred or restricted knowledge is not placed in public databases without consent.

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STL-008 — Ilyan Terrace Village

Ilyan Terrace Village is a terraced mountain village in the Mistroot Basin. Its primary activities are herbs, cool-climate crops, lake care. Local decisions are coordinated by the Terrace Forum, which includes household representatives, at least one healer, one youth observer, one ecological guardian, and one logistics coordinator. Emergency decisions may be taken by a smaller response circle but must be reviewed publicly after the incident.

Settlement layout follows four safety zones. The living zone contains homes and shared kitchens. The clean-water zone protects springs, tanks, wells, or rain collectors. The working zone contains workshops, docks, crop preparation areas, and storage. The wild buffer remains lightly disturbed and serves as habitat, flood absorption, wind protection, and a fire break. Waste pits, fuel stores, and animal processing areas must remain downhill and downwind from drinking-water sources.

Daily records include water condition, food storage status, visitors, injuries, unusual species sightings, and maintenance needs. Weekly councils review shortages and conflicts. Seasonal councils set harvest limits, close breeding areas, repair evacuation routes, and update maps. Oral knowledge is recorded with permission; sacred or restricted knowledge is not placed in public databases without consent.

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STL-009 — Ralu Mangrove Haven

Ralu Mangrove Haven is a root-platform village in the Aurora Mangroves. Its primary activities are nursery protection, canoe building. Local decisions are coordinated by the Mangrove Mothers Council, which includes household representatives, at least one healer, one youth observer, one ecological guardian, and one logistics coordinator. Emergency decisions may be taken by a smaller response circle but must be reviewed publicly after the incident.

Settlement layout follows four safety zones. The living zone contains homes and shared kitchens. The clean-water zone protects springs, tanks, wells, or rain collectors. The working zone contains workshops, docks, crop preparation areas,

and storage. The wild buffer remains lightly disturbed and serves as habitat, flood absorption, wind protection, and a fire break. Waste pits, fuel stores, and animal processing areas must remain downhill and downwind from drinking-water sources.

Daily records include water condition, food storage status, visitors, injuries, unusual species sightings, and maintenance needs. Weekly councils review shortages and conflicts. Seasonal councils set harvest limits, close breeding areas, repair evacuation routes, and update maps. Oral knowledge is recorded with permission; sacred or restricted knowledge is not placed in public databases without consent.

Visitor etiquette requires registration with a host, acceptance of quiet hours, use of assigned paths, respect for restricted ecological sites, and participation in waste return. Photography, specimen collection, drone use, and entry into healing spaces require explicit permission. Visitors who ignore safety or ecological instructions may be escorted out.

STL-010 — Peyral Cliff Community

Peyral Cliff Community is a cliff and cave settlement in the Sunfall Archipelago. Its primary activities are seabird care, rain capture, cave mapping. Local decisions are coordinated by the Island Moot, which includes household representatives, at least one healer, one youth observer, one ecological guardian, and one logistics coordinator. Emergency decisions may be taken by a smaller response circle but must be reviewed publicly after the incident.

Settlement layout follows four safety zones. The living zone contains homes and shared kitchens. The clean-water zone protects springs, tanks, wells, or rain collectors. The working zone contains workshops, docks, crop preparation areas, and storage. The wild buffer remains lightly disturbed and serves as habitat, flood absorption, wind protection, and a fire break. Waste pits, fuel stores, and animal processing areas must remain downhill and downwind from drinking-water sources.

Daily records include water condition, food storage status, visitors, injuries, unusual species sightings, and maintenance needs. Weekly councils review shortages and conflicts. Seasonal councils set harvest limits, close breeding areas, repair evacuation routes, and update maps. Oral knowledge is recorded with permission; sacred or restricted knowledge is not placed in public databases without consent.

Visitor etiquette requires registration with a host, acceptance of quiet hours, use of assigned paths, respect for restricted ecological sites, and participation in waste return. Photography, specimen collection, drone use, and entry into healing spaces require explicit permission. Visitors who ignore safety or ecological instructions may be escorted out.

4. Oceans, Rivers, Reefs and Wetland Systems

4.1 Water Quality Indicators

Temperature influences oxygen, coral stress, microbial growth, and animal movement. A rapid change of more than two degrees within a day should be verified at multiple depths before conclusions are drawn.

Clarity is assessed through turbidity, suspended sediment, plankton density, and colored dissolved organic matter. Brown water after heavy rain may be sediment-rich but not toxic; green or red water may reflect algae, minerals, or decomposition.

Odor can indicate sulfur vents, decaying vegetation, sewage contamination, or natural mangrove processes. Smell alone is never considered sufficient evidence.

Dissolved oxygen below the local seasonal baseline can cause fish distress and surface breathing. Teams should check temperature, algae, organic waste, and water circulation.

pH and salinity changes may result from rainfall, drought, freshwater diversion, volcanic activity, evaporation, or industrial contamination. Measurements should include calibration records.

4.2 Reef Health

Healthy reefs show mixed age classes, active grazing species, clear recruitment surfaces, and limited disease lesions. Bright color is not always a sign of health because some stressed organisms intensify pigments before bleaching.

Physical damage may be caused by anchors, storms, careless harvesting, predator outbreaks, or landslides. Response teams should stop further disturbance, map the damaged area, stabilize loose structures only when trained, and avoid unnecessary touching.

Reef restoration uses locally sourced fragments only when natural recovery is unlikely. Transplant sites must match depth, light, current, and temperature conditions. Monitoring continues for survival, growth, disease, and genetic diversity.

4.3 Wetlands and Mangroves

Wetlands store floodwater, filter sediment, provide nursery habitat, and support food plants. Draining or blocking natural channels can increase both flood and drought risk.

Mangrove roots should not be cut for routine access. Elevated walkways and narrow canoe routes are preferred. New channels require hydrological review because small changes can alter salinity over a wide area.

Mosquito increase may follow stagnant water, blocked channels, discarded containers, or seasonal rainfall. Control focuses on water flow, habitat balance, screens, and targeted biological methods rather than broad chemical spraying.

4.4 Drinking Water Protection

Each settlement designates a source protection radius. Washing, animal care, waste disposal, chemical storage, and funeral practices are prohibited within that area.

Rainwater is collected from clean surfaces, filtered, and stored in covered containers. The first runoff after a dry period is diverted because it may contain dust, droppings, and pollen.

Boiling, solar treatment, membrane filtration, or approved plant-based clarification may be used depending on the hazard. Clarification removes particles but does not necessarily kill pathogens.

4.5 Water Incident Classification

Class	Indicators	Immediate response
W1 Observation	Unusual color or odor; no illness or animal distress	Record, sample, compare upstream/downstream, continue cautious monitoring.
W2 Advisory	Minor symptoms, localized fish avoidance, moderate parameter shift	Restrict sensitive use, provide alternate drinking water, investigate source.
W3 Emergency	Multiple illnesses, fish deaths, toxic reading, severe oxygen loss	Close access, activate medical and ecological teams, isolate inflow where safe.
W4 Regional Crisis	Contamination crosses settlements or affects a major river/reef	Regional command, public warning, external laboratories, long-term restoration.

5. Fauna Species Profiles

FAU-001 — Tideglass Grazer

Category and habitat: The Tideglass Grazer is a marine herbivore associated with seagrass lagoons. Identification features include silver-blue plates. Field teams should avoid identification based on color alone because age, stress, depth, and season can change appearance.

Ecological role: This species grazes algae and maintains seagrass gaps. Its presence may indicate that habitat connections remain functional, but population counts must be compared across seasons. A sudden absence can reflect migration, disturbance, weather, sampling error, or mortality.

Known pressures: The primary documented pressure is juveniles vulnerable to turbidity. Secondary pressures include noise, habitat fragmentation, water-quality decline, accidental capture, and disruption of breeding sites. Risk increases when two or more pressures occur together.

Protection and response: Current guidance is protected during spawning. Injured individuals should be observed from a safe distance, photographed only if permitted, and reported with location, time, behavior, visible injury, nearby hazards, and witness details. Untrained rescuers must not feed, restrain, or relocate wildlife unless immediate danger requires it.

Monitoring record: surveys should document count, age class where visible, behavior, habitat condition, weather, water parameters where relevant, observer effort, and confidence. A zero count is valid data only when survey effort and conditions are recorded.

FAU-002 — Ribbonfin Skimmer

Category and habitat: The Ribbonfin Skimmer is a surface fish associated with warm reef channels. Identification features include long luminous fins. Field teams should avoid identification based on color alone because age, stress, depth, and season can change appearance.

Ecological role: This species controls plankton swarms. Its presence may indicate that habitat connections remain functional, but population counts must be compared across seasons. A sudden absence can reflect migration, disturbance, weather, sampling error, or mortality.

Known pressures: The primary documented pressure is sensitive to oil films. Secondary pressures include noise, habitat fragmentation, water-quality decline, accidental capture, and disruption of breeding sites. Risk increases when two or more pressures occur together.

Protection and response: Current guidance is no harvest during bloom tide. Injured individuals should be observed from a safe distance, photographed only if permitted, and reported with location, time, behavior, visible injury, nearby hazards, and witness details. Untrained rescuers must not feed, restrain, or relocate wildlife unless immediate danger requires it.

Monitoring record: surveys should document count, age class where visible, behavior, habitat condition, weather, water parameters where relevant, observer effort, and confidence. A zero count is valid data only when survey effort and conditions are recorded.

FAU-003 — Deepbell Singer

Category and habitat: The Deepbell Singer is a large marine mammal associated with offshore trenches. Identification features include low-frequency calls. Field teams should avoid identification based on color alone because age, stress, depth, and season can change appearance.

Ecological role: This species nutrient transport and cultural navigation. Its presence may indicate that habitat connections remain functional, but population counts must be compared across seasons. A sudden absence can reflect migration, disturbance, weather, sampling error, or mortality.

Known pressures: The primary documented pressure is ship noise and entanglement. Secondary pressures include noise, habitat fragmentation, water-quality decline, accidental capture, and disruption of breeding sites. Risk increases when two or more pressures occur together.

Protection and response: Current guidance is approach distance 300 m. Injured individuals should be observed from a safe distance, photographed only if permitted, and reported with location, time, behavior, visible injury, nearby hazards, and witness details. Untrained rescuers must not feed, restrain, or relocate wildlife unless immediate danger requires it.

Monitoring record: surveys should document count, age class where visible, behavior, habitat condition, weather, water parameters where relevant, observer effort, and confidence. A zero count is valid data only when survey effort and conditions are recorded.

FAU-004 — Reef Lantern Crab

Category and habitat: The Reef Lantern Crab is a crustacean associated with coral rubble. Identification features include bioluminescent claws. Field teams should avoid identification based on color alone because age, stress, depth, and season can change appearance.

Ecological role: This species scavenger and sediment mixer. Its presence may indicate that habitat connections remain functional, but population counts must be compared across seasons. A sudden absence can reflect migration, disturbance, weather, sampling error, or mortality.

Known pressures: The primary documented pressure is light pollution. Secondary pressures include noise, habitat fragmentation, water-quality decline, accidental capture, and disruption of breeding sites. Risk increases when two or more pressures occur together.

Protection and response: Current guidance is hand collection prohibited. Injured individuals should be observed from a safe distance, photographed only if permitted, and reported with location, time, behavior, visible injury, nearby hazards, and witness details. Untrained rescuers must not feed, restrain, or relocate wildlife unless immediate danger requires it.

Monitoring record: surveys should document count, age class where visible, behavior, habitat condition, weather, water parameters where relevant, observer effort, and confidence. A zero count is valid data only when survey effort and conditions are recorded.

FAU-005 — Mossback Glider

Category and habitat: The Mossback Glider is a canopy glider associated with rainforest upper canopy. Identification features include membranous wings. Field teams should avoid identification based on color alone because age, stress, depth, and season can change appearance.

Ecological role: This species seed dispersal. Its presence may indicate that habitat connections remain functional, but population counts must be compared across seasons. A sudden absence can reflect migration, disturbance, weather, sampling error, or mortality.

Known pressures: The primary documented pressure is canopy fragmentation. Secondary pressures include noise, habitat fragmentation, water-quality decline, accidental capture, and disruption of breeding sites. Risk increases when two or more pressures occur together.

Protection and response: Current guidance is protect crossing trees. Injured individuals should be observed from a safe distance, photographed only if permitted, and reported with location, time, behavior, visible injury, nearby hazards, and witness details. Untrained rescuers must not feed, restrain, or relocate wildlife unless immediate danger requires it.

Monitoring record: surveys should document count, age class where visible, behavior, habitat condition, weather, water parameters where relevant, observer effort, and confidence. A zero count is valid data only when survey effort and conditions are recorded.

FAU-006 — Rootdrum Walker

Category and habitat: The Rootdrum Walker is a forest herbivore associated with lowland forest. Identification features include resonant foot pads. Field teams should avoid identification based on color alone because age, stress, depth, and season can change appearance.

Ecological role: This species opens trails and disperses spores. Its presence may indicate that habitat connections remain functional, but population counts must be compared across seasons. A sudden absence can reflect migration, disturbance, weather, sampling error, or mortality.

Known pressures: The primary documented pressure is hunting and road barriers. Secondary pressures include noise, habitat fragmentation, water-quality decline, accidental capture, and disruption of breeding sites. Risk increases when two or more pressures occur together.

Protection and response: Current guidance is migration corridors required. Injured individuals should be observed from a safe distance, photographed only if permitted, and reported with location, time, behavior, visible injury, nearby hazards, and witness details. Untrained rescuers must not feed, restrain, or relocate wildlife unless immediate danger requires it.

Monitoring record: surveys should document count, age class where visible, behavior, habitat condition, weather, water parameters where relevant, observer effort, and confidence. A zero count is valid data only when survey effort and conditions are recorded.

FAU-007 — Cloudcrest Raptor

Category and habitat: The Cloudcrest Raptor is a mountain aerial predator associated with high cliffs. Identification features include crest changes color. Field teams should avoid identification based on color alone because age, stress, depth, and season can change appearance.

Ecological role: This species controls small glider populations. Its presence may indicate that habitat connections remain functional, but population counts must be compared across seasons. A sudden absence can reflect migration, disturbance, weather, sampling error, or mortality.

Known pressures: The primary documented pressure is nest disturbance. Secondary pressures include noise, habitat fragmentation, water-quality decline, accidental capture, and disruption of breeding sites. Risk increases when two or more pressures occur together.

Protection and response: Current guidance is seasonal cliff closure. Injured individuals should be observed from a safe distance, photographed only if permitted, and reported with location, time, behavior, visible injury, nearby hazards, and witness details. Untrained rescuers must not feed, restrain, or relocate wildlife unless immediate danger requires it.

Monitoring record: surveys should document count, age class where visible, behavior, habitat condition, weather, water parameters where relevant, observer effort, and confidence. A zero count is valid data only when survey effort and conditions are recorded.

FAU-008 — Silverreed Stalker

Category and habitat: The Silverreed Stalker is a wetland predator associated with reed marsh. Identification features include camouflaged side fins. Field teams should avoid identification based on color alone because age, stress, depth, and season can change appearance.

Ecological role: This species regulates marsh grazers. Its presence may indicate that habitat connections remain functional, but population counts must be compared across seasons. A sudden absence can reflect migration, disturbance, weather, sampling error, or mortality.

Known pressures: The primary documented pressure is drainage and traps. Secondary pressures include noise, habitat fragmentation, water-quality decline, accidental capture, and disruption of breeding sites. Risk increases when two or more pressures occur together.

Protection and response: Current guidance is buffer around breeding beds. Injured individuals should be observed from a safe distance, photographed only if permitted, and reported with location, time, behavior, visible injury, nearby hazards, and witness details. Untrained rescuers must not feed, restrain, or relocate wildlife unless immediate danger requires it.

Monitoring record: surveys should document count, age class where visible, behavior, habitat condition, weather, water parameters where relevant, observer effort, and confidence. A zero count is valid data only when survey effort and conditions are recorded.

FAU-009 — Ashshell Tortoise

Category and habitat: The Ashshell Tortoise is a volcanic reptile associated with warm ash plains. Identification features include heat-resistant shell. Field teams should avoid identification based on color alone because age, stress, depth, and season can change appearance.

Ecological role: This species moves mineral-rich soil. Its presence may indicate that habitat connections remain functional, but population counts must be compared across seasons. A sudden absence can reflect migration, disturbance, weather, sampling error, or mortality.

Known pressures: The primary documented pressure is vehicle strike. Secondary pressures include noise, habitat fragmentation, water-quality decline, accidental capture, and disruption of breeding sites. Risk increases when two or more pressures occur together.

Protection and response: Current guidance is marked slow zones. Injured individuals should be observed from a safe distance, photographed only if permitted, and reported with location, time, behavior, visible injury, nearby hazards, and witness details. Untrained rescuers must not feed, restrain, or relocate wildlife unless immediate danger requires it.

Monitoring record: surveys should document count, age class where visible, behavior, habitat condition, weather, water parameters where relevant, observer effort, and confidence. A zero count is valid data only when survey effort and conditions are recorded.

FAU-010 — Dune Whisperer

Category and habitat: The Dune Whisperer is a small desert mammal associated with oasis margins. Identification features include large heat-dissipating ears. Field teams should avoid identification based on color alone because age, stress, depth, and season can change appearance.

Ecological role: This species pollinates night flowers. Its presence may indicate that habitat connections remain functional, but population counts must be compared across seasons. A sudden absence can reflect migration, disturbance, weather, sampling error, or mortality.

Known pressures: The primary documented pressure is oasis drying. Secondary pressures include noise, habitat fragmentation, water-quality decline, accidental capture, and disruption of breeding sites. Risk increases when two or more pressures occur together.

Protection and response: Current guidance is protect burrow fields. Injured individuals should be observed from a safe distance, photographed only if permitted, and reported with location, time, behavior, visible injury, nearby hazards, and witness details. Untrained rescuers must not feed, restrain, or relocate wildlife unless immediate danger requires it.

Monitoring record: surveys should document count, age class where visible, behavior, habitat condition, weather, water parameters where relevant, observer effort, and confidence. A zero count is valid data only when survey effort and conditions are recorded.

FAU-011 — Mangrove Needlefish

Category and habitat: The Mangrove Needlefish is a brackish fish associated with root channels. Identification features include needle-shaped beak. Field teams should avoid identification based on color alone because age, stress, depth, and season can change appearance.

Ecological role: This species predator of mosquito larvae. Its presence may indicate that habitat connections remain functional, but population counts must be compared across seasons. A sudden absence can reflect migration, disturbance, weather, sampling error, or mortality.

Known pressures: The primary documented pressure is salinity extremes. Secondary pressures include noise, habitat fragmentation, water-quality decline, accidental capture, and disruption of breeding sites. Risk increases when two or more pressures occur together.

Protection and response: Current guidance is maintain tidal flow. Injured individuals should be observed from a safe distance, photographed only if permitted, and reported with location, time, behavior, visible injury, nearby hazards, and witness details. Untrained rescuers must not feed, restrain, or relocate wildlife unless immediate danger requires it.

Monitoring record: surveys should document count, age class where visible, behavior, habitat condition, weather, water parameters where relevant, observer effort, and confidence. A zero count is valid data only when survey effort and conditions are recorded.

FAU-012 — Sunfall Cliffwing

Category and habitat: The Sunfall Cliffwing is a seabird associated with island cliffs. Identification features include orange wing tips. Field teams should avoid identification based on color alone because age, stress, depth, and season can change appearance.

Ecological role: This species marine nutrient transfer. Its presence may indicate that habitat connections remain functional, but population counts must be compared across seasons. A sudden absence can reflect migration, disturbance, weather, sampling error, or mortality.

Known pressures: The primary documented pressure is introduced predators. Secondary pressures include noise, habitat fragmentation, water-quality decline, accidental capture, and disruption of breeding sites. Risk increases when two or more pressures occur together.

Protection and response: Current guidance is nest islands biosecure. Injured individuals should be observed from a safe distance, photographed only if permitted, and reported with location, time, behavior, visible injury, nearby hazards, and witness details. Untrained rescuers must not feed, restrain, or relocate wildlife unless immediate danger requires it.

Monitoring record: surveys should document count, age class where visible, behavior, habitat condition, weather, water parameters where relevant, observer effort, and confidence. A zero count is valid data only when survey effort and conditions are recorded.

FAU-013 — Moonpool Salamander

Category and habitat: The Moonpool Salamander is a amphibian associated with cool forest pools. Identification features include translucent skin. Field teams should avoid identification based on color alone because age, stress, depth, and season can change appearance.

Ecological role: This species indicator of clean water. Its presence may indicate that habitat connections remain functional, but population counts must be compared across seasons. A sudden absence can reflect migration, disturbance, weather, sampling error, or mortality.

Known pressures: The primary documented pressure is fungal disease. Secondary pressures include noise, habitat fragmentation, water-quality decline, accidental capture, and disruption of breeding sites. Risk increases when two or more pressures occur together.

Protection and response: Current guidance is equipment disinfection. Injured individuals should be observed from a safe distance, photographed only if permitted, and reported with location, time, behavior, visible injury, nearby hazards, and witness details. Untrained rescuers must not feed, restrain, or relocate wildlife unless immediate danger requires it.

Monitoring record: surveys should document count, age class where visible, behavior, habitat condition, weather, water parameters where relevant, observer effort, and confidence. A zero count is valid data only when survey effort and conditions are recorded.

FAU-014 — Blueveil Manta

Category and habitat: The Blueveil Manta is a large ray associated with coastal cleaning stations. Identification features include blue veil markings. Field teams should avoid identification based on color alone because age, stress, depth, and season can change appearance.

Ecological role: This species connects reef zones. Its presence may indicate that habitat connections remain functional, but population counts must be compared across seasons. A sudden absence can reflect migration, disturbance, weather, sampling error, or mortality.

Known pressures: The primary documented pressure is net capture. Secondary pressures include noise, habitat fragmentation, water-quality decline, accidental capture, and disruption of breeding sites. Risk increases when two or more pressures occur together.

Protection and response: Current guidance is no-net sanctuary. Injured individuals should be observed from a safe distance, photographed only if permitted, and reported with location, time, behavior, visible injury, nearby hazards, and witness details. Untrained rescuers must not feed, restrain, or relocate wildlife unless immediate danger requires it.

Monitoring record: surveys should document count, age class where visible, behavior, habitat condition, weather, water parameters where relevant, observer effort, and confidence. A zero count is valid data only when survey effort and conditions are recorded.

FAU-015 — Currentback Turtle

Category and habitat: The Currentback Turtle is a marine reptile associated with open ocean and beaches. Identification features include raised current-sensing ridges. Field teams should avoid identification based on color alone because age, stress, depth, and season can change appearance.

Ecological role: This species jelly control and nutrient transport. Its presence may indicate that habitat connections remain functional, but population counts must be compared across seasons. A sudden absence can reflect migration, disturbance, weather, sampling error, or mortality.

Known pressures: The primary documented pressure is plastic ingestion and lights. Secondary pressures include noise, habitat fragmentation, water-quality decline, accidental capture, and disruption of breeding sites. Risk increases when two or more pressures occur together.

Protection and response: Current guidance is dark beach policy. Injured individuals should be observed from a safe distance, photographed only if permitted, and reported with location, time, behavior, visible injury, nearby hazards, and witness details. Untrained rescuers must not feed, restrain, or relocate wildlife unless immediate danger requires it.

Monitoring record: surveys should document count, age class where visible, behavior, habitat condition, weather, water parameters where relevant, observer effort, and confidence. A zero count is valid data only when survey effort and conditions are recorded.

FAU-016 — Glowhorn Browsers

Category and habitat: The Glowhorn Browsers is a forest herd animal associated with forest edge. Identification features include luminous horn bands. Field teams should avoid identification based on color alone because age, stress, depth, and season can change appearance.

Ecological role: This species maintains meadow mosaics. Its presence may indicate that habitat connections remain functional, but population counts must be compared across seasons. A sudden absence can reflect migration, disturbance, weather, sampling error, or mortality.

Known pressures: The primary documented pressure is overharvest. Secondary pressures include noise, habitat fragmentation, water-quality decline, accidental capture, and disruption of breeding sites. Risk increases when two or more pressures occur together.

Protection and response: Current guidance is community quota. Injured individuals should be observed from a safe distance, photographed only if permitted, and reported with location, time, behavior, visible injury, nearby hazards, and witness details. Untrained rescuers must not feed, restrain, or relocate wildlife unless immediate danger requires it.

Monitoring record: surveys should document count, age class where visible, behavior, habitat condition, weather, water parameters where relevant, observer effort, and confidence. A zero count is valid data only when survey effort and conditions are recorded.

FAU-017 — Misttail Pollinator

Category and habitat: The Misttail Pollinator is a flying insectivore associated with cloud forest. Identification features include mist-like tail fibers. Field teams should avoid identification based on color alone because age, stress, depth, and season can change appearance.

Ecological role: This species pollination and insect control. Its presence may indicate that habitat connections remain functional, but population counts must be compared across seasons. A sudden absence can reflect migration, disturbance, weather, sampling error, or mortality.

Known pressures: The primary documented pressure is pesticides. Secondary pressures include noise, habitat fragmentation, water-quality decline, accidental capture, and disruption of breeding sites. Risk increases when two or more pressures occur together.

Protection and response: Current guidance is chemical-free zones. Injured individuals should be observed from a safe distance, photographed only if permitted, and reported with location, time, behavior, visible injury, nearby hazards, and witness details. Untrained rescuers must not feed, restrain, or relocate wildlife unless immediate danger requires it.

Monitoring record: surveys should document count, age class where visible, behavior, habitat condition, weather, water parameters where relevant, observer effort, and confidence. A zero count is valid data only when survey effort and conditions are recorded.

FAU-018 — Ventplume Shrimp

Category and habitat: The Ventplume Shrimp is a vent crustacean associated with geothermal vents. Identification features include red plume gills. Field teams should avoid identification based on color alone because age, stress, depth, and season can change appearance.

Ecological role: This species vent food web base. Its presence may indicate that habitat connections remain functional, but population counts must be compared across seasons. A sudden absence can reflect migration, disturbance, weather, sampling error, or mortality.

Known pressures: The primary documented pressure is mineral extraction. Secondary pressures include noise, habitat fragmentation, water-quality decline, accidental capture, and disruption of breeding sites. Risk increases when two or more pressures occur together.

Protection and response: Current guidance is no-take vent circles. Injured individuals should be observed from a safe distance, photographed only if permitted, and reported with location, time, behavior, visible injury, nearby hazards, and witness details. Untrained rescuers must not feed, restrain, or relocate wildlife unless immediate danger requires it.

Monitoring record: surveys should document count, age class where visible, behavior, habitat condition, weather, water parameters where relevant, observer effort, and confidence. A zero count is valid data only when survey effort and conditions are recorded.

FAU-019 — Lake Mirror Eel

Category and habitat: The Lake Mirror Eel is a freshwater fish associated with Mistroot lakes. Identification features include reflective skin. Field teams should avoid identification based on color alone because age, stress, depth, and season can change appearance.

Ecological role: This species controls larvae. Its presence may indicate that habitat connections remain functional, but population counts must be compared across seasons. A sudden absence can reflect migration, disturbance, weather, sampling error, or mortality.

Known pressures: The primary documented pressure is oxygen loss. Secondary pressures include noise, habitat fragmentation, water-quality decline, accidental capture, and disruption of breeding sites. Risk increases when two or more pressures occur together.

Protection and response: Current guidance is aeration emergency plan. Injured individuals should be observed from a safe distance, photographed only if permitted, and reported with location, time, behavior, visible injury, nearby

hazards, and witness details. Untrained rescuers must not feed, restrain, or relocate wildlife unless immediate danger requires it.

Monitoring record: surveys should document count, age class where visible, behavior, habitat condition, weather, water parameters where relevant, observer effort, and confidence. A zero count is valid data only when survey effort and conditions are recorded.

FAU-020 — Sapphire Burrower

Category and habitat: The Sapphire Burrower is a soil invertebrate associated with forest floor. Identification features include blue ring segments. Field teams should avoid identification based on color alone because age, stress, depth, and season can change appearance.

Ecological role: This species soil aeration. Its presence may indicate that habitat connections remain functional, but population counts must be compared across seasons. A sudden absence can reflect migration, disturbance, weather, sampling error, or mortality.

Known pressures: The primary documented pressure is compaction. Secondary pressures include noise, habitat fragmentation, water-quality decline, accidental capture, and disruption of breeding sites. Risk increases when two or more pressures occur together.

Protection and response: Current guidance is limit heavy foot traffic. Injured individuals should be observed from a safe distance, photographed only if permitted, and reported with location, time, behavior, visible injury, nearby hazards, and witness details. Untrained rescuers must not feed, restrain, or relocate wildlife unless immediate danger requires it.

Monitoring record: surveys should document count, age class where visible, behavior, habitat condition, weather, water parameters where relevant, observer effort, and confidence. A zero count is valid data only when survey effort and conditions are recorded.

FAU-021 — Canopy Bell Frog

Category and habitat: The Canopy Bell Frog is a tree amphibian associated with epiphyte pools. Identification features include bell-like call. Field teams should avoid identification based on color alone because age, stress, depth, and season can change appearance.

Ecological role: This species insect control. Its presence may indicate that habitat connections remain functional, but population counts must be compared across seasons. A sudden absence can reflect migration, disturbance, weather, sampling error, or mortality.

Known pressures: The primary documented pressure is pool drying. Secondary pressures include noise, habitat fragmentation, water-quality decline, accidental capture, and disruption of breeding sites. Risk increases when two or more pressures occur together.

Protection and response: Current guidance is retain water plants. Injured individuals should be observed from a safe distance, photographed only if permitted, and reported with location, time, behavior, visible injury, nearby hazards, and witness details. Untrained rescuers must not feed, restrain, or relocate wildlife unless immediate danger requires it.

Monitoring record: surveys should document count, age class where visible, behavior, habitat condition, weather, water parameters where relevant, observer effort, and confidence. A zero count is valid data only when survey effort and conditions are recorded.

FAU-022 — Stormsense Ray

Category and habitat: The Stormsense Ray is a coastal ray associated with sandy shelf. Identification features include electrosensory side bands. Field teams should avoid identification based on color alone because age, stress, depth, and season can change appearance.

Ecological role: This species early storm behavior indicator. Its presence may indicate that habitat connections remain functional, but population counts must be compared across seasons. A sudden absence can reflect migration, disturbance, weather, sampling error, or mortality.

Known pressures: The primary documented pressure is bycatch. Secondary pressures include noise, habitat fragmentation, water-quality decline, accidental capture, and disruption of breeding sites. Risk increases when two or more pressures occur together.

Protection and response: Current guidance is release protocol. Injured individuals should be observed from a safe distance, photographed only if permitted, and reported with location, time, behavior, visible injury, nearby hazards, and witness details. Untrained rescuers must not feed, restrain, or relocate wildlife unless immediate danger requires it.

Monitoring record: surveys should document count, age class where visible, behavior, habitat condition, weather, water parameters where relevant, observer effort, and confidence. A zero count is valid data only when survey effort and conditions are recorded.

FAU-023 — Cave Echo Bat

Category and habitat: The Cave Echo Bat is a cave mammal associated with island caves. Identification features include wide acoustic fan ears. Field teams should avoid identification based on color alone because age, stress, depth, and season can change appearance.

Ecological role: This species seed dispersal. Its presence may indicate that habitat connections remain functional, but population counts must be compared across seasons. A sudden absence can reflect migration, disturbance, weather, sampling error, or mortality.

Known pressures: The primary documented pressure is tour disturbance. Secondary pressures include noise, habitat fragmentation, water-quality decline, accidental capture, and disruption of breeding sites. Risk increases when two or more pressures occur together.

Protection and response: Current guidance is quiet-season closure. Injured individuals should be observed from a safe distance, photographed only if permitted, and reported with location, time, behavior, visible injury, nearby hazards, and witness details. Untrained rescuers must not feed, restrain, or relocate wildlife unless immediate danger requires it.

Monitoring record: surveys should document count, age class where visible, behavior, habitat condition, weather, water parameters where relevant, observer effort, and confidence. A zero count is valid data only when survey effort and conditions are recorded.

FAU-024 — Riverstripe Otter

Category and habitat: The Riverstripe Otter is a semi-aquatic mammal associated with clear rivers. Identification features include striped luminous whiskers. Field teams should avoid identification based on color alone because age, stress, depth, and season can change appearance.

Ecological role: This species fish population balance. Its presence may indicate that habitat connections remain functional, but population counts must be compared across seasons. A sudden absence can reflect migration, disturbance, weather, sampling error, or mortality.

Known pressures: The primary documented pressure is water pollution. Secondary pressures include noise, habitat fragmentation, water-quality decline, accidental capture, and disruption of breeding sites. Risk increases when two or more pressures occur together.

Protection and response: Current guidance is riparian protection. Injured individuals should be observed from a safe distance, photographed only if permitted, and reported with location, time, behavior, visible injury, nearby hazards, and witness details. Untrained rescuers must not feed, restrain, or relocate wildlife unless immediate danger requires it.

Monitoring record: surveys should document count, age class where visible, behavior, habitat condition, weather, water parameters where relevant, observer effort, and confidence. A zero count is valid data only when survey effort and conditions are recorded.

FAU-025 — Petalwing Moth

Category and habitat: The Petalwing Moth is a night pollinator associated with forest and gardens. Identification features include petal-pattern wings. Field teams should avoid identification based on color alone because age, stress, depth, and season can change appearance.

Ecological role: This species pollinates medicinal trees. Its presence may indicate that habitat connections remain functional, but population counts must be compared across seasons. A sudden absence can reflect migration, disturbance, weather, sampling error, or mortality.

Known pressures: The primary documented pressure is white light. Secondary pressures include noise, habitat fragmentation, water-quality decline, accidental capture, and disruption of breeding sites. Risk increases when two or more pressures occur together.

Protection and response: Current guidance is filtered lamps. Injured individuals should be observed from a safe distance, photographed only if permitted, and reported with location, time, behavior, visible injury, nearby hazards, and witness details. Untrained rescuers must not feed, restrain, or relocate wildlife unless immediate danger requires it.

Monitoring record: surveys should document count, age class where visible, behavior, habitat condition, weather, water parameters where relevant, observer effort, and confidence. A zero count is valid data only when survey effort and conditions are recorded.

FAU-026 — Ironjaw Shellfish

Category and habitat: The Ironjaw Shellfish is a bivalve associated with mineral coasts. Identification features include dark metallic shell. Field teams should avoid identification based on color alone because age, stress, depth, and season can change appearance.

Ecological role: This species filters water. Its presence may indicate that habitat connections remain functional, but population counts must be compared across seasons. A sudden absence can reflect migration, disturbance, weather, sampling error, or mortality.

Known pressures: The primary documented pressure is toxin accumulation. Secondary pressures include noise, habitat fragmentation, water-quality decline, accidental capture, and disruption of breeding sites. Risk increases when two or more pressures occur together.

Protection and response: Current guidance is harvest testing. Injured individuals should be observed from a safe distance, photographed only if permitted, and reported with location, time, behavior, visible injury, nearby hazards, and witness details. Untrained rescuers must not feed, restrain, or relocate wildlife unless immediate danger requires it.

Monitoring record: surveys should document count, age class where visible, behavior, habitat condition, weather, water parameters where relevant, observer effort, and confidence. A zero count is valid data only when survey effort and conditions are recorded.

FAU-027 — Meadow Pulse Deer

Category and habitat: The Meadow Pulse Deer is a grassland herbivore associated with highland meadows. Identification features include pulsing flank marks. Field teams should avoid identification based on color alone because age, stress, depth, and season can change appearance.

Ecological role: This species seed movement. Its presence may indicate that habitat connections remain functional, but population counts must be compared across seasons. A sudden absence can reflect migration, disturbance, weather, sampling error, or mortality.

Known pressures: The primary documented pressure is fence barriers. Secondary pressures include noise, habitat fragmentation, water-quality decline, accidental capture, and disruption of breeding sites. Risk increases when two or more pressures occur together.

Protection and response: Current guidance is wildlife gates. Injured individuals should be observed from a safe distance, photographed only if permitted, and reported with location, time, behavior, visible injury, nearby hazards, and witness details. Untrained rescuers must not feed, restrain, or relocate wildlife unless immediate danger requires it.

Monitoring record: surveys should document count, age class where visible, behavior, habitat condition, weather, water parameters where relevant, observer effort, and confidence. A zero count is valid data only when survey effort and conditions are recorded.

FAU-028 — Reednest Weaver

Category and habitat: The Reednest Weaver is a wetland bird associated with reed beds. Identification features include woven floating nests. Field teams should avoid identification based on color alone because age, stress, depth, and season can change appearance.

Ecological role: This species insect control. Its presence may indicate that habitat connections remain functional, but population counts must be compared across seasons. A sudden absence can reflect migration, disturbance, weather, sampling error, or mortality.

Known pressures: The primary documented pressure is reed burning. Secondary pressures include noise, habitat fragmentation, water-quality decline, accidental capture, and disruption of breeding sites. Risk increases when two or more pressures occur together.

Protection and response: Current guidance is nest-season ban. Injured individuals should be observed from a safe distance, photographed only if permitted, and reported with location, time, behavior, visible injury, nearby hazards, and witness details. Untrained rescuers must not feed, restrain, or relocate wildlife unless immediate danger requires it.

Monitoring record: surveys should document count, age class where visible, behavior, habitat condition, weather, water parameters where relevant, observer effort, and confidence. A zero count is valid data only when survey effort and conditions are recorded.

FAU-029 — Coral Needle Snail

Category and habitat: The Coral Needle Snail is a reef mollusk associated with branching coral. Identification features include needle shell. Field teams should avoid identification based on color alone because age, stress, depth, and season can change appearance.

Ecological role: This species grazes disease films. Its presence may indicate that habitat connections remain functional, but population counts must be compared across seasons. A sudden absence can reflect migration, disturbance, weather, sampling error, or mortality.

Known pressures: The primary documented pressure is souvenir collection. Secondary pressures include noise, habitat fragmentation, water-quality decline, accidental capture, and disruption of breeding sites. Risk increases when two or more pressures occur together.

Protection and response: Current guidance is protected species. Injured individuals should be observed from a safe distance, photographed only if permitted, and reported with location, time, behavior, visible injury, nearby hazards, and witness details. Untrained rescuers must not feed, restrain, or relocate wildlife unless immediate danger requires it.

Monitoring record: surveys should document count, age class where visible, behavior, habitat condition, weather, water parameters where relevant, observer effort, and confidence. A zero count is valid data only when survey effort and conditions are recorded.

FAU-030 — Oasis Glass Lizard

Category and habitat: The Oasis Glass Lizard is a desert reptile associated with rocky oasis. Identification features include transparent scales. Field teams should avoid identification based on color alone because age, stress, depth, and season can change appearance.

Ecological role: This species controls crop pests. Its presence may indicate that habitat connections remain functional, but population counts must be compared across seasons. A sudden absence can reflect migration, disturbance, weather, sampling error, or mortality.

Known pressures: The primary documented pressure is heat extremes. Secondary pressures include noise, habitat fragmentation, water-quality decline, accidental capture, and disruption of breeding sites. Risk increases when two or more pressures occur together.

Protection and response: Current guidance is shade corridors. Injured individuals should be observed from a safe distance, photographed only if permitted, and reported with location, time, behavior, visible injury, nearby hazards, and witness details. Untrained rescuers must not feed, restrain, or relocate wildlife unless immediate danger requires it.

Monitoring record: surveys should document count, age class where visible, behavior, habitat condition, weather, water parameters where relevant, observer effort, and confidence. A zero count is valid data only when survey effort and conditions are recorded.

6. Flora, Trees, Fungi and Medicinal Plants

FLR-001 — Memory Root Tree

Profile: Memory Root Tree is a giant canopy tree found in deep forest. Its main ecological or community role is water storage, habitat, ceremonial gathering. Identification requires form, habitat, scent, texture, season, and associated species; visual similarity alone is insufficient.

Pressures and harvest: The principal pressure is root cutting and soil compaction. Harvest, where permitted, follows the one-third rule: take no more than one third of a local patch, never remove all reproductive structures, and rotate sites. Rare, sacred, nursery, and erosion-control plants are not harvested.

Health and material use: not medicinal. Traditional use is not automatically proof of safety. Healers record preparation method, dose, age restrictions, pregnancy cautions, allergy history, and interactions. Unknown plants are never consumed during an emergency simply because animals appear to eat them.

Propagation and restoration: collect seeds or cuttings from multiple healthy parent plants, match soil and moisture conditions, avoid moving pathogens between valleys, label the source region, and monitor survival. Cultivation is preferred over wild harvest for frequently used medicinal species.

FLR-002 — Tidal Lantern Mangrove

Profile: Tidal Lantern Mangrove is a mangrove tree found in brackish coast. Its main ecological or community role is nursery habitat and shoreline protection. Identification requires form, habitat, scent, texture, season, and associated species; visual similarity alone is insufficient.

Pressures and harvest: The principal pressure is salinity disruption. Harvest, where permitted, follows the one-third rule: take no more than one third of a local patch, never remove all reproductive structures, and rotate sites. Rare, sacred, nursery, and erosion-control plants are not harvested.

Health and material use: bark wash used only by trained healers. Traditional use is not automatically proof of safety. Healers record preparation method, dose, age restrictions, pregnancy cautions, allergy history, and interactions. Unknown plants are never consumed during an emergency simply because animals appear to eat them.

Propagation and restoration: collect seeds or cuttings from multiple healthy parent plants, match soil and moisture conditions, avoid moving pathogens between valleys, label the source region, and monitor survival. Cultivation is preferred over wild harvest for frequently used medicinal species.

FLR-003 — Blue Cup Waterleaf

Profile: Blue Cup Waterleaf is a aquatic herb found in clean streams. Its main ecological or community role is filters fine sediment. Identification requires form, habitat, scent, texture, season, and associated species; visual similarity alone is insufficient.

Pressures and harvest: The principal pressure is pollution and trampling. Harvest, where permitted, follows the one-third rule: take no more than one third of a local patch, never remove all reproductive structures, and rotate sites. Rare, sacred, nursery, and erosion-control plants are not harvested.

Health and material use: cool compress for minor heat irritation. Traditional use is not automatically proof of safety. Healers record preparation method, dose, age restrictions, pregnancy cautions, allergy history, and interactions. Unknown plants are never consumed during an emergency simply because animals appear to eat them.

Propagation and restoration: collect seeds or cuttings from multiple healthy parent plants, match soil and moisture conditions, avoid moving pathogens between valleys, label the source region, and monitor survival. Cultivation is preferred over wild harvest for frequently used medicinal species.

FLR-004 — Spiral Bark Feverwood

Profile: Spiral Bark Feverwood is a small forest tree found in humid lowlands. Its main ecological or community role is supports pollinators. Identification requires form, habitat, scent, texture, season, and associated species; visual similarity alone is insufficient.

Pressures and harvest: The principal pressure is overharvest. Harvest, where permitted, follows the one-third rule: take no more than one third of a local patch, never remove all reproductive structures, and rotate sites. Rare, sacred, nursery, and erosion-control plants are not harvested.

Health and material use: bark infusion studied for fever; dosage controlled. Traditional use is not automatically proof of safety. Healers record preparation method, dose, age restrictions, pregnancy cautions, allergy history, and interactions. Unknown plants are never consumed during an emergency simply because animals appear to eat them.

Propagation and restoration: collect seeds or cuttings from multiple healthy parent plants, match soil and moisture conditions, avoid moving pathogens between valleys, label the source region, and monitor survival. Cultivation is preferred over wild harvest for frequently used medicinal species.

FLR-005 — Moonmilk Orchid

Profile: Moonmilk Orchid is a epiphyte found in cloud forest. Its main ecological or community role is night pollinator food. Identification requires form, habitat, scent, texture, season, and associated species; visual similarity alone is insufficient.

Pressures and harvest: The principal pressure is collection. Harvest, where permitted, follows the one-third rule: take no more than one third of a local patch, never remove all reproductive structures, and rotate sites. Rare, sacred, nursery, and erosion-control plants are not harvested.

Health and material use: no approved internal use. Traditional use is not automatically proof of safety. Healers record preparation method, dose, age restrictions, pregnancy cautions, allergy history, and interactions. Unknown plants are never consumed during an emergency simply because animals appear to eat them.

Propagation and restoration: collect seeds or cuttings from multiple healthy parent plants, match soil and moisture conditions, avoid moving pathogens between valleys, label the source region, and monitor survival. Cultivation is preferred over wild harvest for frequently used medicinal species.

FLR-006 — Reedgrain

Profile: Reedgrain is a wetland cereal found in managed marsh plots. Its main ecological or community role is staple food. Identification requires form, habitat, scent, texture, season, and associated species; visual similarity alone is insufficient.

Pressures and harvest: The principal pressure is fungal blight. Harvest, where permitted, follows the one-third rule: take no more than one third of a local patch, never remove all reproductive structures, and rotate sites. Rare, sacred, nursery, and erosion-control plants are not harvested.

Health and material use: nutritious seed; rinse before cooking. Traditional use is not automatically proof of safety. Healers record preparation method, dose, age restrictions, pregnancy cautions, allergy history, and interactions. Unknown plants are never consumed during an emergency simply because animals appear to eat them.

Propagation and restoration: collect seeds or cuttings from multiple healthy parent plants, match soil and moisture conditions, avoid moving pathogens between valleys, label the source region, and monitor survival. Cultivation is preferred over wild harvest for frequently used medicinal species.

FLR-007 — Fireglass Fern

Profile: Fireglass Fern is a volcanic fern found in warm mineral soil. Its main ecological or community role is stabilizes ash. Identification requires form, habitat, scent, texture, season, and associated species; visual similarity alone is insufficient.

Pressures and harvest: The principal pressure is geothermal development. Harvest, where permitted, follows the one-third rule: take no more than one third of a local patch, never remove all reproductive structures, and rotate sites. Rare, sacred, nursery, and erosion-control plants are not harvested.

Health and material use: external paste for minor muscle soreness. Traditional use is not automatically proof of safety. Healers record preparation method, dose, age restrictions, pregnancy cautions, allergy history, and interactions. Unknown plants are never consumed during an emergency simply because animals appear to eat them.

Propagation and restoration: collect seeds or cuttings from multiple healthy parent plants, match soil and moisture conditions, avoid moving pathogens between valleys, label the source region, and monitor survival. Cultivation is preferred over wild harvest for frequently used medicinal species.

FLR-008 — Cloudspun Moss

Profile: Cloudspun Moss is a moss found in highland rocks. Its main ecological or community role is captures fog water. Identification requires form, habitat, scent, texture, season, and associated species; visual similarity alone is insufficient.

Pressures and harvest: The principal pressure is trail widening. Harvest, where permitted, follows the one-third rule: take no more than one third of a local patch, never remove all reproductive structures, and rotate sites. Rare, sacred, nursery, and erosion-control plants are not harvested.

Health and material use: sterile cultivated form used as wound padding. Traditional use is not automatically proof of safety. Healers record preparation method, dose, age restrictions, pregnancy cautions, allergy history, and interactions. Unknown plants are never consumed during an emergency simply because animals appear to eat them.

Propagation and restoration: collect seeds or cuttings from multiple healthy parent plants, match soil and moisture conditions, avoid moving pathogens between valleys, label the source region, and monitor survival. Cultivation is preferred over wild harvest for frequently used medicinal species.

FLR-009 — Sunthread Vine

Profile: Sunthread Vine is a climbing plant found in forest edge. Its main ecological or community role is fiber and nectar. Identification requires form, habitat, scent, texture, season, and associated species; visual similarity alone is insufficient.

Pressures and harvest: The principal pressure is uncontrolled cutting. Harvest, where permitted, follows the one-third rule: take no more than one third of a local patch, never remove all reproductive structures, and rotate sites. Rare, sacred, nursery, and erosion-control plants are not harvested.

Health and material use: fiber only; sap irritant. Traditional use is not automatically proof of safety. Healers record preparation method, dose, age restrictions, pregnancy cautions, allergy history, and interactions. Unknown plants are never consumed during an emergency simply because animals appear to eat them.

Propagation and restoration: collect seeds or cuttings from multiple healthy parent plants, match soil and moisture conditions, avoid moving pathogens between valleys, label the source region, and monitor survival. Cultivation is preferred over wild harvest for frequently used medicinal species.

FLR-010 — Dreamcap Fungus

Profile: Dreamcap Fungus is a fungus found in decaying logs. Its main ecological or community role is wood decomposition. Identification requires form, habitat, scent, texture, season, and associated species; visual similarity alone is insufficient.

Pressures and harvest: The principal pressure is recreational misuse. Harvest, where permitted, follows the one-third rule: take no more than one third of a local patch, never remove all reproductive structures, and rotate sites. Rare, sacred, nursery, and erosion-control plants are not harvested.

Health and material use: toxic; not for consumption. Traditional use is not automatically proof of safety. Healers record preparation method, dose, age restrictions, pregnancy cautions, allergy history, and interactions. Unknown plants are never consumed during an emergency simply because animals appear to eat them.

Propagation and restoration: collect seeds or cuttings from multiple healthy parent plants, match soil and moisture conditions, avoid moving pathogens between valleys, label the source region, and monitor survival. Cultivation is preferred over wild harvest for frequently used medicinal species.

FLR-011 — Silver Reed

Profile: Silver Reed is a marsh reed found in wetlands. Its main ecological or community role is building fiber and bird habitat. Identification requires form, habitat, scent, texture, season, and associated species; visual similarity alone is insufficient.

Pressures and harvest: The principal pressure is mass cutting. Harvest, where permitted, follows the one-third rule: take no more than one third of a local patch, never remove all reproductive structures, and rotate sites. Rare, sacred, nursery, and erosion-control plants are not harvested.

Health and material use: pollen can trigger allergy. Traditional use is not automatically proof of safety. Healers record preparation method, dose, age restrictions, pregnancy cautions, allergy history, and interactions. Unknown plants are never consumed during an emergency simply because animals appear to eat them.

Propagation and restoration: collect seeds or cuttings from multiple healthy parent plants, match soil and moisture conditions, avoid moving pathogens between valleys, label the source region, and monitor survival. Cultivation is preferred over wild harvest for frequently used medicinal species.

FLR-012 — Salt Pearl Seagrass

Profile: Salt Pearl Seagrass is a seagrass found in shallow lagoons. Its main ecological or community role is carbon storage and nursery habitat. Identification requires form, habitat, scent, texture, season, and associated species; visual similarity alone is insufficient.

Pressures and harvest: The principal pressure is anchors and turbidity. Harvest, where permitted, follows the one-third rule: take no more than one third of a local patch, never remove all reproductive structures, and rotate sites. Rare, sacred, nursery, and erosion-control plants are not harvested.

Health and material use: edible seeds in limited season. Traditional use is not automatically proof of safety. Healers record preparation method, dose, age restrictions, pregnancy cautions, allergy history, and interactions. Unknown plants are never consumed during an emergency simply because animals appear to eat them.

Propagation and restoration: collect seeds or cuttings from multiple healthy parent plants, match soil and moisture conditions, avoid moving pathogens between valleys, label the source region, and monitor survival. Cultivation is preferred over wild harvest for frequently used medicinal species.

FLR-013 — Echo Pod Tree

Profile: Echo Pod Tree is a mid-canopy tree found in rainforest. Its main ecological or community role is seed food for gliders. Identification requires form, habitat, scent, texture, season, and associated species; visual similarity alone is insufficient.

Pressures and harvest: The principal pressure is harvest before ripening. Harvest, where permitted, follows the one-third rule: take no more than one third of a local patch, never remove all reproductive structures, and rotate sites. Rare, sacred, nursery, and erosion-control plants are not harvested.

Health and material use: roasted pods edible. Traditional use is not automatically proof of safety. Healers record preparation method, dose, age restrictions, pregnancy cautions, allergy history, and interactions. Unknown plants are never consumed during an emergency simply because animals appear to eat them.

Propagation and restoration: collect seeds or cuttings from multiple healthy parent plants, match soil and moisture conditions, avoid moving pathogens between valleys, label the source region, and monitor survival. Cultivation is preferred over wild harvest for frequently used medicinal species.

FLR-014 — Mistberry Shrub

Profile: Mistberry Shrub is a shrub found in cool terraces. Its main ecological or community role is fruit and erosion control. Identification requires form, habitat, scent, texture, season, and associated species; visual similarity alone is insufficient.

Pressures and harvest: The principal pressure is leaf spot. Harvest, where permitted, follows the one-third rule: take no more than one third of a local patch, never remove all reproductive structures, and rotate sites. Rare, sacred, nursery, and erosion-control plants are not harvested.

Health and material use: berries rich in vitamin compounds. Traditional use is not automatically proof of safety. Healers record preparation method, dose, age restrictions, pregnancy cautions, allergy history, and interactions. Unknown plants are never consumed during an emergency simply because animals appear to eat them.

Propagation and restoration: collect seeds or cuttings from multiple healthy parent plants, match soil and moisture conditions, avoid moving pathogens between valleys, label the source region, and monitor survival. Cultivation is preferred over wild harvest for frequently used medicinal species.

FLR-015 — Glowspore Shelf Fungus

Profile: Glowspore Shelf Fungus is a fungus found in old forest trunks. Its main ecological or community role is nutrient recycling and trail light. Identification requires form, habitat, scent, texture, season, and associated species; visual similarity alone is insufficient.

Pressures and harvest: The principal pressure is souvenir collection. Harvest, where permitted, follows the one-third rule: take no more than one third of a local patch, never remove all reproductive structures, and rotate sites. Rare, sacred, nursery, and erosion-control plants are not harvested.

Health and material use: not edible. Traditional use is not automatically proof of safety. Healers record preparation method, dose, age restrictions, pregnancy cautions, allergy history, and interactions. Unknown plants are never consumed during an emergency simply because animals appear to eat them.

Propagation and restoration: collect seeds or cuttings from multiple healthy parent plants, match soil and moisture conditions, avoid moving pathogens between valleys, label the source region, and monitor survival. Cultivation is preferred over wild harvest for frequently used medicinal species.

FLR-016 — Dune Water Bulb

Profile: Dune Water Bulb is a succulent found in dry basin. Its main ecological or community role is stores water for wildlife. Identification requires form, habitat, scent, texture, season, and associated species; visual similarity alone is insufficient.

Pressures and harvest: The principal pressure is overcollection. Harvest, where permitted, follows the one-third rule: take no more than one third of a local patch, never remove all reproductive structures, and rotate sites. Rare, sacred, nursery, and erosion-control plants are not harvested.

Health and material use: emergency moisture only after correct identification. Traditional use is not automatically proof of safety. Healers record preparation method, dose, age restrictions, pregnancy cautions, allergy history, and interactions. Unknown plants are never consumed during an emergency simply because animals appear to eat them.

Propagation and restoration: collect seeds or cuttings from multiple healthy parent plants, match soil and moisture conditions, avoid moving pathogens between valleys, label the source region, and monitor survival. Cultivation is preferred over wild harvest for frequently used medicinal species.

FLR-017 — Storm Anchor Grass

Profile: Storm Anchor Grass is a coastal grass found in dunes. Its main ecological or community role is stabilizes sand. Identification requires form, habitat, scent, texture, season, and associated species; visual similarity alone is insufficient.

Pressures and harvest: The principal pressure is tourism trampling. Harvest, where permitted, follows the one-third rule: take no more than one third of a local patch, never remove all reproductive structures, and rotate sites. Rare, sacred, nursery, and erosion-control plants are not harvested.

Health and material use: non-medicinal. Traditional use is not automatically proof of safety. Healers record preparation method, dose, age restrictions, pregnancy cautions, allergy history, and interactions. Unknown plants are never consumed during an emergency simply because animals appear to eat them.

Propagation and restoration: collect seeds or cuttings from multiple healthy parent plants, match soil and moisture conditions, avoid moving pathogens between valleys, label the source region, and monitor survival. Cultivation is preferred over wild harvest for frequently used medicinal species.

FLR-018 — Coralroot Herb

Profile: Coralroot Herb is a reef-island herb found in limestone soil. Its main ecological or community role is supports cliff insects. Identification requires form, habitat, scent, texture, season, and associated species; visual similarity alone is insufficient.

Pressures and harvest: The principal pressure is goat grazing. Harvest, where permitted, follows the one-third rule: take no more than one third of a local patch, never remove all reproductive structures, and rotate sites. Rare, sacred, nursery, and erosion-control plants are not harvested.

Health and material use: leaf tea used for mild nausea; pregnancy caution. Traditional use is not automatically proof of safety. Healers record preparation method, dose, age restrictions, pregnancy cautions, allergy history, and interactions. Unknown plants are never consumed during an emergency simply because animals appear to eat them.

Propagation and restoration: collect seeds or cuttings from multiple healthy parent plants, match soil and moisture conditions, avoid moving pathogens between valleys, label the source region, and monitor survival. Cultivation is preferred over wild harvest for frequently used medicinal species.

FLR-019 — Amber Resin Tree

Profile: Amber Resin Tree is a forest tree found in low hills. Its main ecological or community role is resin for waterproofing. Identification requires form, habitat, scent, texture, season, and associated species; visual similarity alone is insufficient.

Pressures and harvest: The principal pressure is fire and tapping damage. Harvest, where permitted, follows the one-third rule: take no more than one third of a local patch, never remove all reproductive structures, and rotate sites. Rare, sacred, nursery, and erosion-control plants are not harvested.

Health and material use: resin fumes irritant. Traditional use is not automatically proof of safety. Healers record preparation method, dose, age restrictions, pregnancy cautions, allergy history, and interactions. Unknown plants are never consumed during an emergency simply because animals appear to eat them.

Propagation and restoration: collect seeds or cuttings from multiple healthy parent plants, match soil and moisture conditions, avoid moving pathogens between valleys, label the source region, and monitor survival. Cultivation is preferred over wild harvest for frequently used medicinal species.

FLR-020 — Healing Veil Algae

Profile: Healing Veil Algae is a algae found in clean tidal pools. Its main ecological or community role is oxygen production. Identification requires form, habitat, scent, texture, season, and associated species; visual similarity alone is insufficient.

Pressures and harvest: The principal pressure is nutrient blooms. Harvest, where permitted, follows the one-third rule: take no more than one third of a local patch, never remove all reproductive structures, and rotate sites. Rare, sacred, nursery, and erosion-control plants are not harvested.

Health and material use: cultivated gel used on minor abrasions after sterilization. Traditional use is not automatically proof of safety. Healers record preparation method, dose, age restrictions, pregnancy cautions, allergy history, and interactions. Unknown plants are never consumed during an emergency simply because animals appear to eat them.

Propagation and restoration: collect seeds or cuttings from multiple healthy parent plants, match soil and moisture conditions, avoid moving pathogens between valleys, label the source region, and monitor survival. Cultivation is preferred over wild harvest for frequently used medicinal species.

6.21 Medicinal Plant Safety Rules

- Use only positively identified species; maintain a reference specimen or verified image where culturally acceptable.
- Do not combine multiple strong remedies without a healer or clinician reviewing interactions.
- Children, pregnant people, older adults, and patients with liver, kidney, breathing, or bleeding problems require additional caution.
- External use can still cause allergy, burns, or infection. Test a small area when the situation is not urgent.
- Persistent fever, breathing difficulty, confusion, severe pain, uncontrolled bleeding, dehydration, or neurological symptoms require clinical escalation.
- Every adverse reaction should be documented with plant ID, preparation, dose, time, symptoms, and treatment.

7. Health Patterns, Diseases and Clinical Protocols

Health records in this corpus are fictional training material and must not replace real medical guidance. The purpose is to test retrieval of symptoms, risk factors, triage steps, contraindications, and escalation rules. A RAG system should quote the relevant protocol and state uncertainty rather than diagnosing beyond the provided evidence.

MED-001 — Reef Cut Infection

Pattern and exposure: Reef Cut Infection is associated with cuts exposed to warm seawater. Commonly recorded symptoms include increasing redness, swelling, pain, discharge, fever. Similar symptoms can arise from other causes, so exposure history and examination matter.

Immediate care: rinse with safe water, remove visible debris without deep probing, cover, assess tetanus-equivalent status. Record onset time, fluid intake, medicines or plant preparations already taken, allergies, pregnancy possibility, chronic conditions, and other affected people.

Red flags requiring urgent escalation: fever, spreading redness, severe pain, numbness, immune weakness. During transport, maintain airway and temperature, avoid unverified remedies, and send a written handover containing observations and treatment times.

Prevention: use protective clothing or equipment appropriate to the habitat, maintain clean water and food practices, report environmental hazards early, and avoid entering restricted areas during blooms, storms, nesting, or contamination events.

MED-002 — Bloom Inhalation Syndrome

Pattern and exposure: Bloom Inhalation Syndrome is associated with aerosol from harmful algal bloom. Commonly recorded symptoms include cough, eye irritation, headache, wheeze. Similar symptoms can arise from other causes, so exposure history and examination matter.

Immediate care: move upwind, rinse eyes, rest, use prescribed inhaler if available. Record onset time, fluid intake, medicines or plant preparations already taken, allergies, pregnancy possibility, chronic conditions, and other affected people.

Red flags requiring urgent escalation: breathing difficulty, chest pain, fainting, child or severe asthma. During transport, maintain airway and temperature, avoid unverified remedies, and send a written handover containing observations and treatment times.

Prevention: use protective clothing or equipment appropriate to the habitat, maintain clean water and food practices, report environmental hazards early, and avoid entering restricted areas during blooms, storms, nesting, or contamination events.

MED-003 — Wetland Waterborne Illness

Pattern and exposure: Wetland Waterborne Illness is associated with contaminated drinking water. Commonly recorded symptoms include diarrhea, vomiting, cramps, fever. Similar symptoms can arise from other causes, so exposure history and examination matter.

Immediate care: oral rehydration, safe fluids, isolate contaminated source, hygiene. Record onset time, fluid intake, medicines or plant preparations already taken, allergies, pregnancy possibility, chronic conditions, and other affected people.

Red flags requiring urgent escalation: blood in stool, confusion, no urination, persistent vomiting, infant or frail adult. During transport, maintain airway and temperature, avoid unverified remedies, and send a written handover containing observations and treatment times.

Prevention: use protective clothing or equipment appropriate to the habitat, maintain clean water and food practices, report environmental hazards early, and avoid entering restricted areas during blooms, storms, nesting, or contamination events.

MED-004 — Highland Altitude Stress

Pattern and exposure: Highland Altitude Stress is associated with rapid ascent. Commonly recorded symptoms include headache, nausea, fatigue, poor coordination. Similar symptoms can arise from other causes, so exposure history and examination matter.

Immediate care: stop ascent, rest, hydrate, descend if not improving. Record onset time, fluid intake, medicines or plant preparations already taken, allergies, pregnancy possibility, chronic conditions, and other affected people.

Red flags requiring urgent escalation: confusion, inability to walk, breathing difficulty at rest. During transport, maintain airway and temperature, avoid unverified remedies, and send a written handover containing observations and treatment times.

Prevention: use protective clothing or equipment appropriate to the habitat, maintain clean water and food practices, report environmental hazards early, and avoid entering restricted areas during blooms, storms, nesting, or contamination events.

MED-005 — Dune Heat Exhaustion

Pattern and exposure: Dune Heat Exhaustion is associated with heat and dehydration. Commonly recorded symptoms include heavy sweating, weakness, dizziness, cramps. Similar symptoms can arise from other causes, so exposure history and examination matter.

Immediate care: shade, cool gradually, oral fluids if alert. Record onset time, fluid intake, medicines or plant preparations already taken, allergies, pregnancy possibility, chronic conditions, and other affected people.

Red flags requiring urgent escalation: confusion, collapse, very hot skin, seizure. During transport, maintain airway and temperature, avoid unverified remedies, and send a written handover containing observations and treatment times.

Prevention: use protective clothing or equipment appropriate to the habitat, maintain clean water and food practices, report environmental hazards early, and avoid entering restricted areas during blooms, storms, nesting, or contamination events.

MED-006 — Spore Allergy

Pattern and exposure: Spore Allergy is associated with forest fungal spores. Commonly recorded symptoms include sneezing, itchy eyes, rash, wheeze. Similar symptoms can arise from other causes, so exposure history and examination matter.

Immediate care: leave exposure, wash, antihistamine if approved. Record onset time, fluid intake, medicines or plant preparations already taken, allergies, pregnancy possibility, chronic conditions, and other affected people.

Red flags requiring urgent escalation: swelling of lips or tongue, breathing difficulty. During transport, maintain airway and temperature, avoid unverified remedies, and send a written handover containing observations and treatment times.

Prevention: use protective clothing or equipment appropriate to the habitat, maintain clean water and food practices, report environmental hazards early, and avoid entering restricted areas during blooms, storms, nesting, or contamination events.

MED-007 — Bioluminescent Sap Dermatitis

Pattern and exposure: Bioluminescent Sap Dermatitis is associated with contact with irritant plant sap. Commonly recorded symptoms include burning rash, blisters. Similar symptoms can arise from other causes, so exposure history and examination matter.

Immediate care: remove contaminated clothing, wash with safe water, avoid sunlight if photosensitive. Record onset time, fluid intake, medicines or plant preparations already taken, allergies, pregnancy possibility, chronic conditions, and other affected people.

Red flags requiring urgent escalation: eye exposure, large blistered area, systemic symptoms. During transport, maintain airway and temperature, avoid unverified remedies, and send a written handover containing observations and treatment times.

Prevention: use protective clothing or equipment appropriate to the habitat, maintain clean water and food practices, report environmental hazards early, and avoid entering restricted areas during blooms, storms, nesting, or contamination events.

MED-008 — Marine Sting Reaction

Pattern and exposure: Marine Sting Reaction is associated with contact with stinging organism. Commonly recorded symptoms include localized pain, welts, swelling. Similar symptoms can arise from other causes, so exposure history and examination matter.

Immediate care: leave water, prevent rubbing, use species-specific rinse if known, remove tentacles with protection. Record onset time, fluid intake, medicines or plant preparations already taken, allergies, pregnancy possibility, chronic conditions, and other affected people.

Red flags requiring urgent escalation: breathing difficulty, chest pain, widespread swelling, unconsciousness. During transport, maintain airway and temperature, avoid unverified remedies, and send a written handover containing observations and treatment times.

Prevention: use protective clothing or equipment appropriate to the habitat, maintain clean water and food practices, report environmental hazards early, and avoid entering restricted areas during blooms, storms, nesting, or contamination events.

MED-009 — Cold Mist Exposure

Pattern and exposure: Cold Mist Exposure is associated with wet highland conditions. Commonly recorded symptoms include shivering, clumsiness, fatigue. Similar symptoms can arise from other causes, so exposure history and examination matter.

Immediate care: remove wet clothing, warm gradually, warm sweet drink if alert. Record onset time, fluid intake, medicines or plant preparations already taken, allergies, pregnancy possibility, chronic conditions, and other affected people.

Red flags requiring urgent escalation: confusion, stopped shivering, slow breathing. During transport, maintain airway and temperature, avoid unverified remedies, and send a written handover containing observations and treatment times.

Prevention: use protective clothing or equipment appropriate to the habitat, maintain clean water and food practices, report environmental hazards early, and avoid entering restricted areas during blooms, storms, nesting, or contamination events.

MED-010 — Cave Echo Disorientation

Pattern and exposure: Cave Echo Disorientation is associated with darkness and repetitive sound. Commonly recorded symptoms include panic, dizziness, route confusion. Similar symptoms can arise from other causes, so exposure history and examination matter.

Immediate care: stop movement, establish light and contact, retrace marked route. Record onset time, fluid intake, medicines or plant preparations already taken, allergies, pregnancy possibility, chronic conditions, and other affected people.

Red flags requiring urgent escalation: injury, loss of consciousness, missing team member. During transport, maintain airway and temperature, avoid unverified remedies, and send a written handover containing observations and treatment times.

Prevention: use protective clothing or equipment appropriate to the habitat, maintain clean water and food practices, report environmental hazards early, and avoid entering restricted areas during blooms, storms, nesting, or contamination events.

MED-011 — Nutrient Deficiency Pattern

Pattern and exposure: Nutrient Deficiency Pattern is associated with restricted diet or crop failure. Commonly recorded symptoms include fatigue, poor healing, weakness. Similar symptoms can arise from other causes, so exposure history and examination matter.

Immediate care: diet review, diversified foods, clinical assessment. Record onset time, fluid intake, medicines or plant preparations already taken, allergies, pregnancy possibility, chronic conditions, and other affected people.

Red flags requiring urgent escalation: rapid weight loss, swelling, fainting, pregnancy. During transport, maintain airway and temperature, avoid unverified remedies, and send a written handover containing observations and treatment times.

Prevention: use protective clothing or equipment appropriate to the habitat, maintain clean water and food practices, report environmental hazards early, and avoid entering restricted areas during blooms, storms, nesting, or contamination events.

MED-012 — Vector Fever

Pattern and exposure: Vector Fever is associated with insect exposure. Commonly recorded symptoms include fever, chills, joint pain, rash. Similar symptoms can arise from other causes, so exposure history and examination matter.

Immediate care: rest, fluids, isolation from further bites, record travel. Record onset time, fluid intake, medicines or plant preparations already taken, allergies, pregnancy possibility, chronic conditions, and other affected people.

Red flags requiring urgent escalation: bleeding, confusion, breathing difficulty, persistent high fever. During transport, maintain airway and temperature, avoid unverified remedies, and send a written handover containing observations and treatment times.

Prevention: use protective clothing or equipment appropriate to the habitat, maintain clean water and food practices, report environmental hazards early, and avoid entering restricted areas during blooms, storms, nesting, or contamination events.

7.13 Community Clinic Operations

Community clinics separate clean treatment, respiratory illness, wound care, medicine storage, and waste handling. Patient flow should prevent symptomatic people from contaminating drinking-water or food areas.

Medicines and plant preparations are labeled with name, strength, preparation date, expiry or discard date, storage condition, and contraindications. Unlabeled remedies are discarded.

Triage priority is based on airway, breathing, circulation, consciousness, severe pain, bleeding, dehydration, temperature exposure, age, pregnancy, and the possibility of a cluster outbreak. Social status never determines priority.

Confidential records are protected. Public-health alerts use anonymous counts unless identification is necessary for contact tracing or direct protection.

8. Food, Agriculture, Water and Nutrition

8.1 Food System Principles

Food security depends on diversity rather than a single staple. Each settlement maintains at least one fast crop, one storage crop, one protein source, one emergency wild-food protocol, and one protected seed reserve.

Harvest schedules consider breeding seasons, rainfall, soil recovery, and travel safety. Food is never taken from sacred groves, nursery reefs, or contamination exclusion zones.

8.2 Crop Management

Floating gardens use layered reed mats, composted plant material, and tether points that allow water movement. Overloading causes mats to sink and release nutrients.

Terrace farms use contour channels, living root barriers, and small overflow basins. A broken terrace is repaired from the top downward to prevent progressive collapse.

Forest gardens mix canopy fruit, mid-layer pods, herbs, fungi logs, and root crops. Clearing all shade increases heat, weeds, erosion, and water demand.

8.3 Food Safety

Cooked food should not remain in warm conditions for extended periods. Large pots are divided into shallow covered containers for cooling.

Shellfish are tested or avoided after algal blooms, volcanic discharge, and sewage incidents because they can concentrate toxins even when water appears clear.

Wild mushrooms require expert identification. Cooking does not reliably remove all toxins.

Drinking water used in food preparation must meet the same standard as direct drinking water.

8.4 Nutrition

A balanced meal combines a staple carbohydrate, protein, leafy or colored plants, fat, and safe fluid. Children, pregnant people, injured people, and heavy workers have increased needs.

Emergency rations prioritize safe water, energy-dense foods, familiar ingredients, easy digestion, and clear allergy labeling.

Signs of poor nutrition are tracked at community level without shaming individuals. Crop failure response includes redistribution, supplementary feeding, and rapid garden support.

Food	Primary value	Key caution
Reedgrain	staple carbohydrate and fiber	dry thoroughly to prevent mold
Echo pods	protein and oil	must be roasted
Mistberries	vitamins and antioxidants	wash; avoid spoiled fruit
Salt pearl seeds	minerals and fat	harvest only from clean lagoons
Cultivated healing algae	gel and micronutrients	use verified cultivated strain
Forest tubers	energy storage	some look-alikes are toxic
Lake mirror eel	protein	avoid during oxygen-loss events
Ironjaw shellfish	protein and minerals	toxin accumulation risk

9. Accommodation, Travel and Visitor Safety

ID	Name	Region	Type	Capacity	Key facilities	Emergency plan
ACC-001	Awa Tide Lodge	Luminous Shelf	raised reef lodge	24	rainwater tanks, compost sanitation, reef guide station	storm evacuation by elevated causeway
ACC-002	Kelutral Canopy Rest	Emerald Canopy	tree-platform guest house	16	filtered spring water, insect screens, quiet lighting	rope descent and forest assembly zone
ACC-003	Cloudspine Shelter	Cloudspine Highlands	stone-and-fiber mountain shelter	12	heat-retaining walls, weather radio, oxygen support	marked descent route
ACC-004	Neyra Garden Homestay	Silverreed Wetlands	floating family units	20	water filtration, mosquito nets, canoe access	high-water tether release plan
ACC-005	Vitra Geothermal Camp	Obsidian Reach	vent-safe cabin camp	18	gas monitors, insulated floors, ash masks	crosswind evacuation corridor
ACC-006	Sahri Shade Compound	Whispering Dunes	courtyard oasis lodge	22	deep shade, water ration display, dust seals	night evacuation to stone ridge
ACC-007	Maroa Wayfinder Vessel	Deep Current Expanse	mobile research vessel	14	life lines, desalination, current beacon	storm harbor and abandon-vessel drill
ACC-008	Ilyan Mist House	Mistroot Basin	terrace lodge	26	warm rooms, drying area,	landslide assembly terrace

ID	Name	Region	Type	Capacity	Key facilities	Emergency plan
					lake-view clinic point	
ACC-009	Ralu Rootwalk Cabins	Aurora Mangroves	elevated mangrove cabins	18	screened rooms, tidal maps, canoe lights	platform-to-high-ground route
ACC-010	Peyral Cliff Haven	Sunfall Archipelago	cliff cave guest lodge	10	rain capture, safety rails, seabird quiet zones	upper cave refuge

ACC-001 — Awa Tide Lodge

Awa Tide Lodge is a raised reef lodge in the Luminous Shelf with a normal capacity of 24 guests. Facilities include rainwater tanks, compost sanitation, reef guide station. The site must not exceed capacity because sanitation, water storage, evacuation, and habitat disturbance limits are calculated for the listed occupancy.

Emergency plan: storm evacuation by elevated causeway. On arrival, guests receive a route briefing, quiet-hour rules, water-use limits, restricted-area map, wildlife guidance, and the location of first aid, communication tools, and assembly points.

Sustainability requirements include refillable water containers, waste separation, return of non-biodegradable materials, locally appropriate food, low-noise operations, filtered lighting, and employment of trained local guides. Guests may not remove shells, feathers, stones, plants, fossils, or cultural objects.

Accessibility and health: hosts should identify mobility, allergy, dietary, respiratory, and medication-storage needs before travel. Remote sites must clearly state limitations. Evacuation plans include assistance for children, older adults, injured people, and visitors unfamiliar with local terrain.

ACC-002 — Kelutral Canopy Rest

Kelutral Canopy Rest is a tree-platform guest house in the Emerald Canopy with a normal capacity of 16 guests. Facilities include filtered spring water, insect screens, quiet lighting. The site must not exceed capacity because sanitation, water storage, evacuation, and habitat disturbance limits are calculated for the listed occupancy.

Emergency plan: rope descent and forest assembly zone. On arrival, guests receive a route briefing, quiet-hour rules, water-use limits, restricted-area map, wildlife guidance, and the location of first aid, communication tools, and assembly points.

Sustainability requirements include refillable water containers, waste separation, return of non-biodegradable materials, locally appropriate food, low-noise operations, filtered lighting, and employment of trained local guides. Guests may not remove shells, feathers, stones, plants, fossils, or cultural objects.

Accessibility and health: hosts should identify mobility, allergy, dietary, respiratory, and medication-storage needs before travel. Remote sites must clearly state limitations. Evacuation plans include assistance for children, older adults, injured people, and visitors unfamiliar with local terrain.

ACC-003 — Cloudspine Shelter

Cloudspine Shelter is a stone-and-fiber mountain shelter in the Cloudspine Highlands with a normal capacity of 12 guests. Facilities include heat-retaining walls, weather radio, oxygen support. The site must not exceed capacity because sanitation, water storage, evacuation, and habitat disturbance limits are calculated for the listed occupancy.

Emergency plan: marked descent route. On arrival, guests receive a route briefing, quiet-hour rules, water-use limits, restricted-area map, wildlife guidance, and the location of first aid, communication tools, and assembly points.

Sustainability requirements include refillable water containers, waste separation, return of non-biodegradable materials, locally appropriate food, low-noise operations, filtered lighting, and employment of trained local guides. Guests may not remove shells, feathers, stones, plants, fossils, or cultural objects.

Accessibility and health: hosts should identify mobility, allergy, dietary, respiratory, and medication-storage needs before travel. Remote sites must clearly state limitations. Evacuation plans include assistance for children, older adults, injured people, and visitors unfamiliar with local terrain.

ACC-004 — Neyra Garden Homestay

Neyra Garden Homestay is a floating family units in the Silverreed Wetlands with a normal capacity of 20 guests. Facilities include water filtration, mosquito nets, canoe access. The site must not exceed capacity because sanitation, water storage, evacuation, and habitat disturbance limits are calculated for the listed occupancy.

Emergency plan: high-water tether release plan. On arrival, guests receive a route briefing, quiet-hour rules, water-use limits, restricted-area map, wildlife guidance, and the location of first aid, communication tools, and assembly points.

Sustainability requirements include refillable water containers, waste separation, return of non-biodegradable materials, locally appropriate food, low-noise operations, filtered lighting, and employment of trained local guides. Guests may not remove shells, feathers, stones, plants, fossils, or cultural objects.

Accessibility and health: hosts should identify mobility, allergy, dietary, respiratory, and medication-storage needs before travel. Remote sites must clearly state limitations. Evacuation plans include assistance for children, older adults, injured people, and visitors unfamiliar with local terrain.

ACC-005 — Vitra Geothermal Camp

Vitra Geothermal Camp is a vent-safe cabin camp in the Obsidian Reach with a normal capacity of 18 guests. Facilities include gas monitors, insulated floors, ash masks. The site must not exceed capacity because sanitation, water storage, evacuation, and habitat disturbance limits are calculated for the listed occupancy.

Emergency plan: crosswind evacuation corridor. On arrival, guests receive a route briefing, quiet-hour rules, water-use limits, restricted-area map, wildlife guidance, and the location of first aid, communication tools, and assembly points.

Sustainability requirements include refillable water containers, waste separation, return of non-biodegradable materials, locally appropriate food, low-noise operations, filtered lighting, and employment of trained local guides. Guests may not remove shells, feathers, stones, plants, fossils, or cultural objects.

Accessibility and health: hosts should identify mobility, allergy, dietary, respiratory, and medication-storage needs before travel. Remote sites must clearly state limitations. Evacuation plans include assistance for children, older adults, injured people, and visitors unfamiliar with local terrain.

ACC-006 — Sahri Shade Compound

Sahri Shade Compound is a courtyard oasis lodge in the Whispering Dunes with a normal capacity of 22 guests. Facilities include deep shade, water ration display, dust seals. The site must not exceed capacity because sanitation, water storage, evacuation, and habitat disturbance limits are calculated for the listed occupancy.

Emergency plan: night evacuation to stone ridge. On arrival, guests receive a route briefing, quiet-hour rules, water-use limits, restricted-area map, wildlife guidance, and the location of first aid, communication tools, and assembly points.

Sustainability requirements include refillable water containers, waste separation, return of non-biodegradable materials, locally appropriate food, low-noise operations, filtered lighting, and employment of trained local guides. Guests may not remove shells, feathers, stones, plants, fossils, or cultural objects.

Accessibility and health: hosts should identify mobility, allergy, dietary, respiratory, and medication-storage needs before travel. Remote sites must clearly state limitations. Evacuation plans include assistance for children, older adults, injured people, and visitors unfamiliar with local terrain.

ACC-007 — Maroa Wayfinder Vessel

Maroa Wayfinder Vessel is a mobile research vessel in the Deep Current Expanse with a normal capacity of 14 guests. Facilities include life lines, desalination, current beacon. The site must not exceed capacity because sanitation, water storage, evacuation, and habitat disturbance limits are calculated for the listed occupancy.

Emergency plan: storm harbor and abandon-vessel drill. On arrival, guests receive a route briefing, quiet-hour rules, water-use limits, restricted-area map, wildlife guidance, and the location of first aid, communication tools, and assembly points.

Sustainability requirements include refillable water containers, waste separation, return of non-biodegradable materials, locally appropriate food, low-noise operations, filtered lighting, and employment of trained local guides. Guests may not remove shells, feathers, stones, plants, fossils, or cultural objects.

Accessibility and health: hosts should identify mobility, allergy, dietary, respiratory, and medication-storage needs before travel. Remote sites must clearly state limitations. Evacuation plans include assistance for children, older adults, injured people, and visitors unfamiliar with local terrain.

ACC-008 — Ilyan Mist House

Ilyan Mist House is a terrace lodge in the Mistroot Basin with a normal capacity of 26 guests. Facilities include warm rooms, drying area, lake-view clinic point. The site must not exceed capacity because sanitation, water storage, evacuation, and habitat disturbance limits are calculated for the listed occupancy.

Emergency plan: landslide assembly terrace. On arrival, guests receive a route briefing, quiet-hour rules, water-use limits, restricted-area map, wildlife guidance, and the location of first aid, communication tools, and assembly points.

Sustainability requirements include refillable water containers, waste separation, return of non-biodegradable materials, locally appropriate food, low-noise operations, filtered lighting, and employment of trained local guides. Guests may not remove shells, feathers, stones, plants, fossils, or cultural objects.

Accessibility and health: hosts should identify mobility, allergy, dietary, respiratory, and medication-storage needs before travel. Remote sites must clearly state limitations. Evacuation plans include assistance for children, older adults, injured people, and visitors unfamiliar with local terrain.

ACC-009 — Ralu Rootwalk Cabins

Ralu Rootwalk Cabins is a elevated mangrove cabins in the Aurora Mangroves with a normal capacity of 18 guests. Facilities include screened rooms, tidal maps, canoe lights. The site must not exceed capacity because sanitation, water storage, evacuation, and habitat disturbance limits are calculated for the listed occupancy.

Emergency plan: platform-to-high-ground route. On arrival, guests receive a route briefing, quiet-hour rules, water-use limits, restricted-area map, wildlife guidance, and the location of first aid, communication tools, and assembly points.

Sustainability requirements include refillable water containers, waste separation, return of non-biodegradable materials, locally appropriate food, low-noise operations, filtered lighting, and employment of trained local guides. Guests may not remove shells, feathers, stones, plants, fossils, or cultural objects.

Accessibility and health: hosts should identify mobility, allergy, dietary, respiratory, and medication-storage needs before travel. Remote sites must clearly state limitations. Evacuation plans include assistance for children, older adults, injured people, and visitors unfamiliar with local terrain.

ACC-010 — Peyral Cliff Haven

Peyral Cliff Haven is a cliff cave guest lodge in the Sunfall Archipelago with a normal capacity of 10 guests. Facilities include rain capture, safety rails, seabird quiet zones. The site must not exceed capacity because sanitation, water storage, evacuation, and habitat disturbance limits are calculated for the listed occupancy.

Emergency plan: upper cave refuge. On arrival, guests receive a route briefing, quiet-hour rules, water-use limits, restricted-area map, wildlife guidance, and the location of first aid, communication tools, and assembly points.

Sustainability requirements include refillable water containers, waste separation, return of non-biodegradable materials, locally appropriate food, low-noise operations, filtered lighting, and employment of trained local guides. Guests may not remove shells, feathers, stones, plants, fossils, or cultural objects.

Accessibility and health: hosts should identify mobility, allergy, dietary, respiratory, and medication-storage needs before travel. Remote sites must clearly state limitations. Evacuation plans include assistance for children, older adults, injured people, and visitors unfamiliar with local terrain.

9.11 Standard Visitor Packing Guidance

- Reusable water container and personal filter where approved.
- Lightweight rain protection, warm layer for highlands, and breathable sun protection for dry regions.
- Closed footwear suitable for roots, coral rubble, wet platforms, or volcanic gravel.
- Personal medicines in labeled waterproof packaging, plus copies of prescriptions.
- Low-intensity filtered lamp; no high-power wildlife spotlight.
- Dry bag, whistle, route card, and emergency contact details.
- No disposable decorations, loud speakers, recreational drones, or wildlife feeding materials.

10. Energy, Materials, Tools and Infrastructure

10.1 Energy

Settlements use combinations of micro-hydro, tidal movement, solar membranes, geothermal heat, stored biological energy, and manual systems. No source is considered impact-free. Intake screens, fish passage, noise limits, thermal discharge, and maintenance waste are monitored.

Critical systems such as clinics, water treatment, communication, and evacuation lighting have independent backup power. Entertainment loads are disconnected first during shortages.

10.2 Construction Materials

Living-root structures are guided over years and never cut from a single load-bearing tree without assessment. Fiber composites use renewable vines, reeds, resins, and mineral fillers.

Volcanic stone is quarried only from mapped low-habitat zones. Coral, active reef rock, nesting cliff stone, and sacred geological formations are prohibited materials.

Every structure includes a repair plan and end-of-life plan. Temporary event structures must be fully removable.

10.3 Waste

Organic kitchen waste is separated from medical waste, sharp tools, batteries, chemical containers, and visitor waste. Compost systems exclude diseased plants, meat where predators are a concern, and unknown toxic material.

Waste records track source, mass or volume, storage location, treatment, transport, and final recovery. Burning mixed waste is prohibited because fumes and ash can contaminate water and food.

10.4 Communication

Routine communication uses village messengers, signal drums, luminous markers, radio, and written logs. Emergency messages begin with location, hazard, number of affected people, immediate needs, route condition, and callback method.

Rumors are labeled as unverified. Public alerts are updated when information changes and must state the time of issue.

11. Culture, Education, Communication and Ethics

Community identity is tied to place, ancestry, shared work, ecological responsibility, and story. However, no village is culturally uniform. Individuals may hold different beliefs, occupations, languages, and levels of participation. Systems should avoid treating all residents as identical or reducing culture to ceremony.

Knowledge is divided into public, community-limited, healer-limited, guardian-limited, family-held, and sacred categories. Consent to hear a story does not automatically grant permission to record, publish, embed, or train a model on it. Dataset administrators must document permission level and deletion procedures.

Children learn observation before intervention. Lessons include recognizing weather signs, safe plants, animal distance, water routes, first aid, conflict resolution, and evidence recording. Advanced students compare oral histories with measurements without assuming one form of knowledge is inherently superior.

Conflict resolution starts with the people directly affected, then a neutral listener, then a council if needed. Restoration may include apology, replacement of damaged resources, habitat repair, service work, or revised access rules. Punishment without restoration is considered incomplete.

Ceremonies near reefs, nesting cliffs, healing groves, and water sources must follow seasonal capacity limits. Sound, fire, lighting, food waste, and visitor numbers are managed as environmental variables, not merely event logistics.

Research ethics require informed consent, minimal extraction, return of results in understandable language, recognition of local contributors, secure handling of sensitive data, and benefit sharing. Researchers may not claim exclusive ownership of collectively held ecological knowledge.

11.1 Multilingual and Accessible Communication

- Use plain-language summaries alongside technical reports.
- Provide symbols or audio instructions for people with limited literacy.
- Do not use color alone for hazard levels; pair it with words and shapes.
- Repeat emergency messages and confirm understanding.
- Translate names carefully; retain local names as searchable aliases.
- Mark uncertain translations rather than presenting them as definitive.

12. Environmental Threats and Emergency Response

INC-001 — Turquoise Water Event

Location and observations: Luminous Shelf. Reported signs: water turns bright turquoise; fish move offshore. Initial risk level: HIGH. This classification may change as evidence is collected.

Plausible causes listed in the incident record: mineral sediment, plankton bloom, chemical release, light reflection. These are hypotheses, not confirmed findings. The response team must avoid selecting the most dramatic explanation without measurements or corroboration.

Immediate actions: restrict drinking and shellfish harvest; sample at three depths; inspect upstream and wind direction. Protect responders with habitat-specific equipment, establish an exclusion boundary, record who entered the site, and preserve samples using documented chain-of-custody methods.

Minimum incident dataset: date and time, exact location, observer identity or anonymous code, weather, photographs, symptoms or animal behavior, water/soil readings, nearby activities, actions already taken, source reliability, and next review time.

Public communication should state what is known, what is not known, what people should do, which areas are affected, when the next update will occur, and how to report new evidence. Avoid blame until investigation is complete.

INC-002 — Coral Break Field

Location and observations: Awa Reef. Reported signs: fresh broken coral across 200 m. Initial risk level: MEDIUM. This classification may change as evidence is collected.

Plausible causes listed in the incident record: storm, anchor drag, animal impact, deliberate damage. These are hypotheses, not confirmed findings. The response team must avoid selecting the most dramatic explanation without measurements or corroboration.

Immediate actions: close site; map fragments; identify continuing hazards; stabilize only with trained team. Protect responders with habitat-specific equipment, establish an exclusion boundary, record who entered the site, and preserve samples using documented chain-of-custody methods.

Minimum incident dataset: date and time, exact location, observer identity or anonymous code, weather, photographs, symptoms or animal behavior, water/soil readings, nearby activities, actions already taken, source reliability, and next review time.

Public communication should state what is known, what is not known, what people should do, which areas are affected, when the next update will occur, and how to report new evidence. Avoid blame until investigation is complete.

INC-003 — Wetland Fever Cluster

Location and observations: Silverreed Wetlands. Reported signs: 12 people with fever and joint pain. Initial risk level: HIGH. This classification may change as evidence is collected.

Plausible causes listed in the incident record: vector surge, waterborne pathogen, shared food exposure. These are hypotheses, not confirmed findings. The response team must avoid selecting the most dramatic explanation without measurements or corroboration.

Immediate actions: clinical triage; insect protection; water and food investigation; anonymized case map. Protect responders with habitat-specific equipment, establish an exclusion boundary, record who entered the site, and preserve samples using documented chain-of-custody methods.

Minimum incident dataset: date and time, exact location, observer identity or anonymous code, weather, photographs, symptoms or animal behavior, water/soil readings, nearby activities, actions already taken, source reliability, and next review time.

Public communication should state what is known, what is not known, what people should do, which areas are affected, when the next update will occur, and how to report new evidence. Avoid blame until investigation is complete.

INC-004 — Canopy Silence

Location and observations: Emerald Canopy. Reported signs: pollinator calls absent for three nights. Initial risk level: MEDIUM. This classification may change as evidence is collected.

Plausible causes listed in the incident record: weather, pesticide exposure, predator change, migration, sampling issue. These are hypotheses, not confirmed findings. The response team must avoid selecting the most dramatic explanation without measurements or corroboration.

Immediate actions: repeat dawn/night surveys; inspect flowering plants; test nearby water and soil. Protect responders with habitat-specific equipment, establish an exclusion boundary, record who entered the site, and preserve samples using documented chain-of-custody methods.

Minimum incident dataset: date and time, exact location, observer identity or anonymous code, weather, photographs, symptoms or animal behavior, water/soil readings, nearby activities, actions already taken, source reliability, and next review time.

Public communication should state what is known, what is not known, what people should do, which areas are affected, when the next update will occur, and how to report new evidence. Avoid blame until investigation is complete.

INC-005 — Vent Plume Release

Location and observations: Obsidian Reach. Reported signs: yellow plume and dead shellfish. Initial risk level: CRITICAL. This classification may change as evidence is collected.

Plausible causes listed in the incident record: natural vent pulse, underwater eruption, disturbed sediment. These are hypotheses, not confirmed findings. The response team must avoid selecting the most dramatic explanation without measurements or corroboration.

Immediate actions: evacuate downwind/cross-current; gas monitoring; close seafood harvest. Protect responders with habitat-specific equipment, establish an exclusion boundary, record who entered the site, and preserve samples using documented chain-of-custody methods.

Minimum incident dataset: date and time, exact location, observer identity or anonymous code, weather, photographs, symptoms or animal behavior, water/soil readings, nearby activities, actions already taken, source reliability, and next review time.

Public communication should state what is known, what is not known, what people should do, which areas are affected, when the next update will occur, and how to report new evidence. Avoid blame until investigation is complete.

INC-006 — Oasis Drawdown

Location and observations: Whispering Dunes. Reported signs: water level drops 40 cm in one week. Initial risk level: HIGH. This classification may change as evidence is collected.

Plausible causes listed in the incident record: drought, upstream diversion, leak, overuse. These are hypotheses, not confirmed findings. The response team must avoid selecting the most dramatic explanation without measurements or corroboration.

Immediate actions: ration water; inspect channels; protect wildlife access; arrange supply. Protect responders with habitat-specific equipment, establish an exclusion boundary, record who entered the site, and preserve samples using documented chain-of-custody methods.

Minimum incident dataset: date and time, exact location, observer identity or anonymous code, weather, photographs, symptoms or animal behavior, water/soil readings, nearby activities, actions already taken, source reliability, and next review time.

Public communication should state what is known, what is not known, what people should do, which areas are affected, when the next update will occur, and how to report new evidence. Avoid blame until investigation is complete.

INC-007 — Deepbell Stranding

Location and observations: Sunfall Archipelago. Reported signs: large marine mammal grounded. Initial risk level: CRITICAL. This classification may change as evidence is collected.

Plausible causes listed in the incident record: illness, sonar disturbance, current anomaly, injury. These are hypotheses, not confirmed findings. The response team must avoid selecting the most dramatic explanation without measurements or corroboration.

Immediate actions: keep airway clear and skin wet as advised; crowd control; expert rescue. Protect responders with habitat-specific equipment, establish an exclusion boundary, record who entered the site, and preserve samples using documented chain-of-custody methods.

Minimum incident dataset: date and time, exact location, observer identity or anonymous code, weather, photographs, symptoms or animal behavior, water/soil readings, nearby activities, actions already taken, source reliability, and next review time.

Public communication should state what is known, what is not known, what people should do, which areas are affected, when the next update will occur, and how to report new evidence. Avoid blame until investigation is complete.

INC-008 — Terrace Collapse

Location and observations: Mistroot Basin. Reported signs: three farm terraces fail after rain. Initial risk level: HIGH. This classification may change as evidence is collected.

Plausible causes listed in the incident record: blocked drainage, soil saturation, poor repair. These are hypotheses, not confirmed findings. The response team must avoid selecting the most dramatic explanation without measurements or corroboration.

Immediate actions: evacuate below slope; stop water inflow; geotechnical assessment. Protect responders with habitat-specific equipment, establish an exclusion boundary, record who entered the site, and preserve samples using documented chain-of-custody methods.

Minimum incident dataset: date and time, exact location, observer identity or anonymous code, weather, photographs, symptoms or animal behavior, water/soil readings, nearby activities, actions already taken, source reliability, and next review time.

Public communication should state what is known, what is not known, what people should do, which areas are affected, when the next update will occur, and how to report new evidence. Avoid blame until investigation is complete.

INC-009 — Mangrove Root Dieback

Location and observations: Aurora Mangroves. Reported signs: leaves yellow and roots soften. Initial risk level: MEDIUM. This classification may change as evidence is collected.

Plausible causes listed in the incident record: salinity change, fungal disease, pollution, channel blockage. These are hypotheses, not confirmed findings. The response team must avoid selecting the most dramatic explanation without measurements or corroboration.

Immediate actions: map tide flow; test salinity; restrict cutting; isolate equipment. Protect responders with habitat-specific equipment, establish an exclusion boundary, record who entered the site, and preserve samples using documented chain-of-custody methods.

Minimum incident dataset: date and time, exact location, observer identity or anonymous code, weather, photographs, symptoms or animal behavior, water/soil readings, nearby activities, actions already taken, source reliability, and next review time.

Public communication should state what is known, what is not known, what people should do, which areas are affected, when the next update will occur, and how to report new evidence. Avoid blame until investigation is complete.

INC-010 — Visitor Waste Surge

Location and observations: Multiple sites. Reported signs: event produces mixed waste and food scraps. Initial risk level: MEDIUM. This classification may change as evidence is collected.

Plausible causes listed in the incident record: insufficient planning, excess capacity, poor signage. These are hypotheses, not confirmed findings. The response team must avoid selecting the most dramatic explanation without measurements or corroboration.

Immediate actions: stop intake; separate hazardous waste; secure food waste; audit vendors. Protect responders with habitat-specific equipment, establish an exclusion boundary, record who entered the site, and preserve samples using documented chain-of-custody methods.

Minimum incident dataset: date and time, exact location, observer identity or anonymous code, weather, photographs, symptoms or animal behavior, water/soil readings, nearby activities, actions already taken, source reliability, and next review time.

Public communication should state what is known, what is not known, what people should do, which areas are affected, when the next update will occur, and how to report new evidence. Avoid blame until investigation is complete.

12.11 Incident Command Roles

Role	Responsibilities
Incident Lead	Sets priorities, approves safety zones, coordinates teams.
Safety Officer	Monitors responder risks and stops unsafe work.
Medical Lead	Triage, treatment, exposure tracking, referral.
Ecology Lead	Habitat assessment, wildlife handling, restoration.
Water/Soil Lead	Sampling plan, calibration, chain of custody.
Logistics Lead	Transport, food, shelter, tools, communication.
Community Liaison	Local knowledge, consent, updates, grievances.
Documentation Lead	Timeline, decisions, evidence, maps, final report.

13. Conservation Policies and Resource Management

Policy ID	Policy	Core rule
POL-001	Water Source Protection	No waste, washing, fuel, or animal processing in source protection zones.
POL-002	Breeding Season Closure	Mapped breeding areas close to harvest and tourism during listed periods.
POL-003	Visitor Carrying Capacity	Accommodation, trails, reefs, and ceremonies have occupancy limits.
POL-004	Specimen Collection	Collection requires purpose, minimum quantity, permit, and return of findings.
POL-005	Community Data Consent	Local knowledge receives access classification and withdrawal process.
POL-006	Restoration Genetics	Use diverse local source material; avoid single-clone restoration.
POL-007	Wildlife Rescue	Only trained teams restrain or relocate wildlife except immediate life-saving action.
POL-008	Noise and Light	Restrict high-intensity light and persistent noise near sensitive habitats.
POL-009	Waste Return	Visitors and contractors remove non-recoverable materials from remote sites.
POL-010	Emergency Transparency	Public alerts include time, evidence level, instructions, and next update.

POL-001 — Water Source Protection

Core rule: No waste, washing, fuel, or animal processing in source protection zones. The policy applies to residents, visitors, researchers, contractors, and event organizers unless an emergency exemption is documented.

Implementation requires a responsible person, mapped scope, signage or communication, monitoring indicator, reporting channel, review date, and a corrective-action process. Repeated non-compliance may lead to access suspension, restoration duty, or permit withdrawal.

Exceptions must be necessary, time-limited, proportionate, and reviewed after use. An exception for convenience or cost alone is not sufficient when a safer feasible option exists.

POL-002 — Breeding Season Closure

Core rule: Mapped breeding areas close to harvest and tourism during listed periods. The policy applies to residents, visitors, researchers, contractors, and event organizers unless an emergency exemption is documented.

Implementation requires a responsible person, mapped scope, signage or communication, monitoring indicator, reporting channel, review date, and a corrective-action process. Repeated non-compliance may lead to access suspension, restoration duty, or permit withdrawal.

Exceptions must be necessary, time-limited, proportionate, and reviewed after use. An exception for convenience or cost alone is not sufficient when a safer feasible option exists.

POL-003 — Visitor Carrying Capacity

Core rule: Accommodation, trails, reefs, and ceremonies have occupancy limits. The policy applies to residents, visitors, researchers, contractors, and event organizers unless an emergency exemption is documented.

Implementation requires a responsible person, mapped scope, signage or communication, monitoring indicator, reporting channel, review date, and a corrective-action process. Repeated non-compliance may lead to access suspension, restoration duty, or permit withdrawal.

Exceptions must be necessary, time-limited, proportionate, and reviewed after use. An exception for convenience or cost alone is not sufficient when a safer feasible option exists.

POL-004 — Specimen Collection

Core rule: Collection requires purpose, minimum quantity, permit, and return of findings. The policy applies to residents, visitors, researchers, contractors, and event organizers unless an emergency exemption is documented.

Implementation requires a responsible person, mapped scope, signage or communication, monitoring indicator, reporting channel, review date, and a corrective-action process. Repeated non-compliance may lead to access suspension, restoration duty, or permit withdrawal.

Exceptions must be necessary, time-limited, proportionate, and reviewed after use. An exception for convenience or cost alone is not sufficient when a safer feasible option exists.

POL-005 — Community Data Consent

Core rule: Local knowledge receives access classification and withdrawal process. The policy applies to residents, visitors, researchers, contractors, and event organizers unless an emergency exemption is documented.

Implementation requires a responsible person, mapped scope, signage or communication, monitoring indicator, reporting channel, review date, and a corrective-action process. Repeated non-compliance may lead to access suspension, restoration duty, or permit withdrawal.

Exceptions must be necessary, time-limited, proportionate, and reviewed after use. An exception for convenience or cost alone is not sufficient when a safer feasible option exists.

POL-006 — Restoration Genetics

Core rule: Use diverse local source material; avoid single-clone restoration. The policy applies to residents, visitors, researchers, contractors, and event organizers unless an emergency exemption is documented.

Implementation requires a responsible person, mapped scope, signage or communication, monitoring indicator, reporting channel, review date, and a corrective-action process. Repeated non-compliance may lead to access suspension, restoration duty, or permit withdrawal.

Exceptions must be necessary, time-limited, proportionate, and reviewed after use. An exception for convenience or cost alone is not sufficient when a safer feasible option exists.

POL-007 — Wildlife Rescue

Core rule: Only trained teams restrain or relocate wildlife except immediate life-saving action. The policy applies to residents, visitors, researchers, contractors, and event organizers unless an emergency exemption is documented.

Implementation requires a responsible person, mapped scope, signage or communication, monitoring indicator, reporting channel, review date, and a corrective-action process. Repeated non-compliance may lead to access suspension, restoration duty, or permit withdrawal.

Exceptions must be necessary, time-limited, proportionate, and reviewed after use. An exception for convenience or cost alone is not sufficient when a safer feasible option exists.

POL-008 — Noise and Light

Core rule: Restrict high-intensity light and persistent noise near sensitive habitats. The policy applies to residents, visitors, researchers, contractors, and event organizers unless an emergency exemption is documented.

Implementation requires a responsible person, mapped scope, signage or communication, monitoring indicator, reporting channel, review date, and a corrective-action process. Repeated non-compliance may lead to access suspension, restoration duty, or permit withdrawal.

Exceptions must be necessary, time-limited, proportionate, and reviewed after use. An exception for convenience or cost alone is not sufficient when a safer feasible option exists.

POL-009 — Waste Return

Core rule: Visitors and contractors remove non-recoverable materials from remote sites. The policy applies to residents, visitors, researchers, contractors, and event organizers unless an emergency exemption is documented.

Implementation requires a responsible person, mapped scope, signage or communication, monitoring indicator, reporting channel, review date, and a corrective-action process. Repeated non-compliance may lead to access suspension, restoration duty, or permit withdrawal.

Exceptions must be necessary, time-limited, proportionate, and reviewed after use. An exception for convenience or cost alone is not sufficient when a safer feasible option exists.

POL-010 — Emergency Transparency

Core rule: Public alerts include time, evidence level, instructions, and next update. The policy applies to residents, visitors, researchers, contractors, and event organizers unless an emergency exemption is documented.

Implementation requires a responsible person, mapped scope, signage or communication, monitoring indicator, reporting channel, review date, and a corrective-action process. Repeated non-compliance may lead to access suspension, restoration duty, or permit withdrawal.

Exceptions must be necessary, time-limited, proportionate, and reviewed after use. An exception for convenience or cost alone is not sufficient when a safer feasible option exists.

14. Research Records and Monitoring Data

The following simulated records are intentionally suitable for retrieval, summarization, trend detection, and contradiction handling. Values are fictional. A RAG system should not generalize beyond the named station, date range, and sampling method.

14.1 Water Monitoring Snapshot

Station	Location	Date	Temp °C	Salinity	DO mg/L	pH	Observation
WS-01	Awa Reef North	2026-05-03	28.2	35.1	7.1	8.12	clear; normal grazing

Station	Location	Date	Temp °C	Salinity	DO mg/L	pH	Observation
WS-01	Awa Reef North	2026-06-02	29.7	34.9	5.4	8.05	mild green tint; fewer grazers
WS-02	Neyra Channel	2026-05-07	26.4	5.2	6.8	7.46	high sediment after rain
WS-02	Neyra Channel	2026-06-09	27.0	7.9	4.9	7.31	stagnant side pool; mosquito rise
WS-03	Vitra Vent Edge	2026-05-11	31.5	36.0	5.9	7.88	sulfur odor within normal vent range
WS-03	Vitra Vent Edge	2026-06-14	34.2	36.5	3.8	7.62	yellow plume; shellfish closure
WS-04	Mistroot Lake East	2026-05-15	18.2	0.3	8.4	7.20	clear
WS-04	Mistroot Lake East	2026-06-18	20.1	0.3	6.2	7.14	algae at sheltered edge

Interpretation note: WS-03 on 2026-06-14 shows simultaneous temperature increase, oxygen decrease, pH decline, visible plume, and shellfish impact. The record supports escalation but does not by itself prove whether the cause was a natural vent pulse or human disturbance.

14.2 Wildlife Survey Snapshot

Survey	Species	Region	Count	Effort	Confidence	Comment
SV-101	Tideglass Grazer	Awa Reef	42	2 divers × 40 min	high	juveniles present
SV-102	Tideglass Grazer	Awa Reef	17	1 diver × 20 min	low	poor visibility; not directly comparable
SV-103	Moonpool Salamander	Mistroot Basin	31	12 pools	high	no lesions
SV-104	Moonpool Salamander	Mistroot Basin	8	4 pools	medium	storm blocked access
SV-105	Deepbell Singer	Deep Current	6 groups	8-hour acoustic track	high	normal migration calls
SV-106	Sunfall Cliffwing	Peyral Island	118 nests	full cliff scan	high	12 abandoned nests

Comparison warning: counts must be normalized by survey effort and detection conditions. A lower count from shorter effort or poor visibility is not reliable evidence of population decline.

14.3 Conflicting Field Notes

Field Note FN-A, issued 2026-06-02, reports that the turquoise color at Awa Reef began after three calm hot days and was strongest near the surface. The author suggests a plankton bloom and notes no chemical odor.

Field Note FN-B, issued 2026-06-03, reports maintenance work on an upstream pigment workshop two days before the color change. The author observed a damaged waste container but did not confirm that material entered the water.

Laboratory Note LAB-C, issued 2026-06-05, detected elevated harmless carbonate particles and moderate plankton density, but the sample chain-of-custody form was incomplete. The note concludes that both natural and human contributions remain possible.

RAG evaluation expectation: an answer should present all three records, identify the incomplete chain of custody, avoid declaring a confirmed cause, and recommend additional properly documented sampling.

15. Contradictions and Glossary

15.1 Recommended Test Questions

- What are the immediate steps when water changes color near Awa Reef?
- Compare Reef Cut Infection and Marine Sting Reaction, including red flags.
- Which accommodations are safest for a traveler with limited mobility during storm season?

15.2 Retrieval Grounding Rules

- Answers must cite record IDs or chapter sections whenever a specific claim is made.
- When the corpus provides multiple plausible causes, present them as hypotheses unless confirmation is documented.
- Do not merge details from two species, villages, plants, or incidents merely because their names or habitats are similar.
- Preserve time and location. A measurement from one station should not be presented as a planet-wide fact.
- For health questions, include red flags and the statement that the corpus is fictional training material.
- When information is absent, state that the corpus does not provide enough evidence.
- When records conflict, summarize the conflict and identify reliability limitations.
- For recommendations, separate documented protocol from model-generated inference.

15.3 Glossary

Term	Definition
Living network	The combined ecological, hydrological, social, and knowledge connections among regions.
Guardian	A trained person responsible for environmental observation, safety, and response.
Healer	A practitioner trained in community health, medicinal preparation, and referral.
Source protection radius	Restricted area surrounding a drinking-water source.
Nursery habitat	Area used by juvenile organisms for shelter and feeding.
Bloom Tide	Season of major flowering, pollination, and some plankton activity.
Deep Current	Season of stronger offshore currents and storm exposure.
Verified observation	Record supported by direct measurement or repeatable evidence.
Provisional interpretation	A plausible explanation not yet confirmed.
Disputed report	Claim challenged by another source or weakened by poor evidence.
Chain of custody	Documented control of a sample from collection to analysis.

Term	Definition
Carrying capacity	Maximum use level that infrastructure and habitat can sustain.
No-take zone	Area where harvesting and specimen removal are prohibited.
Buffer zone	Area around a sensitive site where disturbance is restricted.
Reranking	A retrieval step that reorders candidate chunks by relevance.
Chunk overlap	Repeated context shared between adjacent text chunks.
Grounded answer	Response whose claims are supported by retrieved evidence.
Hallucination	Unsupported or fabricated model output.
Metadata filter	Restriction of retrieval by fields such as region, category, or date.
Incident severity	Operational level based on impact, spread, and urgency.

Appendix A — Detailed Field Assessment Checklists

A.1 Water Investigation

- Confirm personal safety before entering shore, boat, wetland, or vent areas.
- Photograph the site from fixed points and include a scale where possible.
- Record water color using plain terms and a reference card; do not rely on camera color alone.
- Measure temperature, pH, dissolved oxygen, salinity or conductivity, and turbidity when trained and equipped.
- Take upstream, event-zone, and downstream samples at consistent depths.
- Record wind, rainfall, tide, current direction, odor, foam, dead organisms, and nearby activities.
- Use clean labeled containers and complete chain-of-custody forms.
- Notify drinking-water, fishery, clinic, and accommodation operators when exposure is plausible.
- Set a review time and criteria for lifting restrictions.

A.2 Wildlife Incident

- Identify species only to the confidence level supported by evidence.
- Observe breathing, movement, posture, wounds, entanglement, and nearby hazards.
- Control crowds, noise, pets, boats, and artificial light.
- Contact trained responders before physical handling.
- Use gloves, eye protection, and species-specific equipment.
- Do not release an animal into unfamiliar habitat without approval.
- Record outcome, samples, treatment, relocation site, and follow-up plan.

A.3 Settlement Evacuation

- Name the hazard and define who must move.
- Choose routes that avoid water flow, falling rock, smoke, predators, damaged bridges, and contaminated zones.
- Assign support for children, older adults, injured people, visitors, and those with disabilities.
- Carry drinking water, essential medicines, patient records, communication tools, and head counts.
- Mark evacuated buildings and prevent unauthorized return.
- Provide shelter zones for families, medical care, food, sanitation, and animals where appropriate.
- Announce re-entry only after safety checks and documentation.

A.4 Event Sustainability

- Calculate visitor capacity from water, toilets, waste storage, evacuation time, and habitat limits.
- Use registration and timed entry where sites are sensitive.
- Brief vendors on permitted materials, food safety, waste return, and noise limits.
- Provide refill stations and prohibit unnecessary single-use items.
- Protect wildlife corridors, nesting zones, root systems, and shore access.
- Use low-impact lighting and end amplified sound before wildlife-sensitive periods.
- Record waste quantities, incidents, complaints, and restoration actions after the event.

Appendix B — Sample Knowledge Cards

Knowledge Card KC-01

Topic: reef restoration. This card is designed as a compact retrieval target. The recommended response begins with hazard identification, then separates verified facts from assumptions, identifies affected people and habitats, lists immediate protective actions, and sets a review time. It should be retrieved together with the more detailed chapter rather than used as the sole authority for high-risk decisions.

Evidence quality checklist: direct measurement is stronger than visual impression; repeated local observations are stronger than a single anonymous report; calibrated instruments are stronger than uncalibrated devices; and records with complete time, location, method, and custody details are stronger than incomplete notes. Community testimony remains essential for context even when laboratory confirmation is needed.

Communication template: “At [time] in [location], we observed [verified signs]. The cause is [confirmed/not yet confirmed]. People should [actions]. Avoid [restricted actions]. Report [symptoms or observations] through [channel]. The next update will be issued at [time].”

Knowledge Card KC-02

Topic: forest travel. This card is designed as a compact retrieval target. The recommended response begins with hazard identification, then separates verified facts from assumptions, identifies affected people and habitats, lists immediate protective actions, and sets a review time. It should be retrieved together with the more detailed chapter rather than used as the sole authority for high-risk decisions.

Evidence quality checklist: direct measurement is stronger than visual impression; repeated local observations are stronger than a single anonymous report; calibrated instruments are stronger than uncalibrated devices; and records with complete time, location, method, and custody details are stronger than incomplete notes. Community testimony remains essential for context even when laboratory confirmation is needed.

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Knowledge Card KC-03

Topic: medicinal plant use. This card is designed as a compact retrieval target. The recommended response begins with hazard identification, then separates verified facts from assumptions, identifies affected people and habitats, lists immediate protective actions, and sets a review time. It should be retrieved together with the more detailed chapter rather than used as the sole authority for high-risk decisions.

Evidence quality checklist: direct measurement is stronger than visual impression; repeated local observations are stronger than a single anonymous report; calibrated instruments are stronger than uncalibrated devices; and records with complete time, location, method, and custody details are stronger than incomplete notes. Community testimony remains essential for context even when laboratory confirmation is needed.

Communication template: “At [time] in [location], we observed [verified signs]. The cause is [confirmed/not yet confirmed]. People should [actions]. Avoid [restricted actions]. Report [symptoms or observations] through [channel]. The next update will be issued at [time].”

Knowledge Card KC-04

Topic: visitor management. This card is designed as a compact retrieval target. The recommended response begins with hazard identification, then separates verified facts from assumptions, identifies affected people and habitats, lists immediate protective actions, and sets a review time. It should be retrieved together with the more detailed chapter rather than used as the sole authority for high-risk decisions.

Evidence quality checklist: direct measurement is stronger than visual impression; repeated local observations are stronger than a single anonymous report; calibrated instruments are stronger than uncalibrated devices; and records with complete time, location, method, and custody details are stronger than incomplete notes. Community testimony remains essential for context even when laboratory confirmation is needed.

Communication template: “At [time] in [location], we observed [verified signs]. The cause is [confirmed/not yet confirmed]. People should [actions]. Avoid [restricted actions]. Report [symptoms or observations] through [channel]. The next update will be issued at [time].”

Knowledge Card KC-05

Topic: wildlife rescue. This card is designed as a compact retrieval target. The recommended response begins with hazard identification, then separates verified facts from assumptions, identifies affected people and habitats, lists immediate protective actions, and sets a review time. It should be retrieved together with the more detailed chapter rather than used as the sole authority for high-risk decisions.

Evidence quality checklist: direct measurement is stronger than visual impression; repeated local observations are stronger than a single anonymous report; calibrated instruments are stronger than uncalibrated devices; and records with complete time, location, method, and custody details are stronger than incomplete notes. Community testimony remains essential for context even when laboratory confirmation is needed.

Communication template: “At [time] in [location], we observed [verified signs]. The cause is [confirmed/not yet confirmed]. People should [actions]. Avoid [restricted actions]. Report [symptoms or observations] through [channel]. The next update will be issued at [time].”

Knowledge Card KC-06

Topic: food storage. This card is designed as a compact retrieval target. The recommended response begins with hazard identification, then separates verified facts from assumptions, identifies affected people and habitats, lists immediate protective actions, and sets a review time. It should be retrieved together with the more detailed chapter rather than used as the sole authority for high-risk decisions.

Evidence quality checklist: direct measurement is stronger than visual impression; repeated local observations are stronger than a single anonymous report; calibrated instruments are stronger than uncalibrated devices; and records with complete time, location, method, and custody details are stronger than incomplete notes. Community testimony remains essential for context even when laboratory confirmation is needed.

Communication template: “At [time] in [location], we observed [verified signs]. The cause is [confirmed/not yet confirmed]. People should [actions]. Avoid [restricted actions]. Report [symptoms or observations] through [channel]. The next update will be issued at [time].”

Knowledge Card KC-07

Topic: storm response. This card is designed as a compact retrieval target. The recommended response begins with hazard identification, then separates verified facts from assumptions, identifies affected people and habitats, lists immediate protective actions, and sets a review time. It should be retrieved together with the more detailed chapter rather than used as the sole authority for high-risk decisions.

Evidence quality checklist: direct measurement is stronger than visual impression; repeated local observations are stronger than a single anonymous report; calibrated instruments are stronger than uncalibrated devices; and records with complete time, location, method, and custody details are stronger than incomplete notes. Community testimony remains essential for context even when laboratory confirmation is needed.

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Knowledge Card KC-08

Topic: research ethics. This card is designed as a compact retrieval target. The recommended response begins with hazard identification, then separates verified facts from assumptions, identifies affected people and habitats, lists immediate protective actions, and sets a review time. It should be retrieved together with the more detailed chapter rather than used as the sole authority for high-risk decisions.

Evidence quality checklist: direct measurement is stronger than visual impression; repeated local observations are stronger than a single anonymous report; calibrated instruments are stronger than uncalibrated devices; and records with complete time, location, method, and custody details are stronger than incomplete notes. Community testimony remains essential for context even when laboratory confirmation is needed.

Communication template: “At [time] in [location], we observed [verified signs]. The cause is [confirmed/not yet confirmed]. People should [actions]. Avoid [restricted actions]. Report [symptoms or observations] through [channel]. The next update will be issued at [time].”

Knowledge Card KC-09

Topic: waste handling. This card is designed as a compact retrieval target. The recommended response begins with hazard identification, then separates verified facts from assumptions, identifies affected people and habitats, lists immediate protective actions, and sets a review time. It should be retrieved together with the more detailed chapter rather than used as the sole authority for high-risk decisions.

Evidence quality checklist: direct measurement is stronger than visual impression; repeated local observations are stronger than a single anonymous report; calibrated instruments are stronger than uncalibrated devices; and records with complete time, location, method, and custody details are stronger than incomplete notes. Community testimony remains essential for context even when laboratory confirmation is needed.

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Knowledge Card KC-10

Topic: water safety. This card is designed as a compact retrieval target. The recommended response begins with hazard identification, then separates verified facts from assumptions, identifies affected people and habitats, lists immediate protective actions, and sets a review time. It should be retrieved together with the more detailed chapter rather than used as the sole authority for high-risk decisions.

Evidence quality checklist: direct measurement is stronger than visual impression; repeated local observations are stronger than a single anonymous report; calibrated instruments are stronger than uncalibrated devices; and records with complete time, location, method, and custody details are stronger than incomplete notes. Community testimony remains essential for context even when laboratory confirmation is needed.

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Knowledge Card KC-11

Topic: reef restoration. This card is designed as a compact retrieval target. The recommended response begins with hazard identification, then separates verified facts from assumptions, identifies affected people and habitats, lists immediate protective actions, and sets a review time. It should be retrieved together with the more detailed chapter rather than used as the sole authority for high-risk decisions.

Evidence quality checklist: direct measurement is stronger than visual impression; repeated local observations are stronger than a single anonymous report; calibrated instruments are stronger than uncalibrated devices; and records with complete time, location, method, and custody details are stronger than incomplete notes. Community testimony remains essential for context even when laboratory confirmation is needed.

Communication template: “At [time] in [location], we observed [verified signs]. The cause is [confirmed/not yet confirmed]. People should [actions]. Avoid [restricted actions]. Report [symptoms or observations] through [channel]. The next update will be issued at [time].”

Knowledge Card KC-12

Topic: forest travel. This card is designed as a compact retrieval target. The recommended response begins with hazard identification, then separates verified facts from assumptions, identifies affected people and habitats, lists immediate protective actions, and sets a review time. It should be retrieved together with the more detailed chapter rather than used as the sole authority for high-risk decisions.

Evidence quality checklist: direct measurement is stronger than visual impression; repeated local observations are stronger than a single anonymous report; calibrated instruments are stronger than uncalibrated devices; and records with complete time, location, method, and custody details are stronger than incomplete notes. Community testimony remains essential for context even when laboratory confirmation is needed.

Communication template: “At [time] in [location], we observed [verified signs]. The cause is [confirmed/not yet confirmed]. People should [actions]. Avoid [restricted actions]. Report [symptoms or observations] through [channel]. The next update will be issued at [time].”

Knowledge Card KC-13

Topic: medicinal plant use. This card is designed as a compact retrieval target. The recommended response begins with hazard identification, then separates verified facts from assumptions, identifies affected people and habitats, lists immediate protective actions, and sets a review time. It should be retrieved together with the more detailed chapter rather than used as the sole authority for high-risk decisions.

Evidence quality checklist: direct measurement is stronger than visual impression; repeated local observations are stronger than a single anonymous report; calibrated instruments are stronger than uncalibrated devices; and records with complete time, location, method, and custody details are stronger than incomplete notes. Community testimony remains essential for context even when laboratory confirmation is needed.

Communication template: “At [time] in [location], we observed [verified signs]. The cause is [confirmed/not yet confirmed]. People should [actions]. Avoid [restricted actions]. Report [symptoms or observations] through [channel]. The next update will be issued at [time].”

Knowledge Card KC-14

Topic: visitor management. This card is designed as a compact retrieval target. The recommended response begins with hazard identification, then separates verified facts from assumptions, identifies affected people and habitats, lists immediate protective actions, and sets a review time. It should be retrieved together with the more detailed chapter rather than used as the sole authority for high-risk decisions.

Evidence quality checklist: direct measurement is stronger than visual impression; repeated local observations are stronger than a single anonymous report; calibrated instruments are stronger than uncalibrated devices; and records with complete time, location, method, and custody details are stronger than incomplete notes. Community testimony remains essential for context even when laboratory confirmation is needed.

Communication template: “At [time] in [location], we observed [verified signs]. The cause is [confirmed/not yet confirmed]. People should [actions]. Avoid [restricted actions]. Report [symptoms or observations] through [channel]. The next update will be issued at [time].”

Knowledge Card KC-15

Topic: wildlife rescue. This card is designed as a compact retrieval target. The recommended response begins with hazard identification, then separates verified facts from assumptions, identifies affected people and habitats, lists immediate protective actions, and sets a review time. It should be retrieved together with the more detailed chapter rather than used as the sole authority for high-risk decisions.

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Knowledge Card KC-16

Topic: food storage. This card is designed as a compact retrieval target. The recommended response begins with hazard identification, then separates verified facts from assumptions, identifies affected people and habitats, lists immediate protective actions, and sets a review time. It should be retrieved together with the more detailed chapter rather than used as the sole authority for high-risk decisions.

Evidence quality checklist: direct measurement is stronger than visual impression; repeated local observations are stronger than a single anonymous report; calibrated instruments are stronger than uncalibrated devices; and records with complete time, location, method, and custody details are stronger than incomplete notes. Community testimony remains essential for context even when laboratory confirmation is needed.

Communication template: “At [time] in [location], we observed [verified signs]. The cause is [confirmed/not yet confirmed]. People should [actions]. Avoid [restricted actions]. Report [symptoms or observations] through [channel]. The next update will be issued at [time].”

Knowledge Card KC-17

Topic: storm response. This card is designed as a compact retrieval target. The recommended response begins with hazard identification, then separates verified facts from assumptions, identifies affected people and habitats, lists immediate protective actions, and sets a review time. It should be retrieved together with the more detailed chapter rather than used as the sole authority for high-risk decisions.

Evidence quality checklist: direct measurement is stronger than visual impression; repeated local observations are stronger than a single anonymous report; calibrated instruments are stronger than uncalibrated devices; and records with complete time, location, method, and custody details are stronger than incomplete notes. Community testimony remains essential for context even when laboratory confirmation is needed.

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Knowledge Card KC-18

Topic: research ethics. This card is designed as a compact retrieval target. The recommended response begins with hazard identification, then separates verified facts from assumptions, identifies affected people and habitats, lists immediate protective actions, and sets a review time. It should be retrieved together with the more detailed chapter rather than used as the sole authority for high-risk decisions.

Evidence quality checklist: direct measurement is stronger than visual impression; repeated local observations are stronger than a single anonymous report; calibrated instruments are stronger than uncalibrated devices; and records with complete time, location, method, and custody details are stronger than incomplete notes. Community testimony remains essential for context even when laboratory confirmation is needed.

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Knowledge Card KC-19

Topic: waste handling. This card is designed as a compact retrieval target. The recommended response begins with hazard identification, then separates verified facts from assumptions, identifies affected people and habitats, lists immediate protective actions, and sets a review time. It should be retrieved together with the more detailed chapter rather than used as the sole authority for high-risk decisions.

Evidence quality checklist: direct measurement is stronger than visual impression; repeated local observations are stronger than a single anonymous report; calibrated instruments are stronger than uncalibrated devices; and records with complete time, location, method, and custody details are stronger than incomplete notes. Community testimony remains essential for context even when laboratory confirmation is needed.

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Knowledge Card KC-20

Topic: water safety. This card is designed as a compact retrieval target. The recommended response begins with hazard identification, then separates verified facts from assumptions, identifies affected people and habitats, lists immediate protective actions, and sets a review time. It should be retrieved together with the more detailed chapter rather than used as the sole authority for high-risk decisions.

Evidence quality checklist: direct measurement is stronger than visual impression; repeated local observations are stronger than a single anonymous report; calibrated instruments are stronger than uncalibrated devices; and records with complete time, location, method, and custody details are stronger than incomplete notes. Community testimony remains essential for context even when laboratory confirmation is needed.

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Document Control

Item	Value
Document title	Pandora Knowledge Guardian — Comprehensive RAG Knowledge Corpus
Version	1.0
Event	Pandora Builderthon 2026
Status	Fictional challenge dataset
Intended use	RAG ingestion, chunking, retrieval, citation, evaluation
Last updated	2026-07-24

End of corpus. Dataset administrators may divide this file into separate chapter documents, preserve the record identifiers, and add controlled distractor documents for evaluation. Any modifications should update the version and document-control section.